Regional Airport *Ground Access* Plan

January 27, 2005

Puget Sound Regional Council
PSRC

This report was prepared to provide direction to the Regional Council's ongoing Regional Airport System Planning process. The 2001 Regional Airport System Plan is a Modal Component of **DESTINATION 2030**

Puget Sound Regional Council

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January 27, 2005

This report was prepared by
Puget Sound Regional Council Staff
with input from the
Regional Airport Ground Access Plan Advisory Committee

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The *2001 Regional Airport System Plan*
is a Modal Component of
Destination 2030
the Metropolitan Transportation Plan for the
Central Puget Sound Region

Disclaimer

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For additional information or to obtain copies of the *PSRC Regional Airport Ground Access Plan* report, please contact the Puget Sound Regional Council's Information Center by phone at 1-206-464-7532 or by E-mail at infoctr@psrc.org. The report can also be found on PSRC's Air Transportation web page at: http://www.psrc.org/projects/air/index.htm.

Regional Airport Ground Access Plan
Advisory Committee

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Chapter 1: Introduction

1.1 PROJECT BACKGROUND

Over the past two decades the Federal Aviation Administration (FAA) and airport sponsors have made significant investment in airport capacity to meet the growing demand for airspace, runways, passenger terminals, and air cargo facilities. Unfortunately, there has not been an equivalent level of planning and investment in facilities to preserve ground access to airports. This is due to a combination of factors including: limitations on how FAA funds are spent, lack of a perceived airport access problem, absence of coordinated planning to address known airport access needs, and other factors. While airport activity levels have grown rapidly over the past 20 years, our urban regions, including the areas surrounding our major airports, have also grown, placing increasing demands on the regional ground transportation system.

Air passengers, airport employees, and other airport users rely on the regional intermodal ground transportation system to provide ground access to the region's airports. Recognizing these realities, planning for airport systems is increasingly using an approach which integrates airports with other transportation modes. State and Federal regulations now require an intermodal approach to planning for regional transportation systems. In Washington State, Title 47 of the Revised Code of Washington (RCW): *Public Highways and Transportation* requires that Regional Transportation Planning Organizations (RTPOs) prepare regional transportation plans that include improvements at airports (RCW 47.80.030). Notwithstanding these requirements, the Puget Sound region has been aware of a growing need to identify the intermodal ground access requirements for the region's airports, integrate planning for those needs with ongoing planning for other modal components, such as highways, transit, and freight mobility, and incorporate regionally significant airport access projects into the region's transportation plans and programs. Historically, the challenges to successful airport access planning have included:

- Lack of communication and coordinated planning, project development, and funding between airport sponsors and city, county, state and federal agencies and transit providers.
- The apparent gulf between FAA-sponsored planning for on-airport improvements and planning for off-airport facilities, such as ground access projects. Historically, there has been a planning and implementation gap at airport boundaries.
- Lack of comprehensive analysis and planning for the integrated access needs of airports, airport-related economic development, and the surrounding communities. Perhaps the best current example of coordinated transportation planning is the work being done by the Port of Seattle and the City of Sea-Tac as mandated in their 1997 Interlocal Agreement. There is a need for similar, broader cooperative planning for the region's airport access needs.

Based on the above-listed challenges, the following questions have emerged:

- How can the Puget Sound region identify and address the region's airport access needs, including passengers, employees, general aviation users, other airport tenants and related economic development adjoining airports?
- What critical information is required, what is available now, and what additional data is needed to help define the issues and provide the basis for future planning?
- How should airport access needs be integrated into the region's Metropolitan Transportation Plan (*Destination 2030*), as well as the plans of individual cities, counties, the Washington State Department of Transportation (WSDOT), transit agencies and others?

The *Regional Airport Ground Access Plan* (Plan) is the initial effort to bring a comprehensive regional perspective to planning for airport ground transportation needs. As such, the Plan includes four related tasks:

- Determine the status of airport ground access facilities and services, activity levels and planning (Chapter 2).
- Produce airport ground access demand forecasts (Chapter 3).
- Define regional needs and identify potential projects to meet those needs (Chapter 4).
- Integrate regional airport access needs into the Metropolitan Transportation Plan (*Destination 2030*), *Regional Transportation Action Strategy,* and *Regional Transportation Improvement Program* (TIP) as appropriate (Chapter 5).

1.2 NEED FOR THE PROJECT

The following list shows the need for the project, as identified by the Puget Sound Regional Council (PSRC).

- The S*trategic Plan for Aviation* (PSRC, 2002) found that the Puget Sound Regional Council has an appropriate role in planning for the intermodal aspects of regional airport ground access.
- It is not currently known what level of demand exists from the many sources of access demand at the region's airports, nor is it known what contribution this demand adds to activity levels and congestion on the local and regional ground transportation system.
- There is a need for more complete data on the current status of the ground transportation facilities serving the region's airports: their capacity, volumes, and levels of service.
- There is a need to identify the status of airport ground access-related planning (existing problems, bottlenecks, future demand, improvement needs, and planned/funded improvements) being done by airport sponsors, WSDOT, transit agencies, cities and counties. There is a need to document and consolidate this information.

1.3 PROJECT GOALS

Based on the identified needs for the project, the following project goals have been identified to guide development of this plan.

- Confirm the major issues, problems and opportunities related to airport ground access in the four county (Snohomish, King, Pierce and Kitsap) PSRC region.
- Document existing conditions (airport activity levels, access facilities and services, volumes, capacity and service levels, bottlenecks, improvement plans, etc.).
- Develop a method of translating activity levels into ground access demand, assessing mode splits, and distributing trips to the regional transportation system.
- Document existing airport access demand and prepare future demand forecasts.
- Evaluate how the PSRC travel demand model handles airport demand and make improvements as needed.
- Identify major access problems and needs, and assess alternative solutions.
- Identify access improvement projects.
- Recommend projects to be included in appropriate transportation plans and programs.
- Identify future issues, data needs and model improvements.

1.4 PROJECT OBJECTIVES

The *Regional Airport Ground Access Plan* evaluates airport ground access needs for the region's 26 public use airports as well as the two military airfields (Gray Army Airfield and McChord AFB) (see Figure 1-1 for location of airports). The planning process evaluates ground access needs related to the following major generators of access demand: passengers; airport, airline, aerospace and related

employees; general aviation activity (based aircraft and operations); Fixed Base Operator (FBO) activities; and other airport-related businesses and activities.

Close coordination with ongoing state, regional, and local transportation planning efforts was conducted during preparation of the plan. All public use airports in the region were analyzed and more detail was included on the region's busiest airports, as measured by the number of based aircraft and/or annual aircraft operations. General Aviation Airport facilities were broken into four categories:

- Commercial airports (Sea-Tac International Airport)
- Major General Aviation airports (10 airports)
- Other General Aviation airports (15 airports)
- Military airfields (Gray Army Airfield and McChord Air Force Base)

The Plan documents airport ground access needs based on the demand forecasts for each airport. Those projects are then incorporated into the appropriate plans around the region, including the Metropolitan Transportation Plan (*Destination 2030*), WSDOT plans, transit development plans, city and county plans and airport master plans.

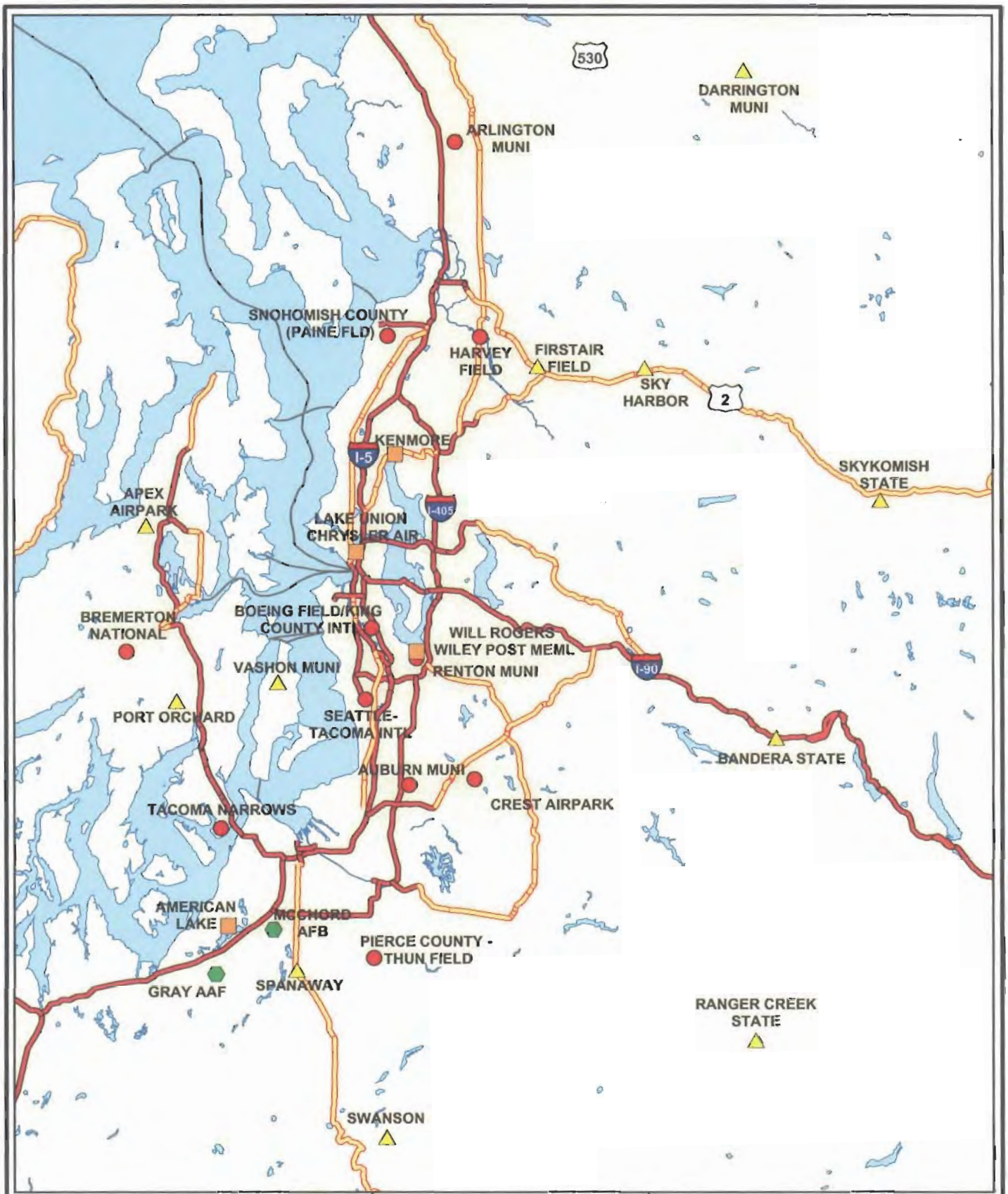
Work completed in association with the Seattle-Tacoma International Airport for this Plan did not duplicate the work that Port of Seattle Staff has done to date, or has planned for the future. Rather, the Plan incorporates the results of their work into this planning effort to ensure the modeling efforts were uniform and comprehensive.

1.5 OTHER RELATED PROJECTS

Other related projects on-going in the area include but are not limited to:

- Regional Air Cargo Study
- SR 518 Corridor Study
- Individual airport master planning

For information concerning the above projects, contact PSRC.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DARRINGTON MUNI
ARLINGTON MUNI
SNOHOMISH COUNTY (PAINE FLD)
HARVEY FIELD
FIRSTAIR FIELD
SKY HARBOR
2
KENMORE
I-5
SKYKOMISH STATE
APEX AIRPARK
I-405
LAKE UNION CHRYSLER AIR
BREMERTON NATIONAL
BOEING FIELD/KING COUNTY INTL
WILL ROGERS WILEY POST MEML
VASHON MUNI
RENTON MUNI
I-90
PORT ORCHARD
SEATTLE-TACOMA INTL
BANDERA STATE
AUBURN MUNI
CREST AIRPARK
TACOMA NARROWS
AMERICAN LAKE
MCCHORD AFB
PIERCE COUNTY - THUN FIELD
GRAY AAF
SPANAWAY
RANGER CREEK STATE
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Airports
Float Plane Facilities
General Aviation
Major Airports
Military
Road Classification
Limited Access Highway
Highway
Ferries
Airport Overview
Puget Sound Regional Council
Airport Ground Access Study
Coordinate System: WA State Plane North Zone NAD83
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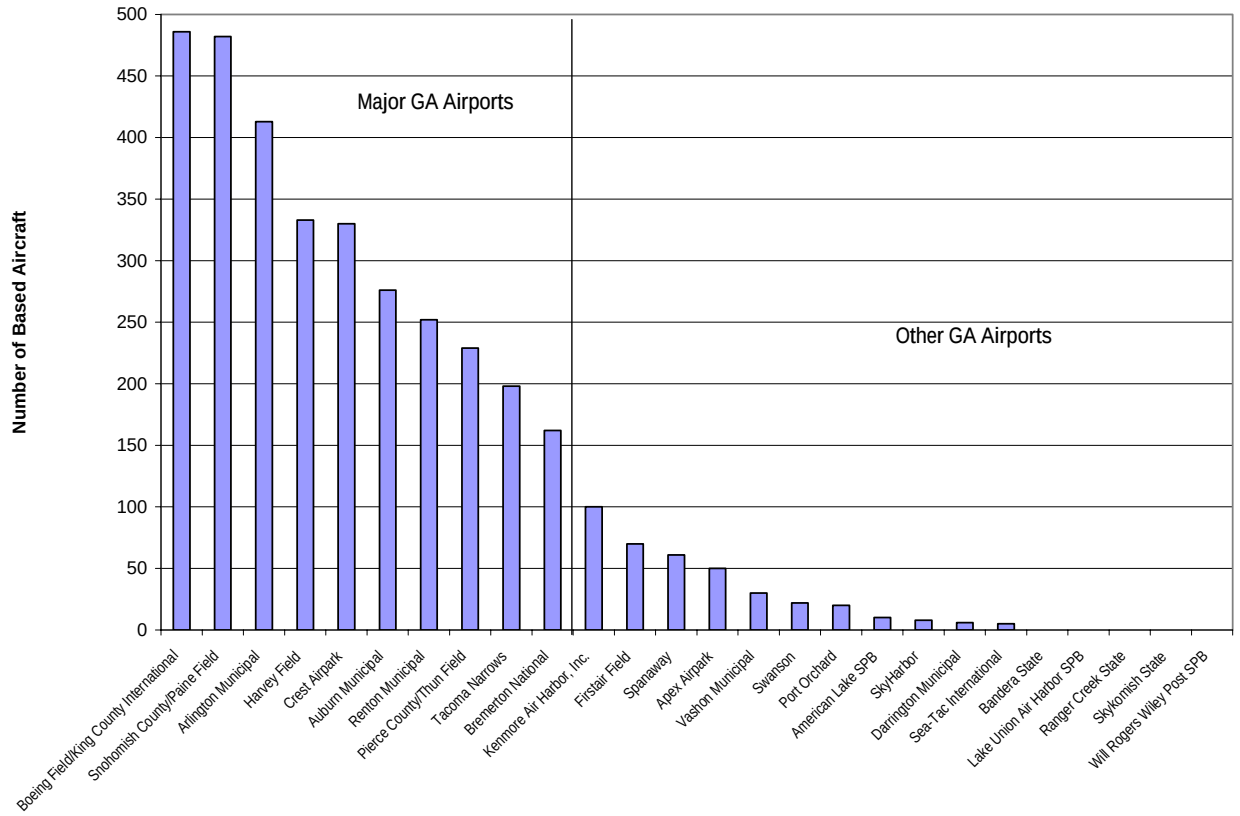
Puget Sound Regional Council
PSRC

Chapter 2: Status of Existing Airport Access System

There are 28 airports within the Puget Sound Regional Council (PSRC) area ranging in size as well as activity levels. For purposes of this report the airports have been categorized into four major groups: Commercial, Major General Aviation (GA) airports, Other General Aviation (GA) airports, and Military Airfields.

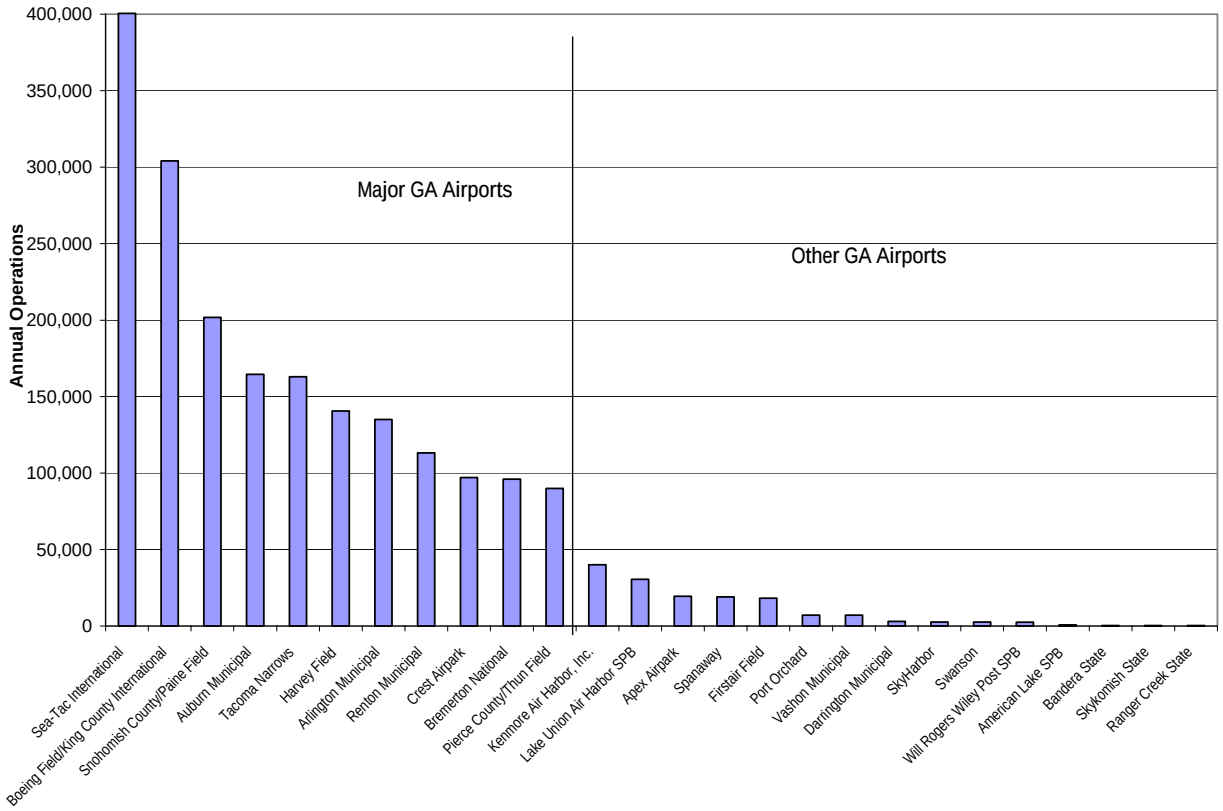
WSDOT updated its *Continuous Airport System Plan* (CASP) in 2002. This documented the number of based aircraft (Figure 2-1) and the number of operations for each airport (Figure 2-2). These two figures illustrate that there is a natural break between Major and other GA airports. Using a dividing point of 100 based aircraft and 50,000 annual operations, the same 10 GA airports remain at the top. Therefore, these 10 GA airports were designated as Major GA airports. All other GA airports were designated Other GA airports. Note: Sea-Tac International remains categorized as a commercial airport. Additionally, the two military airfields (Gray and McChord) were not shown on these figures but remain categorized as Military Airfields.

Figure 2-1 Airports Ranked by Number of Based Aircraft



Source: WSDOT, CASP, 2002

Figure 2-2 Airports Ranked By Number of Operations



Source: WSDOT, CASP, 2002

2.1 COMMERCIAL AIRPORTS

Within the Puget Sound Regional Council area, there is one commercial airport; Seattle-Tacoma International Airport (Sea-Tac). It should be noted that because of its commercial status, based aircraft at Sea-Tac is low (WSDOT reports only six aircraft based at Sea-Tac).

2.2 MAJOR GENERAL AVIATION AIRPORTS

Comparing Figures 2-1 and 2-2, the top 10 airports (not including Sea-Tac) are consistent in based aircraft at 150 or above and operations at 50,000 per year or above. For this report, 10 airports were categorized as Major General Aviation (GA) airports and are listed as follows in alphabetical order:

- Arlington Municipal Airport
- Auburn Municipal Airport
- Bremerton National Airport
- Crest Airpark
- Harvey Field
- King County International Airport/Boeing Field
- Pierce County Airport/Thun Field
- Renton Municipal Airport
- Snohomish County Airport/Paine Field
- Tacoma Narrows Airport

2.3 OTHER GENERAL AVIATION AIRPORTS

Fifteen airports are designated as Other GA airports because they have both less than 100 based aircraft and operate at fewer than 50,000 operations per year. Overall, Other GA airports are designed primarily for the use of small private aircraft. They are usually characterized by short runways, few or no terminal facilities and many small aircraft. The Other GA airports include:

- American Lake Sea Plane Base
- Apex Airpark
- Bandera State Airport
- Darrington Municipal Airport
- Firstair Field
- Kenmore Air Harbor Sea Plane Base
- Lake Union Sea Plane Base
- Port Orchard Airport
- Ranger Creek State Airport
- Sky Harbor Airport
- Skykomish State Airport
- Spanaway Airport
- Swanson Airport
- Vashon Municipal Airport
- Will Rogers-Wiley Post Sea Plane Base

2.4 MILITARY AIRPORTS

Two airfields are designated as Military Airfields: Gray Army Airfield at Fort Lewis and McChord Air Force Base.

2.5 ANALYSIS METHODOLOGY

Additional analysis was completed for the commercial and major GA airports as designated above. This analysis included individual site visits to the airport and surrounding area. Intersection and street characteristics were noted and surrounding land use was recorded for use with the forecast of demand as described in Chapter 3 for all airports. For the Other GA airports, telephone conversations with the airport manager identified characteristics of the airport and potential problem areas for access to/from the airport if any.

Employment was characterized into three categories by airport related use:

- Aviation Related Airport Employment includes land uses within the airport property that are directly related to the aviation industry (e.g., airline employees, instruction in flying, etc.).
- Non-Aviation Related Airport Employment includes land use on and adjacent to airport property that is supported by the airport (e.g., hotels, rental cars, airport manufacturers, cargo, etc.).
- Non-Airport Related Employment includes land uses not contained above or areas off airport property and with land uses not related to the operation of the airport (e.g., supermarkets, dry cleaners, etc.).

For purposes of analysis and modeling, PSRC has divided the region into Transportation Analysis Zones (TAZs). Often the boundaries of a TAZ containing an airport contain more than the airport property itself. Employment is reported to Washington State Department of Employment Security by employer and by Standard Industrial Classification (SIC) code that indicates the type of business reporting. Each type of business has a different SIC code (i.e., if your business is in aircraft engine and parts, the SIC code is 3724, retail-grocery stores are 5411, Hotel/Motels are 7011). Although each employer is responsible to report the number of employees, to ensure anonymity of individual employers, some employment numbers are suppressed if only one employer (or a small number of employers) for that type of employment is located in a particular TAZ. To maintain confidentiality, SIC codes were combined along broad employment lines to ensure anonymity of individual employers.

The SIC codes used in conjunction with employment types defined above are included in Table 2-1.

Table 2-1 SIC Codes by Type of Employment

Aviation Related Airport Employment	Non-Aviation Related Airport Employment	Employment Not Related to Airport Operations (Total Employment)
Manufacturing	*Manufacturing*	All remaining SIC codes*
3721-Aircraft-with and without research & development	3537-Industrial Trucks, Tractors, Trailers, Stackers - Metal Air Cargo Containers	
3724-Aircraft engines and engine parts (with and without research & development)	*Transportation*	
3728- Aircraft parts & Auxiliary Equipment, NEC	5088-Transportation Equipment and Supplies	
Transportation	*Services*	
4111-Local and Suburban Transit	7011-Hotels and Motels	
4725-Transportation Services - tour operators	7021-Rooming and Boarding Houses	
4731-Transportation Services - arrangement of transportation of freight and cargo		
4489-Water Transportation of Passengers NEC		
4512-Transportation by air - scheduled air transportation (passenger & freight)		
4513-Transportation by air - courier services		
4522-Transportation by air - non-scheduled		
4581-Transportation by air - airports, flying fields, airport terminal services		
Retail		
5812-Eating & Drinking Places - Food Service Contractors		
Services		
7349-Building Cleaning and Maintenance Services, Not Elsewhere		
8299-Schools & Education - Flying Instruction		

Source: PSRC, 2003
* For a list of SIC codes see: http://www.sec.gov/info/edgar/siccodes.htm

PSRC uses the employment as reported by SIC code in modeling the number of trips made on the regional street system. Knowing where and what type of land use and employment is in the area is essential to the understanding of the movement of traffic in the area. For each TAZ, the PSRC Travel Demand Model looks at employment (by category) and generates trips for each employment category per day per employee based on regional factors for the number of trips an employee is likely to make.

2.6 EXISTING AIRPORT CHARACTERISTICS

The following pages detail characteristics of each of the 28 regional airports by major category (Commercial, Major GA, Other GA, and Military). For each airport, the following is discussed:

- Airport Characteristics: This section contains the number of operations and based aircraft per year and definitions of each type are listed below. This information was provided by the WSDOT 2003 CASP Database with the following exceptions: Apex Airpark, Port Orchard (North Gig Harbor) Airport, Sky Harbor Airport, Gray Army Airfield, and McChord Airforce Base. Numbers for these airports were taken from the Regional Airport System Plan (RASP), 2001.
- Aircraft Operations are subdivided into two types: (1) Local operations which are performed by aircraft that operate in the local traffic pattern or within sight of the airport and are known to be departing for/arriving from a local practice area, and (2) Itinerant operations are all other operations at an airport.
- *GA local flights* include all civil aviation operations other than scheduled air carrier operations and non-scheduled air taxi operations for remuneration or hire. These flights usually are within sight of the airport or air traffic control tower. Most local flights can be categorized as training flights, sightseeing flights, and 'touch-and-go' landings.

- *GA itinerant flights*: flight operation (either a landing or a take-off) performed by a general aviation aircraft which usually originates at one airport and terminates at another.
    - *Air carrier flights*: An airline providing scheduled air service for the commercial transport of passengers or cargo.
    - *Air Taxi flights*: An air carrier certificated in accordance with FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Air taxi operators generally operate small aircraft "for hire" for specific trips transporting passengers or cargo.
    - *Commuter flights*: An airline providing scheduled air service using commuter aircraft (aircraft having a certificated maximum seating capacity of 60 or less).
    - *Military flights*: flight operations in which military aircraft is used including those flown by the Air Force and aviation units of the Army, Navy Marine Corps, and National Guard.
- Based Aircraft: include all aircraft stationed at an airport on an annual basis.
    - *Single-engine piston*: Aircraft with one piston engine. Used mostly with recreational purposes
    - *Multi-engine piston*: Aircraft with two or more piston engines. Used mostly with recreational purposes but some commercial and air-taxi uses.
    - *Turbo-jet/Turbo-prop*: An aircraft powered by a turbine engine including those with internal fan blades and those powering an external propeller. Used largely for business purposes.
    - *Rotor aircraft*: An aircraft that derives its lift from blades that rotate about an approximately vertical central axis.
    - *Gliders*: almost exclusively used for recreational purposes and does not have an engine. The glider is towed by another plane to altitude and then released to utilize atmospheric conditions to climb and maneuver.
    - *Ultralights*: almost exclusively used for recreational purposes and designated as sport aircraft. Ultralights include a small engine (average speed attainable is 85-mph) incased in a framed structure with one to two seats.
- Land Use/Employment Characteristics: This section contains a general overview of land use around the airport and employment in and around the airport based on PSRC TAZ boundaries.
- Transportation Characteristics: This section contains general information related to access for all modes of transportation if available. Acceptable levels of service for traffic analysis assumes that operation of the roadway and intersections fall within acceptable levels of the area. For WSDOT roadways in an urban setting, acceptable levels of service (LOS) for intersections are LOS E. In rural and on city/county roadways, these levels may differ but are usually either a threshold of LOS C or LOS D. For roadway sections (in between intersections), WSDOT sets a LOS D for their roadways in urban settings and LOS C in rural settings. For individual city and county roads (not owned and operated by WSDOT), these thresholds differ but are predominantly LOS D for intersections and LOS C for roadways. Major roadways are shown on the map directly following the discussion of each specific airport in this chapter. LOS analysis is consistent with the governing jurisdiction for each roadway.
- Planned Projects: This section contains projects as identified by PSRC, WSDOT and respective cities and counties to be completed by 2030 or before and are broken down by decade of planned completion (2010, 2020, 2030) to correspond to travel demand model projection years.

As stated in section 1.5 Other Related Projects, the region's air cargo ground access needs will not be included in this study, but will be addressed as part of the proposed future Regional Air Cargo Strategy project, a future regional air cargo study scheduled to be completed in 2005. The results of the work related to the air cargo ground access study will be incorporated into any future updates of this plan and other appropriate regional transportation plans.

Airport Characteristics

Sea-Tac International Airport had 400,635 operations in 2002 comprised of zero GA local flights, 4,668 GA itinerant flights, 227,579 air carrier flights, 168,322 commuter flights, and 66 military flights. Based Aircraft totals 6 with 2 multi-engine piston and 3 turbo-jet aircraft, and 1 rotor aircraft located at this airport.

Land Use/Employment Characteristics

The area around Sea-Tac is highly commercial/retail, largely with businesses supporting the airport. To the east of the airport is SR 99 where several airport-related parking, restaurants, hotels, retail businesses and offices are located. Cargo centers are located adjacent to the airport along Air Cargo Road and farther out in all directions. There has been some reclaiming of land to the north that falls into the Runway Protection Zone (RPZ). RPZs are trapezoidal areas "off the end of the runway established to enhance the protection of people and property on the ground" in the event an aircraft lands or crashes beyond the runway end. Runway Protection Zones underlie a portion of the approach closest to the airport. This area to the north will continue to be undeveloped. The Port of Seattle owns land to the north and south of the airport, which is reserved for future development. With the exception of the Port owned land, there is very little undeveloped land in the vicinity of Sea-Tac International Airport.

Using the definitions above, and the SIC codes as shown in Table 2-1, for airport related and non-airport related employment, Table 2-2 shows the employment for the TAZs including and surrounding the airport. The TAZ that contains the airport is shown in bold. For locations of these TAZ boundaries, see Figure 2-3.

Table 2-2 Employment for Sea-Tac International Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
356	619	0	662	1,281
364	210	0	1,301	1,511
365	335	21	799	1,155
366	243	5	1,069	1,317
369	**14,730**	**499**	**5,920**	**21,149**
370	413	52	30	495
371	362	1,366	1,142	2,870
372	556	0	1,499	2,055
376	1,655	89	880	2,624
377	107	307	1,735	2,149
TOTAL	19,230	2,339	15,037	36,606

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Traffic at commercial airports is caused by (1) the movement of passengers to/from the airport for travel purposes, (2) traffic associated with parking at the airport whether for employment or travel purposes, and (3) the movement of individuals to/from the airport to access businesses located on the airport property.

Commercial airport sponsors have historically built large amounts of on-airport parking. While this parking is convenient for passengers and airport employees, it generates significant volumes of traffic, and encourages access by single-occupant vehicles (SOV). On the upside, airport parking generates

significant revenues for airport sponsors that can help pay for other needed airport improvements. In 2000 parking revenues at Sea-Tac exceeded $40 million.

Historically, non-SOV modes of travel (e.g., transit, bicycle, taxi, etc.) for airport access at U.S. airports have been extremely low. Consequently, there has been little incentive for investing in alternative access modes such as increased transit service.

Sea-Tac has access points off Interstate 5 (I-5), SR 509, SR 518 and SR 99 (International Boulevard). There is a perimeter road to the east providing access to the cargo facilities. Employee parking is located to the north with shuttle service between the parking lot and the passenger terminal.

There are five transit routes currently serving Sea-Tac as listed below:

- Route 140 (weekdays, Saturday, Sunday) serving the Burien Transit Center, Sea-Tac International Airport, McMicken Heights, Southcenter, South Renton Park & Ride and the Renton Transit Center.
- Route 174 (weekdays, Saturday, Sunday) serving downtown Seattle, Duwamish/Boeing area, Sea-Tac International Airport, Midway and the Federal Way Transit Center.
- Route 194 (Weekdays, Saturday, Sunday) serving downtown Seattle, Sea-Tac International Airport, Kent-Des Moines Park & Ride, Star Lake Park & Ride and the Federal Way Transit Center.
- Route 560 (Sound Transit) (Weekdays, Saturday, Sunday) serving the Bellevue Transit Center, South Bellevue Park & Ride, Newport Hills Park & Ride, Renton Boeing, Renton Transit Center, Sea-Tac International Airport, Burien Transit Center, White Center Transfer Point, Fauntleroy and the West Seattle Junction.
- Route 574 (Sound Transit) (Weekdays, Saturday, Sunday) serving Sea-Tac International Airport, Kent-Des Moines Park & Ride, Star Lake Park & Ride, Federal Way Park & Ride, Tacoma Dome, Lakewood Park & Ride, Lakewood Mall and the Lakewood Transit Center.

Additionally, shuttle vans and buses, taxis, and other passenger cars regularly access the airport to pick-up and drop-off passengers or to conduct airport related business.

Figure 2-3 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- South Military Road will be restriped to include a bike lane on the shoulder area from Peasley Canyon Way South to SR 161. Planned completion, 2010.
- S 188th Street would be widened and an overlay placed on the roadway from 16th Avenue S to Des Moines Memorial Drive. The roadway would be re-channeled to construct curb, gutter, sidewalk, and bicycle lanes. Planned completion, 2020.
- International Boulevard would be widened from S 200th Street to S 216th Street. Improvements include curbs, gutters, sidewalks, bicycle lanes, medians, street lighting, storm drainage channelization, signalization, paving, landscaping and to consolidate driveways and underground utilities. Planned completion, 2010.
- SW 152nd Street from 1st Avenue S to 10th Avenue SW. The roadway would be reconstructed and enhanced to add wide sidewalks, curb bulbs at pedestrian crossings, landscaping, new street lights, signalization, gateway enhancements, left turn pockets at intersections and signal interconnections. Planned completion, 2010.
- I-5 at I-405/SR 518 interchange improvement would include the construction of a freeway to freeway core lane HOV connection at this interchange. Planned completion, 2010.
- 1st Avenue S from 174th Street S to 200th Street S would be a non-motorized enhancement Phase 2 project. Planned completion, 2010.

- SR 509/I-5 interchange area from SW 210th Street to Sea-Tac International Airport. This project would provide an extension of the SR 509 HOV lanes with a new interchange with I-5 at SW 210th Street. I-5 would be widened between S 272nd Street and S 204th Street. Planned completion, 2010.
- SR 518 from SR 509 Interchange to I-5 would widen SR 518 for additional lanes of either HOV or general purpose and provide a new connection to Port of Seattle's North Terminal. Reconstruct the SR 99 interchange with SR 518. Two projects (one for NW quadrant and one for SE quadrant). Planned completion, 2010.
- SR 509 from Des Moines Memorial Drive to S 136th Street would be widened to include 6 lanes with HOV lanes. Planned completion, 2030.
- S 188th Street from the tunnel to Des Moines Memorial Drive would be widened. Planned completion, 2010.
- Military Road from Air Cargo Road to Pacific Highway would be striped to include a Class 2 bicycle lane. This project is not in local plans. Planned completion, 2010.
- Pacific Highway South from 144th Street to Military Road would be striped to include a Class 2 bicycle lane. This project is not in local plans. Planned completion, 2010.
- S 156th St/Des Moines Memorial Road from 1st Avenue S to 157th Street would be striped to include a Class 2 bicycle lane. This project is not in local plans. Planned completion, 2010.
- S 170th Street/29th Street from Military Road to Sea-Tac Light Rail Station would be striped to include a Class 2 bicycle lane. This project is not in local plans. Planned completion, 2010.
- S 188th Street/Orilla Road from Military Road to Perimeter Road would be striped to include a Class 2 bicycle lane. This project is not in local plans. Planned completion, 2010.
- S 200th Street from Des Moines Memorial Drive to Pacific Highway would be striped to include a Class 2 bicycle lane. This project is not in local plans. Planned completion, 2010.
- SW 139th/SW 140th Street from Ambaum to Des Moines Memorial Drive would be striped to include a Class 2 bicycle lane. This project is not in local plans. Planned completion, 2010.
- SR 509 Bike lanes from S Normandy Road to Des Moines Way would be striped to include a Class 2 bicycle lane. This project is not in local plans. Planned completion, 2010.
- Highline Corridor Improvement Project from SW 148th Street to SW 162nd Street would be widened to include two 11' lanes in each direction, one 12' left turn/raised center landscaped median, with curbs, gutters, sidewalks, landscaping and street lighting. Between SW 160th Street and SW 162nd Street, the project includes two 5' bicycle lanes and storm drainage. Planned completion, 2010.
- S 154th Street from SR 518 to 24th Avenue South would be widened. Planned completion, 2010.
- SR 518 at SR 509 interchange would construct a flyover ramp or interchange from SR 509 to eastbound SR 518. Planned completion, 2010.
- Sea-Tac Airport Transportation Center at the intersection of International Boulevard and S 170th Street would construct a Bus Rapid Transit Station. Planned completion, 2020.
- South Airport Access Project from 28th Avenue S to S 188th Street. A new roadway would be constructed. Planned completion, 2010.
- Link Light Rail – Phase I; Segment F would construct three stations along the proposed light rail alignment (154th Street Station, Airport Station, 200th Street Station). Planned completion, 2010.
- S 154th Street Park & Ride Lot would be constructed and include 650 new parking stalls. Planned completion, 2010.
- Sea-Tac/Tukwila/Burien Park & Ride Lots would be expanded to include 350 new stalls split between the S 180th Street, Tukwila and Burien Park & Ride lots. Planned completion, 2030.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Locator Map
Seattle
Bellevue
Renton
Legend
Airport Related Land Use
Industrial or Underdeveloped Land
Major Roadways
Traffic Analysis Zone
Transit Route
Seattle-Tacoma International Airport (Sea-Tac)
Puget Sound Regional Council Airport Ground Access Study
Miles
URS
Puget Sound Regional Council
PSRC

Airport Characteristics

Arlington Municipal Airport has 135,000 operations per year comprised of 76,167 GA local flights, 58,293 GA itinerant flights, 520 air taxi flights, and 20 military flights. Based Aircraft totals 501 with 390 single-engine piston, 16 multi-engine piston, and 7 turbo-jet aircraft. There are an additional, 6 rotor aircraft, 21 gliders, and 61 ultra lights located at this airport. Arlington Municipal Airport hosts an annual Northwest Experimental Aircraft Association Fly-in and Sport Aviation Convention which occurs Wednesday through Sunday of the second weekend in July. On average, approximately 125 exhibitors in addition to the pilots and spectators are present in addition to drive-in participants.

Land Use/Employment Characteristics

To the east of the airport, industrial and manufacturing uses border 59th Street with residential development and Gleneagle Golf Course further to the east. Woods and fields are located to the north with residential development located on the north side of 288th Street NE. Mixed use is located to the west, with commercial and vacant/farmland located to the south. An alternative high school is located off the northeast corner of the property. Table 2-3 shows the employment for the area in and around Arlington Municipal Airport.

Table 2-3 Employment for Arlington Municipal Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
646	829	14	2,598	3,441
662	567	51	5,333	5,951
663	185	0	2,390	2,575
TOTAL	1,581	65	10,321	11,967

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to the airport is primarily from I-5 at the SR 531 interchange, traveling east on SR 531 (172nd Street NE) to 59th Street NE and then north on 59th Street NE. The numbers of lanes along SR 531 from I-5 east is inconsistent. Just east of the interchange, there are 7 lanes (3 lanes in each direction with a center two-way left turn lane). East of Smokey Point Boulevard there are 3 total lanes (one lane in each direction with a center two-way left turn lane) and the road narrows further east of 43rd Avenue NE to 2 lanes (one lane in each direction). Signals exist along SR 531 at the interchange with I-5 and then at Smokey Point Boulevard, 51st Avenue NE, 59th Avenue NE and 67th Avenue NE. Left turn lanes exist in all directions for the intersections of SR 531/Smokey Point Boulevard, SR 531/51st Avenue NE, and SR 531/67th Avenue NE. A left-turn lane in the eastbound direction at the signal at 59th Avenue NE exists to aid in access to/from the airport. Congestion along SR 531 is significant especially in the am and pm peak hours. At the present time, a need for better operation of the existing street system around the Arlington Municipal Airport, specifically on SR 531, is hindering the expansion of development on the airport property.

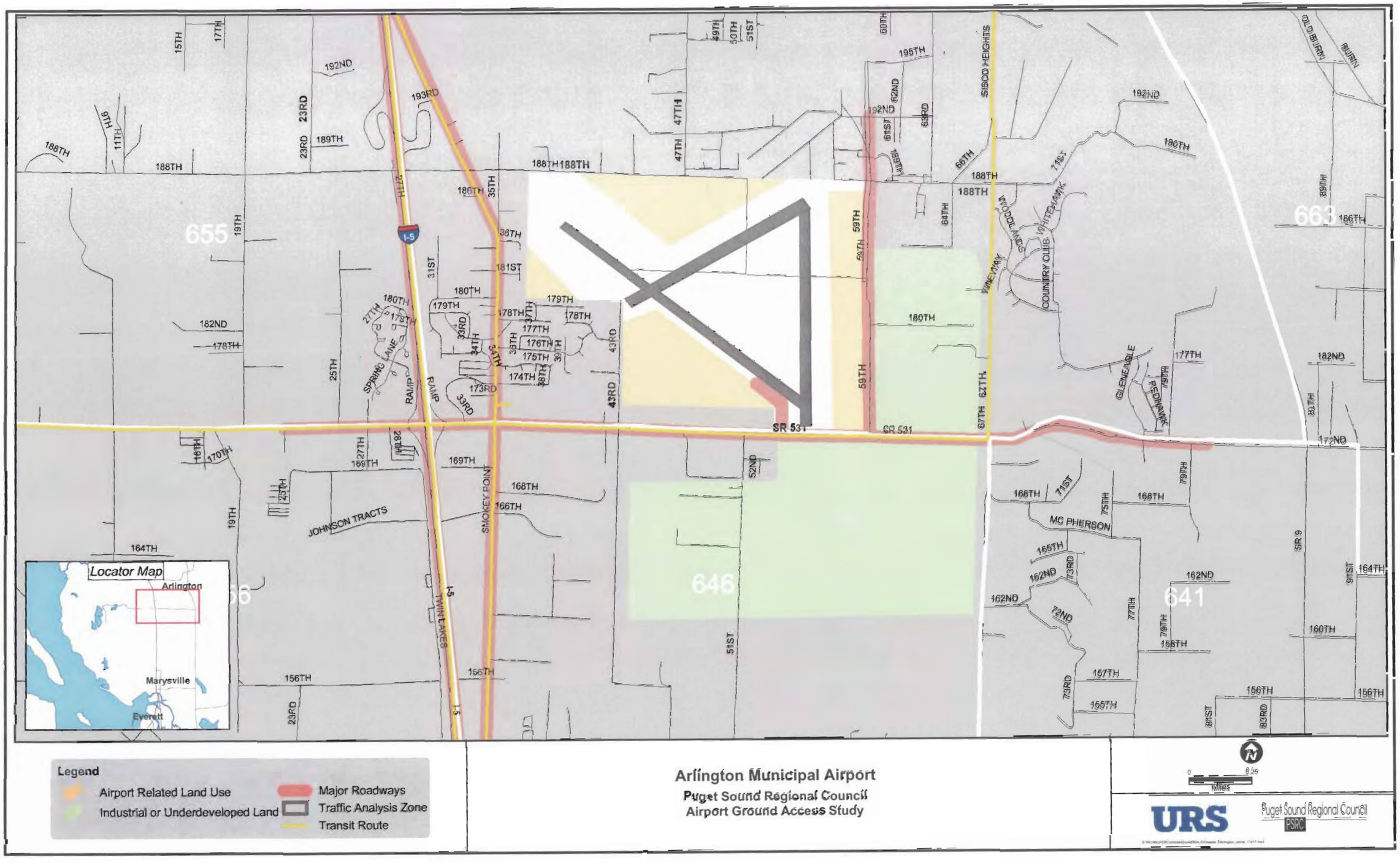
There is one transit route serving the Arlington Municipal Airport (Community Transit [CT] 230) which picks-up and drops-off at 188th Street NE and 59th Avenue NE.

Figure 2-4 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Smokey Point Boulevard from 136th Street NE to 152nd Street NE would be widened and include bicycle lanes. Planned completion, 2020.
- State Avenue from 100th Street NE to 152nd Street NE would be widened from the existing two-lane roadway to five lanes with curb, gutter and sidewalks. A bridge would be constructed over the Quilceda Creek. Planned completion, 2020.
- SR 531 from 43rd Avenue NE to 67th Avenue NE would be widened to five lanes. No completion date for this project was specified.
- 51st Avenue NE from 136th Street NE to 172nd Street NE would be widened to three lanes with bike lanes. Planned completion, 2020.
- SR 531 from I-5 to SR 9 would be widened to four lanes. This project was partially funded in the 1999 WSDOT Transportation Budget. Planned completion, 2010.
- I-5 from SR 528 to SR 531 would be widened from three to four lanes in each direction. Interchange ramps would be reconstructed. Planned completion, 2030.
- I-5 from SR 530 to SR 532 would be widened from three to four lanes in each direction. Interchange ramps would be reconstructed. The Stanwood Park & Ride lot would be expanded. Planned completion, 2030.
- SR 9 from SR 530 to City of Arlington Limits would be widened to four lanes with a center two-way left-turn lane. Programmed to be completed 2030.
- SR 530 from I-5 to Arlington City Limits would be widened to four lanes with restricted median and access management. Planned completion, 2030.
- SR 530 from Arlington City Limits to Arlington Heights/Jordan Road intersection would be widened to four lanes with restricted median. Planned completion, 2030.
- Centennial Trail Crossing of SR 530 at the SR 9 intersection would utilize the abandoned railroad right-of-way to construct a crossing for the Centennial Trail. Programmed to be completed 2010.
- 67th Avenue NE from 204th Street NE to 188th Street NE would widen the existing two lanes to five lanes with curb, gutter and sidewalk on both sides of the road. A Center Two-way, Left-turn lane would be provided. Planned completion, 2010.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I-5
SR 531
SR 9
SPRING LANE
RAMP
SMOKEY POINT
JOHNSON TRACTS
TWIN LAKES
SIBCO HEIGHTS
COUNTRY CLUB
GLENEAGLE
PEDMARK
MC PHERSON
Locator Map
Arlington
Marysville
Everett
Legend
Airport Related Land Use
Industrial or Underdeveloped Land
Major Roadways
Traffic Analysis Zone
Transit Route
Arlington Municipal Airport
Puget Sound Regional Council
Airport Ground Access Study
Miles
URS
Puget Sound Regional Council
PSRC

Airport Characteristics

Auburn Municipal Airport has 164,539 operations per year comprised of 60,000 GA local flights, 98,339 GA itinerant flights, 6,100 air taxi flights, and 100 military flights. Based Aircraft totals 277 with 264 single-engine piston and 12 multi-engine piston aircraft. Additionally there is one rotor aircraft located at this airport.

It should be noted that Auburn Municipal Airport is one of five reliever airports to Sea-Tac International Airport.

Land Use/Employment Characteristics

To the north, east and west of the airport, industrial and manufacturing are prevalent along 30th Street NE (north), E Street NE (east), and C Street NE (west) with residential development occurring further to the north and east. To the west is Emerald Downs (racetrack). The King County Metro Park & Ride lot is located southwest of the airport. Commercial/retail/office development is located to the south of the airport off 15th Street NE.

There are currently approximately 25 acres of undeveloped property along the southwest corner of the airport. This land could be available for aviation related development (e.g., maintenance facilities and/or eating establishments, etc.). Employment in and around the airport is shown in Table 2-4.

Table 2-4 Employment for Auburn Municipal Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
433	538	40	5,289	5,867
434	545	0	3,358	3,903
435	**460**	**44**	**2,451**	**2,955**
436	25	0	1,937	1,962
437	72	0	646	718
TOTAL	1,640	84	13,681	15,405

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

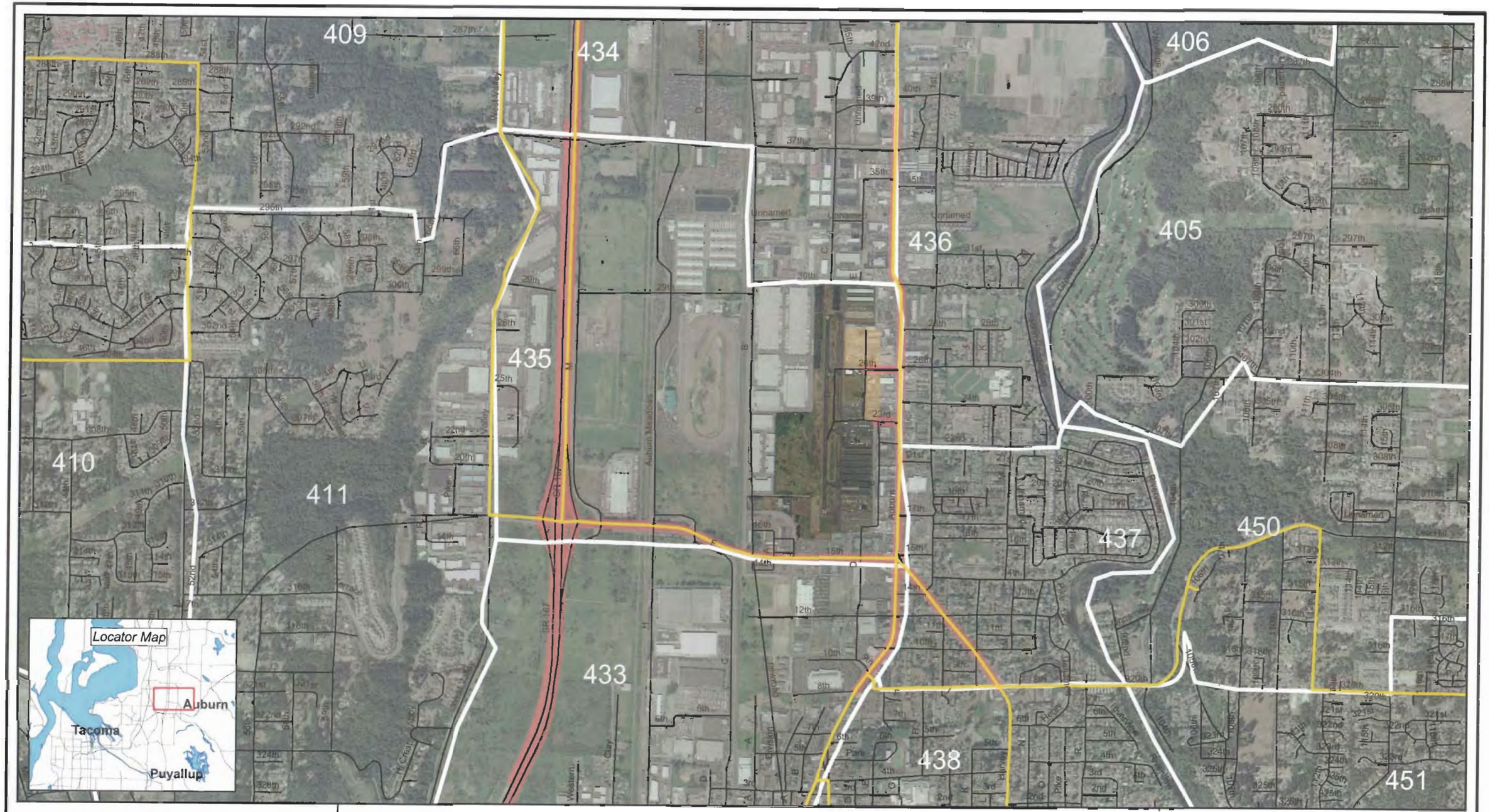
Access to and from the Auburn Municipal Airport is within acceptable levels (WSDOT, King County and City of Auburn). The airport is in proximity to I-5 (approximately 4 miles west of airport), SR 18 (south of airport) and SR 167 (Valley Freeway-west of airport). Direct access is on the east side of the airport at 23rd Street NE and 26th Street NE both connecting to Auburn Way. Signals exist along 15th Street NE at major locations as well as along Auburn Way. Congestion in the area can be seen at the am and pm peak hours. The two main access roads (23rd Street NE and 26th Street NE) are both two-lane facilities posted at 30-35 mph. Auburn Way is a 5 lane facility with speed limits ranging from 35 to 50 mph.

Figure 2-5 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Cross Street from A Street SE to Auburn Way S would widen this roadway. Planned completion, 2010.
- S 277th Street from 83rd Avenue S to West Valley Highway would widen the roadway to four lanes and include channelization, traffic signal upgrade, bike lane construction and a bridge widening. No completion date is planned.
- SE 277th Street from 83rd Avenue S to SR 516 would construct a new four lane arterial with transit, HOV lanes, curb, gutter, sidewalks, and bicycle lanes. Planned completion, 2020.
- SE 277th Street from SE 272nd Street to Auburn Way would construct new HOV lanes. Planned completion, 2010.
- SR 167 from SR 18 to 15th Street NW would widen the roadway for HOV lanes. Planned completion, 2010.
- SR 18 from I-5 interchange to SR 164th Interchange would improve the interchange at SR-167 and C Street by widening the westbound truck climbing lane from I-5 to SR 167. Additionally, roadway would be widened for HOV lanes. Planned completion, 2010.
- SR 167 from S 177th Street to SR 516 would widen the roadway to provide an additional general purpose lane in each direction. Planned completion, 2030.
- S 272nd/S 277th Street from Auburn Way North to Kent-Kangley Road (SR 516) would construct a new roadway between these points. Planned completion, 2030.
- S 277th Street from SR 167 to Auburn Way North would widen the roadway from three lanes to five. Additional accommodations for bicycles and pedestrian facilities are included. Planned completion, 2010.
- Auburn Transit Center would construct a pedestrian bridge over the existing railroad tracks. Planned completion, 2010.
- S 277th Street at the Burlington-Northern/Santa Fe Railroad crossing and the Union Pacific Railroad Crossing would be constructed as a grade separated crossing. Planned completion, 2010.
- W Valley Highway at S 277th Street would be widened to extend the existing southbound left turn and right turn lanes at the intersection. Project would also include construction of paved shoulders, street lighting, storm drainage, utilities and appurtenances. Planned completion, 2010.
- Auburn Station Park & Ride Lot at SR 167 would be expanded to include 580 new stalls. Planned completion, 2010.



Legend

- Airport Related Land Use
- Major Roadways
- Traffic Analysis Zone
- Transit Route

Auburn Municipal Airport

Puget Sound Regional Council
Airport Ground Access Study

0 0.25 0.5 Miles

URS

Puget Sound Regional Council
PSRC

Airport Characteristics

Bremerton National Airport has 96,000 operations per year comprised of 54,000 GA local flights, 41,000 GA itinerant flights, no air carrier flights, 100 air taxi flights, and 900 military flights. Based Aircraft totals 166 with 149 single-engine piston, and 13 multi-engine piston aircraft. Additionally there are three rotor aircraft and one ultra light located at this airport.

Land Use/Employment Characteristics

Bremerton National Airport is surrounded by industrial and underdeveloped lands. Industrial and manufacturing facilities exist on the north and west side opposite the airport on SR 3. The Bremerton Race Track is located to the east and underdeveloped land is located to the south. Employment in and around the airport is shown in Table 2-6.

Table 2-5 Employment for Bremerton National Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
925	0	0	41	41
926	93	0*	1,447	1,540 *
TOTAL	93	0*	1,488	1,581

Source: PSRC, 2003

* denotes a zone where only one employer was reported for that type of land use. To insure confidentiality agreements, the number of employees for this type of land use is suppressed. Note: the employment numbers are included in trip projections as detailed in Chapter 3.

SIC codes used to determine employees shown in columns above are outlined in Table 2-1.

TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to and from the Bremerton National Airport meets acceptable levels (WSDOT and City of Bremerton). The airport is adjacent to SR 3 (two to three lane 50 mph facility) and south of the City of Bremerton. There is a signal at the entrance to the airport. Congestion is minimal and restricted to the am and pm peak hours on SR 3.

Figure 2-7 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

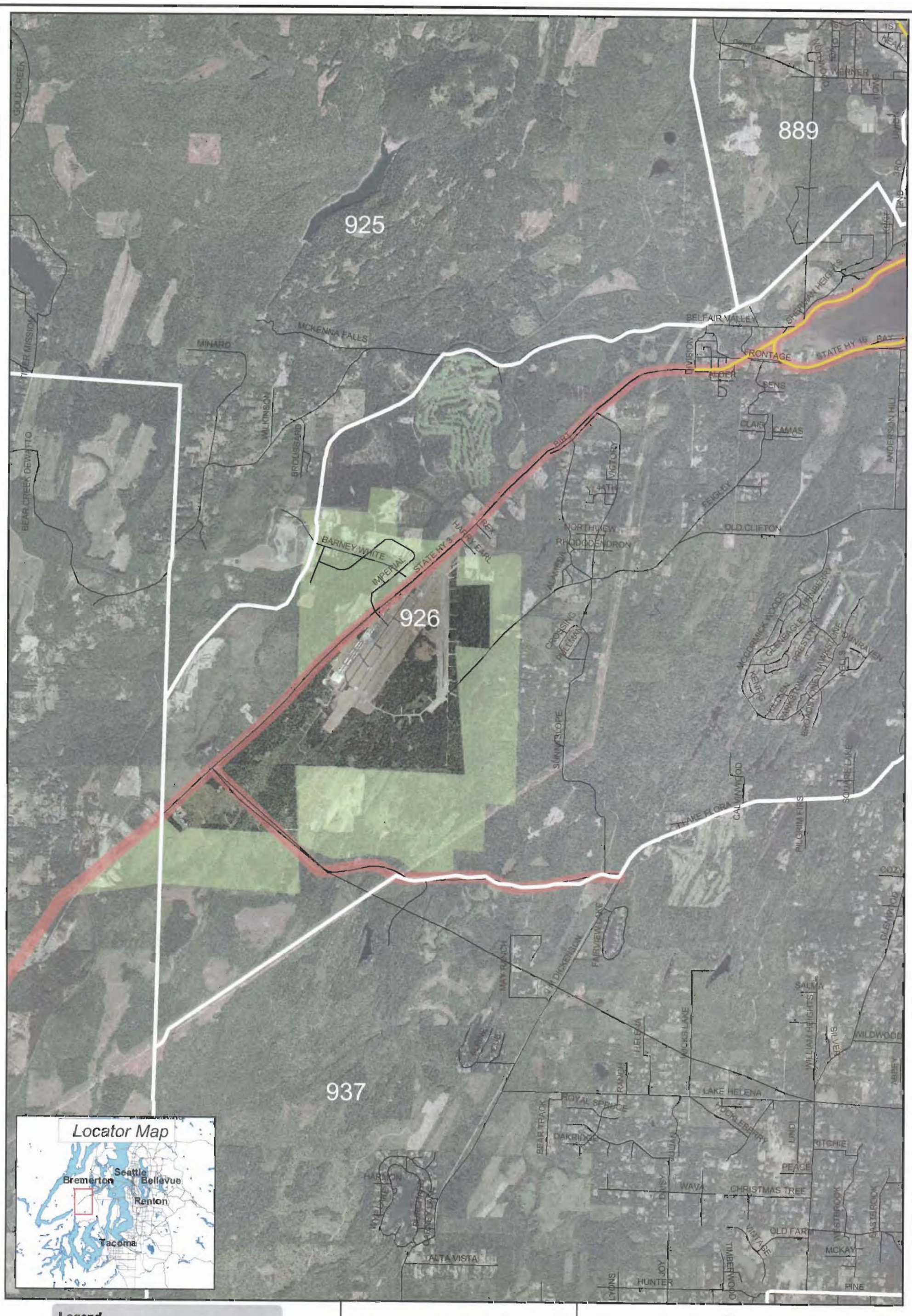
No transit routes serve the Bremerton National Airport at this time.

Planned Projects

Projects planned for the area include:

- SW Lake Flora Road from SR 3 to Glenwood Road SE would be widened to four lanes. Planned completion, 2020.
- Sam Christopherson Road from Old Belfair Valley Road to Werner Road would be constructed to two lanes. Planned completion, 2020.
- Glenwood Road from Lake Flora Road to SR 16 would be widened to four lanes. Planned completion, 2020.
- SR 3 from Gorst USG RR Bridge to SR 3/SR 304 interchange would be widened from four lanes to six lanes creating HOV lanes. Planned completion, 2010.

- SR 16 from SR 166 to SR 3 would be widened from six lanes to eight lanes creating HOV lanes. Planned completion, 2020.
- SR 3 from Mason/Kitsap County Line to SR 6 spur at Gorst would be widened to four lanes. Planned completion, 2020.
- SR 16 from SR 160 (Sedgwick Road) to SR 166 would be widened from four lanes to six lanes creating HOV lanes, improved intersection and interchange improvements, and transit operations. Planned completion, 2020.
- Port Blakely from Werner Road to Chico Way. A new roadway would be constructed connecting Werner Road and Chico Way. Planned completion, 2010.
- SR 16 from Bay Street to Sidney Road SW. A Class II bike lane would be constructed between these points. Planned completion, 2010.
- SR 3/SR 16 Park & Ride Lot. A total of 800 new stalls would be constructed on the phasing system of 250 stalls by 2015, 250 stalls by 2020 and 300 stalls by 2030.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937
BELFAIR VALLEY
MCKENNA FALLS
MINARD
WILKINSON
BRIDLESPUR
BEAR CREEK DEWATTO
GOLD CREEK
BARNEY WHITE
IMPERIAL
STATE HY 3
HARRY EARL
REX
FRONTAGE
STATE HY 16
PAY
DIVISION
ALDER
BENS
CLAIR
CAMAS
SHERMAN HEIGHTS
ANDERSON HILL
VICTORY
PATH
FEIGLEY
OLD CLIFTON
NORTHVIEW
RHODODENDRON
CROSSING
PELLEBAN
SUNNYSLOPE
MACCORMICK WOODS
GLENEAGLE
TURNBERRY
PRESTWICK
HAWKSTONE
BROADSTONE
GLENRAVEN
WILLOWSIDE
PARKSTONE
NELLS
JENNIE
CALAMITY WOOD
LAKE FLORA
PILGRIM FIRS
SOUTHSHORE
COZY
FAIRVIEW LAKE
MAY RANCH
DICKENSON
HELENA
WICKS LAKE
WILLIAM HEIGHTS
SILVER
WILDWOOD
ABBEY
LAKE HELENA
ROYAL SPRUCE
OAKRIDGE
BEAR TRACK
HUCKLEBERRY
LINDI
RITCHIE
PEACE
WAVA
CHRISTMAS TREE
WOODSTOCK
EASTBROOK
OLD FARM
VINTAGE
MCKAY
TIMBERWOOD
JOY
HUNTER
LYONS
PINE
HARLTON
WILLAMETTE
ALTA VISTA
Locator Map
Seattle
Bremerton
Bellevue
Renton
Tacoma
Legend
Industrial or Underdeveloped Land
Major Roadways
Traffic Analysis Zone
Transit Route
Bremerton National Airport
Puget Sound Regional Council
Airport Ground Access Study
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Miles
URS
Puget Sound Regional Council
PSRC

Airport Characteristics

Crest Airpark has 97,000 operations per year comprised of 12,000 GA local flights and 85,000 GA itinerant flights. Based Aircraft totals 332 with 327 single-engine piston and three multi-engine piston aircraft. Additionally there are two rotor aircraft located at this airport. Crest Airpark is a privately owned facility but is open to the public.

Land Use/Employment Characteristics

Crest Airpark is surrounded by residential land use, including a residential airpark where home owners use their direct access to the airport property to fly. Commercial development is located farther north along SR 516 (Kent Kangley Road). There is undeveloped and underdeveloped land surrounding the airport. Employment in and around the airport is shown in Table 2-7.

Table 2-6 Employment for Crest Airpark Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
459	22	0	392	414

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to and from Crest Airpark meets acceptable levels (City of Kent and King County). The airport access is off Covington Way SE (two lanes, 35 mph) to 179th Street NE (two lanes, 35 mph). There is a new overpass of SR 18 off Covington Way SE which realigns Covington Way SE to the west and further west of the SR 18/SR 516 interchange. Kent Black Diamond Road (two lanes, 50 mph) is located to the south of the airport and SR 516 (Kent Kangley Road-5 lanes, 35 mph) is located to the north.

There are signals at the intersections of SR 516/Covington Way SE, SR 516/SR 18 interchange, SR 516/Wax Road and Kent Black Diamond Road/Thomas Road (to the south of the airport). Congestion is minimal and restricted to the am and pm peak hours on SR 516 and SR 18.

No transit routes serve the airport area at this time.

Figure 2-8 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

No projects in the TAZ including this airport were found in the Metropolitan Transportation Plan (*Destination 2030*) but within the area, SR 18 is slated to be widened from two lanes to four lanes from Covington to I-90. This project will allow additional access in and around the airport. Planned completion, 2010.


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SR 516
SR 18
Locator Map
Renton
Kent
Federal Way
Auburn
Tacoma
Legend
Major Roadways
Traffic Analysis Zone
Transit Route
Crest Airpark
Puget Sound Regional Council
Airport Ground Access Study
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Miles
URS
Puget Sound Regional Council
PSRC

Airport Characteristics

Harvey Field has 140,677 operations per year comprised of 93,200 GA local flights, 44,352 GA itinerant flights, 1,879 air taxi flights, and 1,246 military flights. Based Aircraft totals 348 with 325 single-engine piston and eight multi-engine piston aircraft. Additionally there are 8 rotor aircraft, three gliders, and four ultra lights located at this airport. Harvey Field is a privately owned, public use airport with significant recreation activity (e.g., parachuting, glider operations, etc.) as well as more traditional flight operations.

It should be noted that Harvey Field is one of five reliever airports to Sea-Tac International Airport.

Land Use/Employment Characteristics

Harvey Field is surrounded by agricultural and underdeveloped lands with commercial activities located on Airport Road. Railroad tracks are located to the north of the airport and residential development to the south. Employment in and around the airport is shown in Table 2-8.

Table 2-7 Employment for Harvey Field Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
616	66	2	311	379
632	455	1	3,541	3,997
TOTAL	521	3	3,852	4,376

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to and from Harvey Field meets acceptable levels (WSDOT, Snohomish County and City of Snohomish) with the exception of Airport Way. Airport access is off the signalized intersection of Marsh Road (two lanes, 35-40 mph)/Airport Way and SR 9 (four lanes, 50 mph) or along Avenue D (two lanes, 30 mph) south across the Snohomish River (Avenue D becomes Airport Way south of the Snohomish River). Congestion is seen on all roadways listed above as well as surrounding roadways.

No transit routes serve the airport.

Figure 2-9 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- 2nd Street from SR 9 to Snohomish County line would be widened to provide two lanes, bike lanes and a center two-way left-turn lane. Planned completion, 2010.
- SR 9 from 176th Street to U.S. 2 would widen the roadway to four lanes in two phases: 176th Street to Marsh Road. Planned completion, 2020. Marsh Road to U.S. 2 planned completion, 2030.
- Marsh Road from SR 9 to Lowell-Larimer Road would be improved to meet the four lane rural standard as a collector arterial. Planned completion, 2020.
- Riverfront/Interurban Connector from the Planned Riverfront Trail to the Interurban Trail at 84th Street would construct a shared bike path in two phases. The first phase is from the Planned

Riverfront Trail to the Everett City limits while the second phase is from the Everett City limits to the Interurban Trail at 84th Street. Neither is currently in local plans. Planned completion, 2010.

- SE Snohomish Park & Ride Lot would expand the existing lot by up to 800 new spaces. Planned completion, 2010.

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632

616

Legend
- Industrial or Undeveloped Land
- Major Roadways
- Traffic Analysis Zone
- Transit Route

Harvey Field

Puget Sound Regional Council
Airport Ground Access Study

0 0.1 0.2 Miles

URS

Puget Sound Regional Council
PSRC

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Airport Characteristics

King County International Airport/Boeing Field has 304,099 operations per year comprised of 80,792 GA local flights, 156,945 GA itinerant flights, 10,311 air carrier flights, 54,138 air taxi flights, and 1,913 military flights. Based Aircraft totals 540 with 268 single-engine piston, 108 multi-engine piston, and 110 turbo-jet aircraft. Additionally, there are 54 rotor aircraft located at this airport.

It should be noted that Boeing Field is one of five reliever airports to Sea-Tac International Airport.

Land Use/Employment Characteristics

Land to the north of the airport is a mix of residential and commercial land uses. To the east the airport is bordered by Airport Way with railroad facilities directly adjacent on the far side and I-5 in close proximity. To the south industrial and undeveloped land and to the west are industrial and manufacturing facilities along East Marginal Way with the Duwamish River further west and SR 99 beyond that. The area adjacent to the airport on the west side includes the Seattle Museum of Flight and Boeing facilities. This is one of three Boeing related airfields, each producing large aviation related traffic in their respective area(s). Employment in and around the airport is shown in Table 2-5.

Table 2-8 Employment for King County International Airport/Boeing Field Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
196	583	29	9,828	10,440
197	5,336	138	2,104	7,578
199	20	3	571	594
213	10	0	2,677	2,687
343	45	0	1,182	1,227
344	7,151	0	2,266	9,417
TOTAL	13,145	170	18,628	31,943

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to and from the Boeing Field meets acceptable levels for the governing agencies (WSDOT and King County). As stated in the introduction to Chapter 2, "acceptable" refers to meeting the LOS threshold for individual intersections and roadways within the area owned and operated by individual jurisdictions. The airport is in close proximity to I-5 (east of airport) and East Marginal Way (west of airport), with SR 99 further west and other connections throughout the vicinity. Additional capacity on the perimeter roadways exists. Airport Way is a 4-lane (2 lanes in each direction), 45-mph facility providing direct access to the airport offices, terminal building and the east side flight line. East Marginal Way is a 5-6 lane (2-3 lanes in each direction), 35 mph facility providing direct access to Boeing properties, the Museum of Flight, and the west side flight line. Connections to the north and south lead to I-5 and SR 99. Recently there have been some improvements to the street system including a reconstruction of the 16th Street Bridge connecting SR 99 to SR 509. Congestion is minimal and restricted to the am and pm peak hours along East Marginal Way, SR 99 and I-5.

There are five transit routes serving the area including:

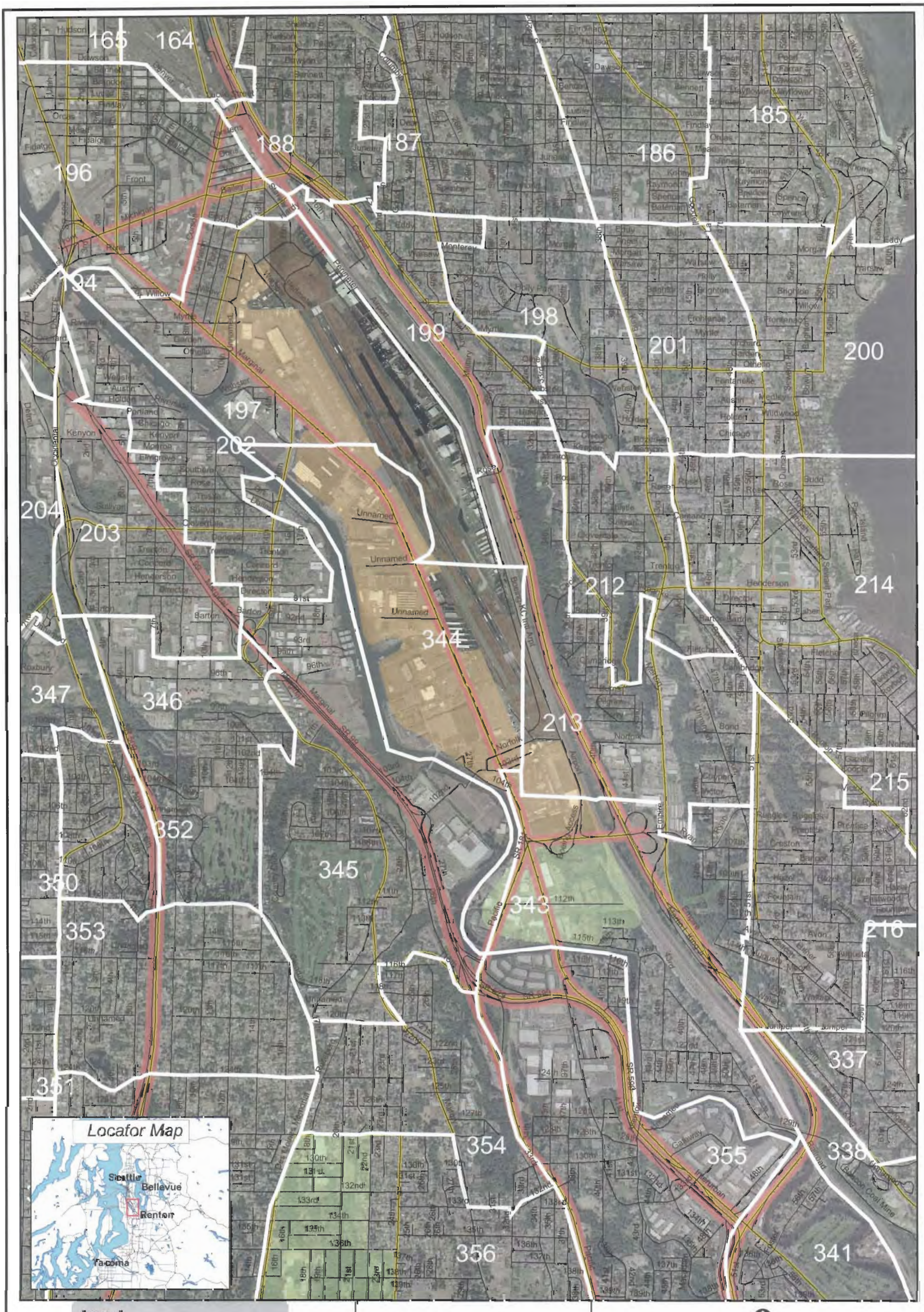
- Route 130 (Weekdays, Saturday, Sunday) serves downtown Seattle, Georgetown, Southpark, Boeing Plant 2, Olson/Myers Park & Ride, Burien Transit Center, Normandy Park, Des Moines and Highline Community College.
- Route 154 (Weekdays) serves Federal Center South, Duwamish Boeing, Tukwila Park & ride, Kent Boeing, Kent Park & Ride, Auburn Park & Ride, Auburn Transit Center and the Auburn Commuter Rail Station.
- Route 170 (Weekdays) serves downtown Seattle, King County Airport (Boeing Field), Riverton Heights and McMicken Heights.
- Route 173 (weekdays) serves Duwamish Boeing, Federal Center South, Midway, Sea-Tac Mall and Federal Way Transit Center.
- Route 174 (Weekdays, Saturday, Sunday) serves downtown Seattle, Duwamish Boeing, Sea-Tac International Airport, Midway and the Federal Way Transit Center.

Figure 2-6 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Link Light Rail, Phase I from Boeing Access Road to Tukwila would construct two light rail stations in the area: one at Boeing Access Road and one at Georgetown. Planned completion, 2010. Note, both of these projects have been deferred. With the increased economic development at KCIA, future growth in aviation and passengers is predicted. This growth will increase the need for a valuable light rail connection near the airport as well as Metro Transit and Sounder commuter rail connections.
- Tukwila International Blvd/S 116th Street from the Duwamish Bridge to SR 599 would widen both SR 99 and SR 599 for HOV and queue jumps at intersections. Planned completion, 2010.
- E Marginal Way from Boeing Access Road to S 112th Street would widen the roadway to three lanes and include curbs, gutter, sidewalks, drainage and paving. Planned completion, 2010.
- Tukwila International Boulevard from Boeing Access Road to S 116h Way would widen the roadway and include curbs, gutters sidewalks and drainage. Planned completion, 2010.
- I-5 from I-405 to Mercer Street would provide Core HOV lane amenities from Tukwila to Mercer Street. Planned completion, 2010.
- 15th Avenue S Bikeway from Beacon Avenue to Chief Sealth Trail would construct a Class II bikeway. This project is not currently in local plans. Planned completion, 2010.
- Airport Way South from Norfolk Street to Boeing Access Road. This project would construct a Class II bikeway. This project is not currently in local plans. Planned completion, 2010.
- Ryan/107th/Creston from Martin Luther King Jr. Way to Planned Chief Sealth Trail. This project would construct a Class II bikeway. This project is not currently in local plans. Planned completion, 2010.
- 16th Avenue S Bridge replacement. Planned completion, 2010.
- Rainier Avenue at Grady Way grade separation. Planned completion, 2010.
- Boeing Access Road Park & Ride Lot would be expanded to include 300 new stalls. Planned completion, 2010.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Locator Map
Seattle
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Tacoma
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Airport Related Land Use
Industrial or Undeveloped Land
Major Roadways
Traffic Analysis Zone
Transit Route
King County International Airport/ Boeing Field
Puget Sound Regional Council
Airport Ground Access Study
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Puget Sound Regional Council
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Airport Characteristics

Pierce County Airport/Thun Field has 90,000 operations per year comprised of 30,149 GA local flights, 56,463 GA itinerant flights, and 3,388 air taxi flights. Based Aircraft totals 231 with 221 single-engine piston and eight multi-engine piston aircraft. Additionally there are two rotor aircraft located at this airport.

Land Use/Employment Characteristics

Thun Field is adjacent to residential areas to the north, undeveloped and industrial land to the east, a flight school on the southeast corner, undeveloped land to the south and small commercial/retail areas to the west. Residential land surrounds the airport farther out. Land exists at this airport for future expansion if necessary. Employment in and around the airport is shown in Table 2-12.

Table 2-9 Employment for Pierce County Airport/Thun Field

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
855	182	2	1,047	1,231
857	86	0	557	643
858	256	7	225	488
859	41	0	312	353
860	20	0	259	279
TOTAL	585	9	2,400	2,994

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to and from Thun Field meets acceptable levels (WSDOT and Pierce County). The airport access is off SR 161 (Meridian Street – four lanes, 35 mph) just north of 176th Street East. Congestion is minimal and restricted to the am and pm peak hours along SR 161.

There is one transit route serving the airport:

- Route 402 (Pierce Transit-Weekdays, Saturday, Sunday) serves Federal Way, Sea-Tac Mall, Sea-Tac Mall Park & Ride, The Enchanted Village, Edgewood, Puyallup, Puyallup Fairgrounds, South Hill Mall, Thun Field/Pierce County Airport, Pierce County Fairgrounds and Roy "Y" Park & Ride.

Figure 2-13 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- 176th Street E from SR 161 to SR 7 would widen the roadway for additional lanes and provide for non-motorized facilities. Planned completion, 2010.
- 224th Street East from SR 7 to SR 161 would widen the roadway for additional lanes and provide for non-motorized facilities. Planned completion, 2020.

- 160th Street E from SR 161 to 100th Avenue E. This project would include the construction of a new arterial roadway. Planned completion, 2020.
- SR 161 from 234th Street E to 176th Street E would widen the existing roadway to five lanes and include transit improvements. The project would be constructed in two phases: (1) 234th Street E to 204th Street E and (2) 204th Street E to 176th Street E. Planned completion, 2010.
- SR 161 from 176th Street E to Meridian Street would improve transit as well as provide access management for the area. Planned completion, 2030.
- 176th Street East from 130th Avenue E to Calistoga Avenue. This project would construct a new arterial roadway with non-motorized facilities. Planned completion, 2020.
- 176th Street E Bridge over the Tacoma Eastern Railroad Tracks would replace the existing bridge with a wider span. Planned completion, 2010.

Legend

- Airport Related Land Use
- Industrial or Underdeveloped Land
- Major Roadways
- Traffic Analysis Zone
- Transit Route

Pierce County Airport/ Thun Field

Puget Sound Regional Council Airport Ground Access Study

0 0.25 Miles

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Puget Sound Regional Council PSRC

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Airport Characteristics

Renton Municipal Airport has 113,104 operations per year comprised of 69,779 GA local flights, 41,681 GA itinerant flights, 282 air carrier flights, 1,268 air taxi flights, and 94 military flights. Based Aircraft totals 263 with 239 single-engine piston, 12 multi-engine piston, three turbo-jet and one turbo-prop aircraft. Additionally, there are seven rotor aircraft and one glider located at this airport.

Will Rogers-Wiley Post Seaplane Base (listed as an Other GA Airport is located on adjacent property to Renton Municipal Airport) has 2,387 operations per year comprised of 1,737 GA local flights, and 650 GA itinerant flights. Based Aircraft totals zero. Any based aircraft at this location are included in the numbers for Renton Municipal Airport above.

It should be noted that Renton Municipal Airport is one of five reliever airports to Sea-Tac International Airport.

Land Use/Employment Characteristics

Renton Municipal Airport and Will Rogers-Wiley Post Seaplane Base are surrounded by industrial/manufacturing and office space most of which is related to Boeing to the east. This is one of three Boeing related airfields each producing large volumes of aviation related traffic in their respective area(s). The Renton Boeing Plant serves as the hub for distribution of parts on an as-needed basis. Commercial/retail development is located to the south, residential is located to the west, and Lake Washington is located to the north. Employment in and around the airport is shown in Table 2-10. The area surrounding the airport property is built-out and unavailable making expansion of these two airport facilities difficult.

Table 2-10 Employment for Renton Municipal Airport/Will Rogers-Wiley Post Seaplane Base Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
323	12,349	0	997	13,346
324	2,818	50	7,708	10,576
TOTAL	15,167	50	8,705	23,922

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to and from Renton Municipal Airport and Will Rogers-Wiley Post Seaplane Base meets acceptable levels (WSDOT, King County and City of Renton). The airport access is off Airport Way (four lanes, 35 mph) to the south which connects directly with Rainier Avenue North (two to four lanes, 30-45 mph) to the west. Farther south, South 2nd Street (two to three lanes, 35 mph) and South 3rd Street (two to three lanes, 35 mph) make up the one-way couplet through downtown Renton. South 2nd and 3rd Streets connect with Bronson Way to the east providing access to I-405. Rainier Avenue South forms the western airport boundary and provides access to I-405 and SR 167 south of the airport. Congestion is minimal and restricted to the am and pm peak hours along Rainier Avenue N and neighboring smaller streets. It should be noted that the peak hours in the pm period begin at the Boeing shift change between 2:00 and 3:00 pm and continue through 6:00 pm.

With the Renton Boeing Plant serving as the hub of the as-needed parts distribution center, additional trips on the roadways delivering parts to different plants throughout the day is a result.

There is one transit route serving the area including:

- MT 107 (Weekday, Saturday Sunday) serves the Renton Avenue South corridor south of Henderson Street, Renton Municipal Airport and the Renton Park & Ride.

Figure 2-11 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Grady Way from SR 167 to SR 515 would modify the traffic signals and re-channelize the roadway to provide a continuous eastbound lane. Planned completion, 2010.
- Renton Downtown Bus Transit Center at Burnett Avenue and Logan Avenue would construct an intermodal facility to be used as a transit hub and transfer point and would include bicycle facilities. Planned completion, 2020.
- I-405 at the SR 900 Interchange would construct direct HOV access at this interchange. Planned completion, 2010.
- Park/Sunset Corridor from east Renton City limits to Garden Avenue North would provide traffic signal improvements along the corridor. Planned completion, 2010.
- Airport Way/Rainier Avenue S from SR 900 to Logan Avenue N would provide queue bypasses and signal priority systems along the corridor. Planned completion, 2010.
- Park Drive/Sunset Blvd from Garden Avenue to Duvall Avenue NE would be widened to construct HOV lanes. Planned completion, 2020.
- Logan Avenue N/N 6th Street from S 3rd Street to Park Drive would be widened to improve HOV access and to provide sidewalks. Planned completion, 2020.
- Cedar River Trail from existing terminus to Rainier Avenue/88th Street. This project would construct a shared use bike path and is not currently in local plans. Planned completion, 2010.
- 30th/Kennewick Class II bikeway from Lake Washington Blvd Trail to 28th Street. This project is not currently in local plans. Planned completion, 2010.
- Lake Washington Blvd Class II bikeway from Lake Washington Blvd Trail to Jones Street. This project is not currently in local plans. Planned completion, 2010.
- Rainier Avenue S Bike Lanes from King County/City of Seattle City Limits to the King County, City of Renton Line. This project is not currently in local plans. Planned completion, 2010.
- I-405 from Sunset Road to SR 900/Park Avenue would construct HOV access at the interchange of I-405 to SR 900. Planned completion, 2010.
- I-405 collector distributor lanes at the interchanges of SR 167, Sunset, and SR 900/North Renton. Planned completion, 2010.


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Will Rogers-
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Seaplane Base
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Locator Map
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Airport Related Land Use
Major Roadways
Traffic Analysis Zone
Transit Route
Renton Municipal Airport/
Will Rogers-
Wiley Post Seaplane Base
Puget Sound Regional Council
Airport Ground Access Study
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Puget Sound Regional Council
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Airport Characteristics

Snohomish County Airport/Paine Field has 172,514 operations per year comprised of 79,162 GA local flights, 85,676 GA itinerant flights, 2,893 air carrier flights, 3,579 air taxi flights, and 1,204 military flights. Based Aircraft totals 565 with 492 single-engine piston, 55 multi-engine piston, and 13 turbo-jet aircraft. Additionally there are three rotor aircraft, one ultra light, and one glider, located at this airport. [1]

It should be noted that Paine Field is one of five reliever airports to Sea-Tac International Airport.

Land Use/Employment Characteristics

Paine Field is one of three Boeing related airfields each producing large aviation related traffic in their respective area(s) and is surrounded by large scale manufacturing/industrial and office space most of which is operated by Boeing (the Boeing 747, 767, 777, and now the 787 plant) resulting in large numbers of employees and related individuals traveling to and from these areas on a daily basis. The overall size of this manufacturing/industrial area is evident in that the world's largest building (by volume) is located adjacent to the airport. Retail development is located to the south of the airport. Residential and commercial surrounds the airport farther out. Employment in and around the airport is shown in Table 2-9. Note: with the assembly plants for the 777, 747, 767, and recently the 787 airplanes located adjacent to the airport, over 42,000 employees exist in this area. In addition to the Boeing Company, B.F. Goodrich is a major employer in the area and occupies a significant amount of ramp, office, hangar and aircraft maintenance space at the airport. B.F. Goodrich is the largest third party commercial aircraft repair and maintenance company in the nation. It performs major maintenance on large passenger and air cargo jet aircraft for dozens of airlines and aircraft holding companies, and therefore, also contributes to traffic in the area.

Table 2-11 Employment for Snohomish County Airport/Paine Field Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
545	22,550	8	4,684	27,242
546	262	22	1,017	1,301
563	4,602	35	2,609	7,246
564	1,090	0	1,357	2,447
567	20	0	202	222
569	233	0	2,863	3,096
TOTAL	28,757	65	12,732	41,554

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Paine Field has excellent connections to the regional highway system. The airport has direct access to SR 526 via interchanges at Seaway Boulevard (providing access to the Boeing plant), Airport Road and SR 525 (Mukilteo Speedway). SR 526 (Boeing Access Freeway) is a four to six lane limited access

[1] Based Aircraft numbers were reported by Bruce Getz (Snohomish County/Paine Field and reflect 2003 numbers. Operations for year 2003 were significantly lower then previous years (e.g., year 1999 = 205,408, year 2000 = 213,291, year 2001 = 207,323 and year 2002 = 200,727).

freeway which links to Interstate 5. Airport Road is a seven-lane major arterial street with four general purpose travel lanes, two high-occupancy vehicle (HOV) lanes, and a center two-way left turn lane. SR 525 (Mukilteo Speedway) is a four lane arterial servicing the west side of the airport, and provides a major access route to downtown Mukilteo and the WSDOT ferry terminal. Paine Field Boulevard is a four lane connection from SR 525 to SR 526 located on the west side of the airport. Other roadways also serve Paine Field including Casino Road, Beverly Park Road and 100th Street. Access to and from Paine Field meets acceptable levels (WSDOT and Snohomish County). The main airport access is off Airport Road at 100th Street SW which connects directly with SR 526 through an interchange and connects to SR 99 (Pacific Highway) at a signalized intersection. Congestion is minimal around the airport and restricted to the am and pm peak hours along SR 525, SR 526 and SR 99. It should be noted that the peak hours in the pm period begin at the Boeing shift change between 2:00 and 3:00 pm and continue through 6:00 pm.

There are three transit routes serving the area including:

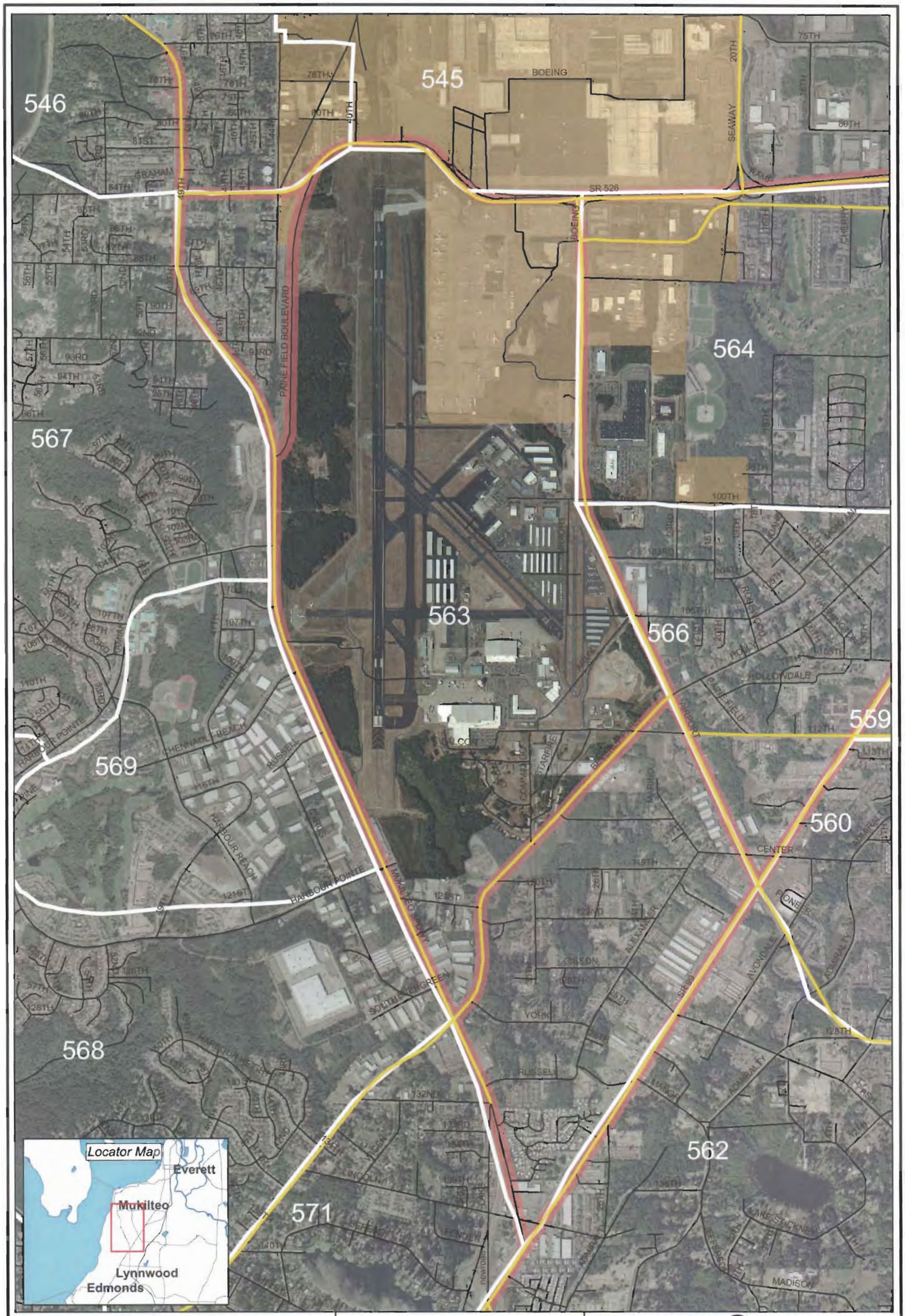
- Route 1 (Everett Transit-Weekdays, Saturday, Sunday) serves Everett Station, Boeing/Paine Field and Everett Mall.
- Route 2 (Everett Transit-Weekdays) serves Everett Community College, Everett Station and Boeing/Paine Field.
- Route 9 (Everett Transit-Weekdays, Saturday, Sunday) serves Everett Community College, Everett Station, downtown Everett and Paine Field.

Figure 2-10 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- 112th Street- Beverly Park Road Corridor from SR 527 to SR 525 would widen the roadway to five lanes with sidewalks and bike lanes on both sides in four phases: SR 99 – 3rd Avenue SE, SR 99 – Airport Road, Airport Road – SR 525, SR 527 – 3rd Avenue SE. Planned completion, 2010.
- 121st Street SW from Beverly Park Road to Harbour Pointe Blvd would extend 121st Street to match a realigned Harbour Points Blvd creating a new four way intersection. Planned completion, 2020.
- SR 525 from SR 99 to SR 526 would widen to five lanes. This project was funded in the 1999 Transportation Budget. Planned completion, 2010.
- SR 99 from SR 525 to Airport Road would widen the roadway to six to seven lanes to accommodate an HOV lane. Planned completion, 2020.
- SR 525 from SR 526 to proposed Mukilteo Multimodal Terminal would realign the roadway to provide access to the Mukilteo Multimodal Terminal. Planned completion, 2020.
- Beverly Edmonds Road from 112th Street SW to SR 525 would improved the roadway to five lane urban standards as a minor arterial. Planned completion, 2010.
- Ferry Holding Lanes at the Mukilteo Ferry Terminal would construct holding lanes and reduce the backup on SR 525. Planned completion, 2010.
- Mukilteo Terminal Relocation/Expansion from Loveland Street to Cornelia Street would move the existing terminal to a new location. Planned completion, 2010.



Legend

- Airport Related Land Use
- Major Roadways
- Traffic Analysis Zone
- Transit Route

Snohomish County Airport/ Paine Field

Puget Sound Regional Council Airport Ground Access Study

0 0.25 0.5 Miles

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Puget Sound Regional Council PSRC

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Airport Characteristics

Tacoma Narrows Airport has 162,898 operations per year comprised of 58,734 GA local flights, 101,571 GA itinerant flights, 1,352 air taxi flights, and 1,241 military flights. Based Aircraft totals 200 with 162 single-engine piston, 31 multi-engine piston, and five turbo-jet aircraft. Additionally, there are two rotor aircraft located at this airport.

Land Use/Employment Characteristics

Tacoma Narrows Airport has industrial/manufacturing uses on the east side, Puget Sound to the south, residential development to the west and undeveloped land necessary for the RPZ to the north. Employment in and around the airport is shown in Table 2-11.

Table 2-12 Employment for Tacoma Narrows Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
832	419	3	2,113	2,535
833	264	67	1,489	1,820
TOTAL	683	70	3,602	4,355

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to and from Tacoma Narrows Airport meets acceptable levels (WSDOT and Pierce County). The airport access is off 28th Avenue NW (two lanes, 30 mph) connecting to Stone Drive NW (two lanes, 35 mph). Stone Drive NW connects directly to SR 16 through a new interchange currently under construction to the east serving Gig Harbor and the City of Tacoma and beyond. Congestion is minimal and restricted to the am and pm peak hours along SR 16.

Tacoma Narrows hosts some additional special events at the airport. Car shows and an air show are yearly events adding to traffic along 28th Avenue NW. Parking lines 28th Avenue NW on both sides during these events.

There are no transit routes serving the area at this time.

Figure 2-12 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- SR 16 Bridge Nonmotorized Improvements would widen the bridge to accommodate a four foot Class III bikeway and six foot sidewalks. Planned completion, 2010.
- Wollochet Drive NW from Hunt Street NW to 40th Street NW would widen the roadway and construct non-motorized features in two phases: (1) Hunt Street to Fillmore Drive NW, (2) Fillmore Drive NW to 40th Street NW. Planned completion, 2030.
- 56th Street NW/Filmore St NW from 38th Avenue NW to Wollochet Drive NW would widen the roadway and include non-motorized facilities. Planned completion, 2020.

- East Bay Drive NW from Wollochet Drive NW to Stone Drive NW would widen the roadway and include non-motorized facilities. Planned completion, 2030.
- Point Fosdick Drive NW from Gig Harbor City Limits to Stone Drive NW would widen the roadway and include non-motorized facilities. Planned completion, 2020.
- SR 16 at the Tacoma Narrows Bridge. This project is the construction of a new wider bridge with HOV lanes. Toll plazas would be constructed. Planned completion, 2010.
- 38th Avenue NW from 36th Street NW to Gig Harbor City limits would reconstruct the existing arterial roadway and include non-motorized facilities. Planned completion, 2010.
- 36th Street NW from SR 16 to East Bay Drive NW would reconstruct the existing arterial roadway and include non-motorized facilities. Planned completion, 2020.


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Airport Characteristics

American Lake Seaplane Base has 700 operations per year comprised of 50 GA local flights and 650 GA itinerant flights. Based Aircraft totals 10 all of which are single-engine piston aircraft.

Land Use/Employment Characteristics

Land use around American Lake Seaplane Base is predominantly residential to the north, east and west, and American Lake to the south. Further to the east is Fort Lewis Military Reservation and to the west is McChord Air Force Base. Employment in and around the area is shown in Table 2-13.

Table 2-13 Employment for American Lake SPB Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
819	5	0	179	184

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

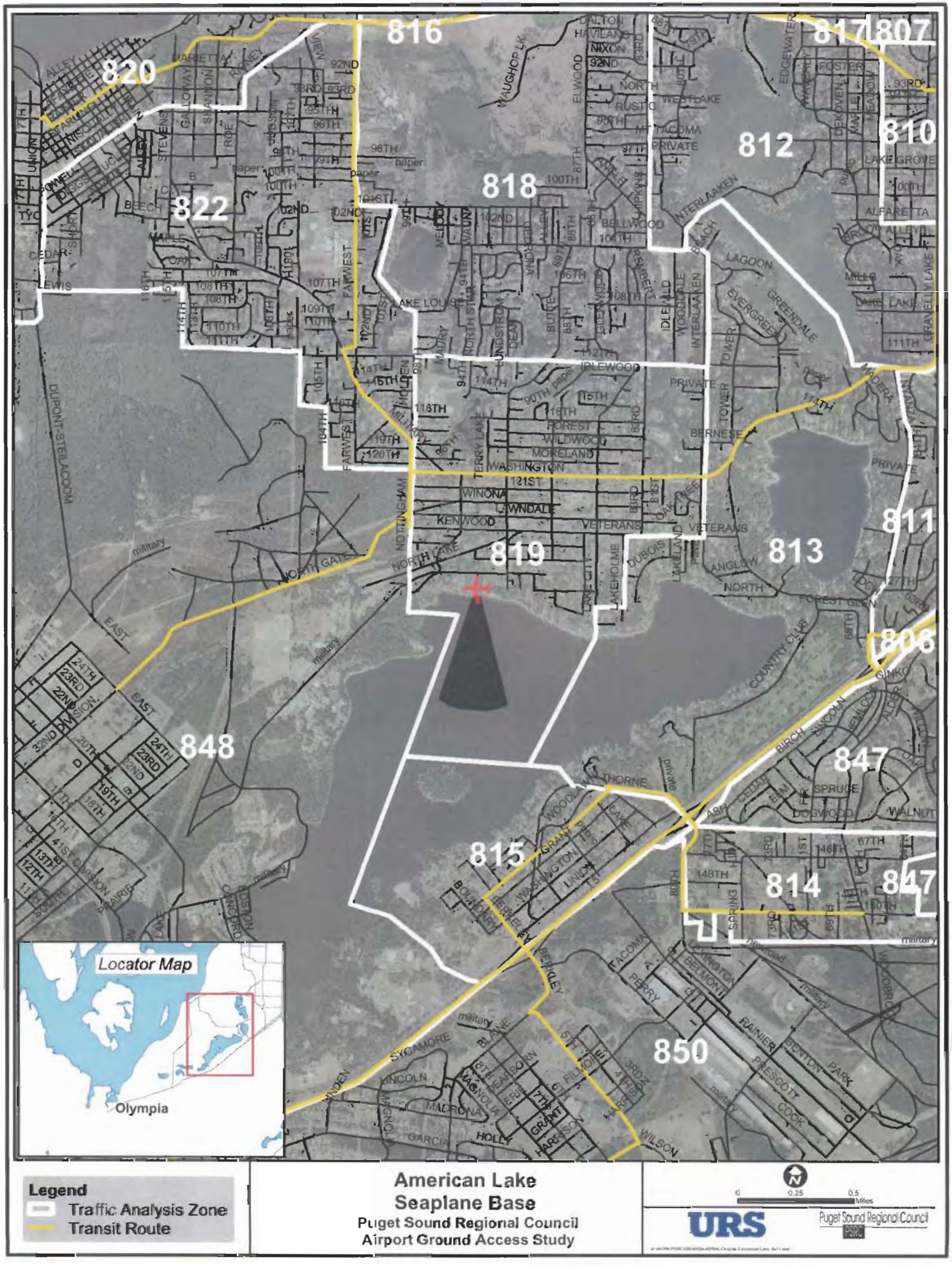
Transportation Characteristics

Access to American Lake Seaplane Base meets acceptable levels (Pierce County). The seaplane base access is off Veterans Drive SW connecting through city streets to Gravelly Lake Drive and I-5 to the east, or the towns of Steilacoom and Lakewood Center to the northwest and northeast respectively. Congestion is minimal and restricted to the am and pm peak periods as well as good weather weekends along the surrounding street system when more boats and recreational vehicles are out on the water.

Figure 2-14 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

No projects in the vicinity of this airport were found in the Metropolitan Transportation Plan (*Destination 2030*).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Airport Characteristics

Apex Airpark is a privately owned, publicly used airport located approximately two miles northwest of Silverdale and has 19,425 operations per year comprised of 15,000 GA local flights, 4,400 GA itinerant flights, and 25 military flights. Based Aircraft totals 50, which are all single-engine piston aircraft[2].

Land Use/Employment Characteristics

Land use around Apex Airpark is predominantly vacant and undeveloped to the north, east and south directions. To the west, residential developments exist. Employment in and around the area is shown in Table 2-14.

Table 2-14 Employment for Apex Airpark Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
915	24	0	339	363

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Apex Airpark is accessed off NW Apex Airport Road which is west of SR 3 in Silverdale. Neighboring residential access to the private airpark is through the residential streets system. Congestion is minimal.

There are no transit routes serving the area at this time.

Figure 2-15 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Waaga Way extension from Clear Creek Road to Old Frontier Road. Planned completion, 2010.
- Anderson Hill Road from SR 3 to Willamette-Meridian Road would widen the roadway to four lanes. Planned completion, 2010.
- Newberry Hill Road West from Seabeck Highway to Dickey Road would widen the roadway to add left turn lanes. Planned completion, 2010.

[2] Operation and based aircraft numbers for this airport were taken from the 2001 Regional Airport System Plan (RASP).

Legend

Traffic Analysis Zone

Transit Route

Apex Airpark

Puget Sound Regional Council
Airport Ground Access Study

0 0.125 0.25 Miles

URS

Puget Sound Regional Council

Airport Characteristics

Bandera State Airport is owned by the Washington State Department of Transportation – Aviation Division and serves as an emergency airport. Bandera State is open from June 1st to October 1st and has operations of 300 GA itinerant flights with no based aircraft.

Land Use/Employment Characteristics

The airport is surrounded by undeveloped and vacant lands. Animals are often seen on the runway and there are no airport related facilities (gas, restaurant, terminal, etc.) at this airport. Employment in and around the area is shown in Table 2-15.

Table 2-15 Employment for Bandera State Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
529	7	5	72	84

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

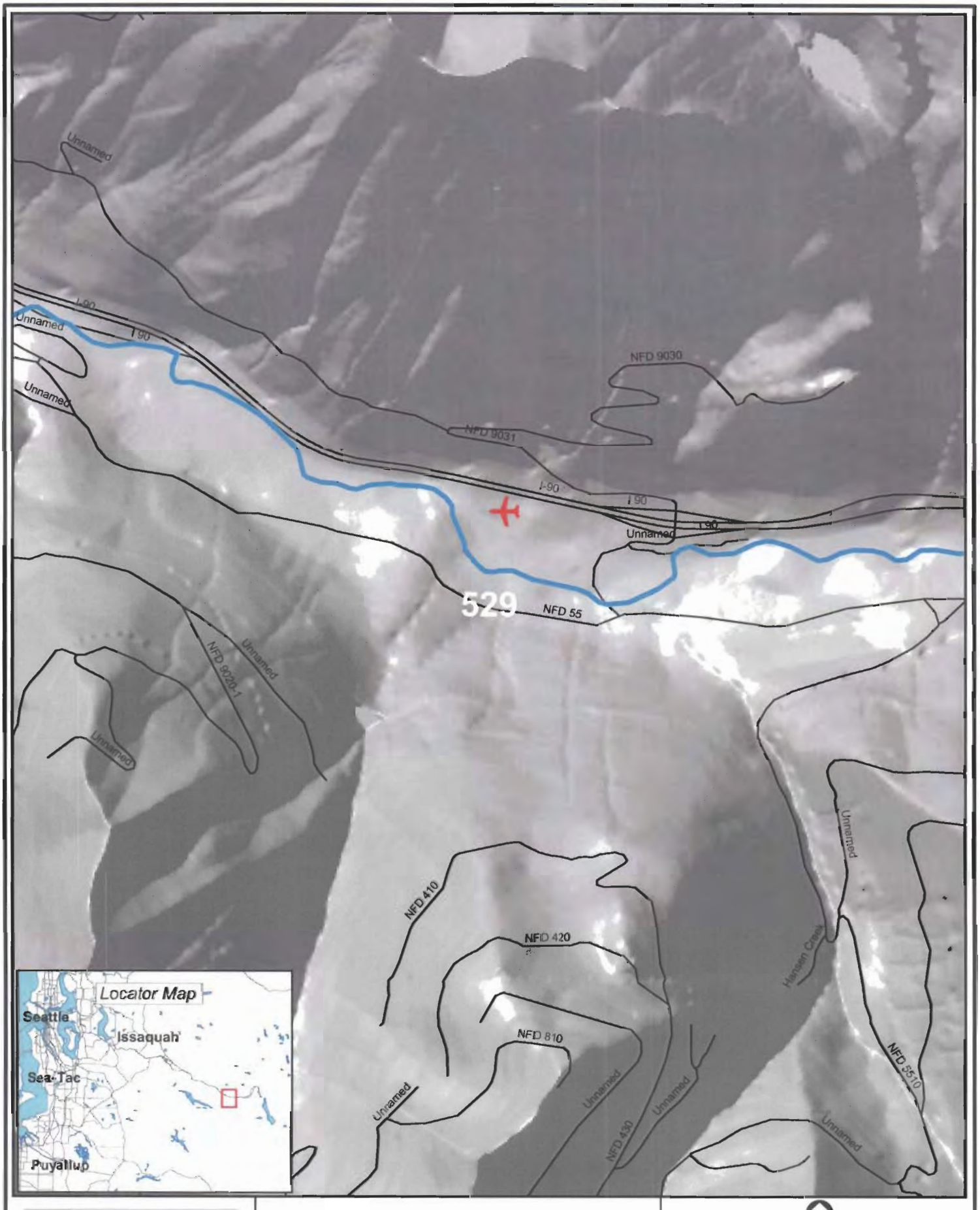
Bandera State is located directly south of Interstate-90 at exit 45. Congestion is minimal and restricted to movement along I-90. There are no transit routes serving the area.

Figure 2-16 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Iron Horse/Cedar Falls Tail Connector from the existing terminus to Cedar Falls Trail. This project is not currently in local plans. Planned completion, 2010.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Airport Ground Access Study
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Puget Sound Regional Council
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Airport Characteristics

Darrington Municipal Airport is located just north of Darrington and has 3,025 operations per year comprised of 525 GA local flights and 2,500 GA itinerant flights. Based Aircraft totals eight, of which six are single-engine piston aircraft. Additionally, there is one rotor aircraft and one ultra light located at this airport.

Land Use/Employment Characteristics

The airport is located directly north of the City of Darrington. South of the airport residential, commercial, and retail area exists. Less development exists to the north and west of the airport. Employment in and around the area is shown in Table 2-16.

Table 2-16 Employment for Darrington Municipal Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
668	13	0	663	676

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

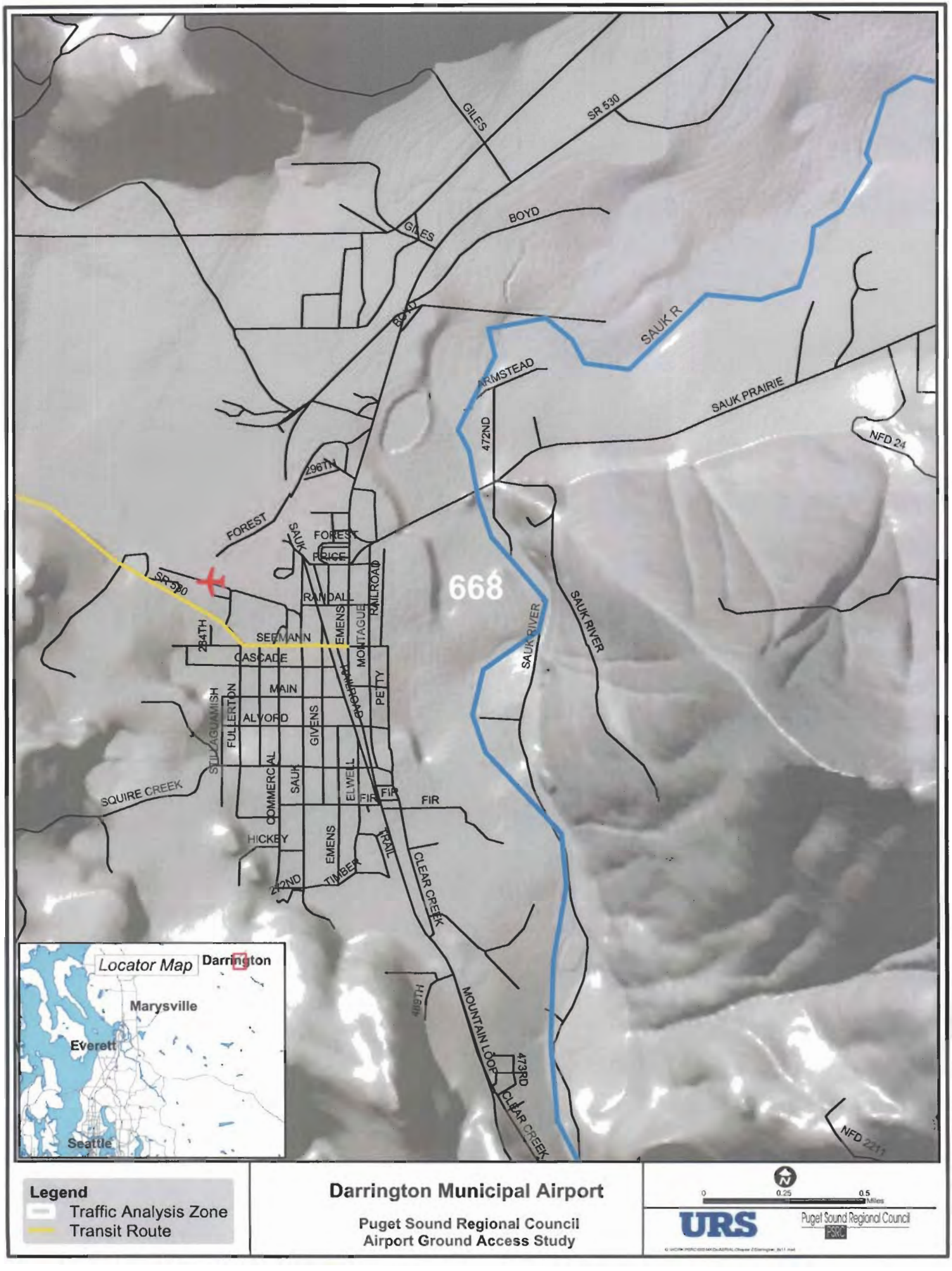
Darrington Municipal is located directly north of SR 530. Congestion is minimal and restricted to movement along SR 530 and residential streets. No facilities exist in this area (e.g., car rentals, etc.).

The Community Transit (CT) 230 route serves the Darrington Airport on Weekdays. Route 230 also serves: City of Darrington, SR 530, Arlington Park & Ride, Cascade Valley Hospital and the Smokey Point Transit Center.

Figure 2-17 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

No projects in the vicinity of this airport were found in the Metropolitan Transportation Plan (*Destination 2030*).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ALVORD
FULLERTON
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COMMERCIAL
SAUK
ELWELL
EMENS
MONTAGUE
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Locator Map
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Traffic Analysis Zone
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Darrington Municipal Airport
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Airport Ground Access Study
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Puget Sound Regional Council
PSRC

Airport Characteristics

Firstair Field is located approximately two miles northwest of Monroe and has 18,169 operations per year comprised of 5,044 GA local flights, and 13,125 GA itinerant flights. Based Aircraft totals 70 of which 68 are single-engine piston aircraft, and two are multi-engine piston aircraft.

Land Use/Employment Characteristics

Surrounding land uses include retail, office, commercial and residential. Firstair Field is located directly west of the Evergreen State Fairgrounds which is used throughout the year for events. Employment in and around the area is shown in Table 2-17.

Table 2-17 Employment for Firstair Field Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
625	364	42	1,202	1,608
626	156	0	1,781	1,937
627	287	0	3,718	4,005
TOTAL	807	42	6,701	7,550

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Firstair Field is located directly north of U.S. 2. Congestion is minimal and restricted to movement along U.S. 2 during the am and pm peak hours as well as during weekends when events occur at the Fairgrounds. The intersection of U.S. 2 and 179th Street (entrance to Firstair Field) currently is not signalized. As stated above, only at peak times and events can access be a problem. For events, there are usually police present to aid in the movement of people and vehicles to/from the Fairgrounds. Otherwise, one must wait for a break in traffic.

There are five transit routes serving the area including:

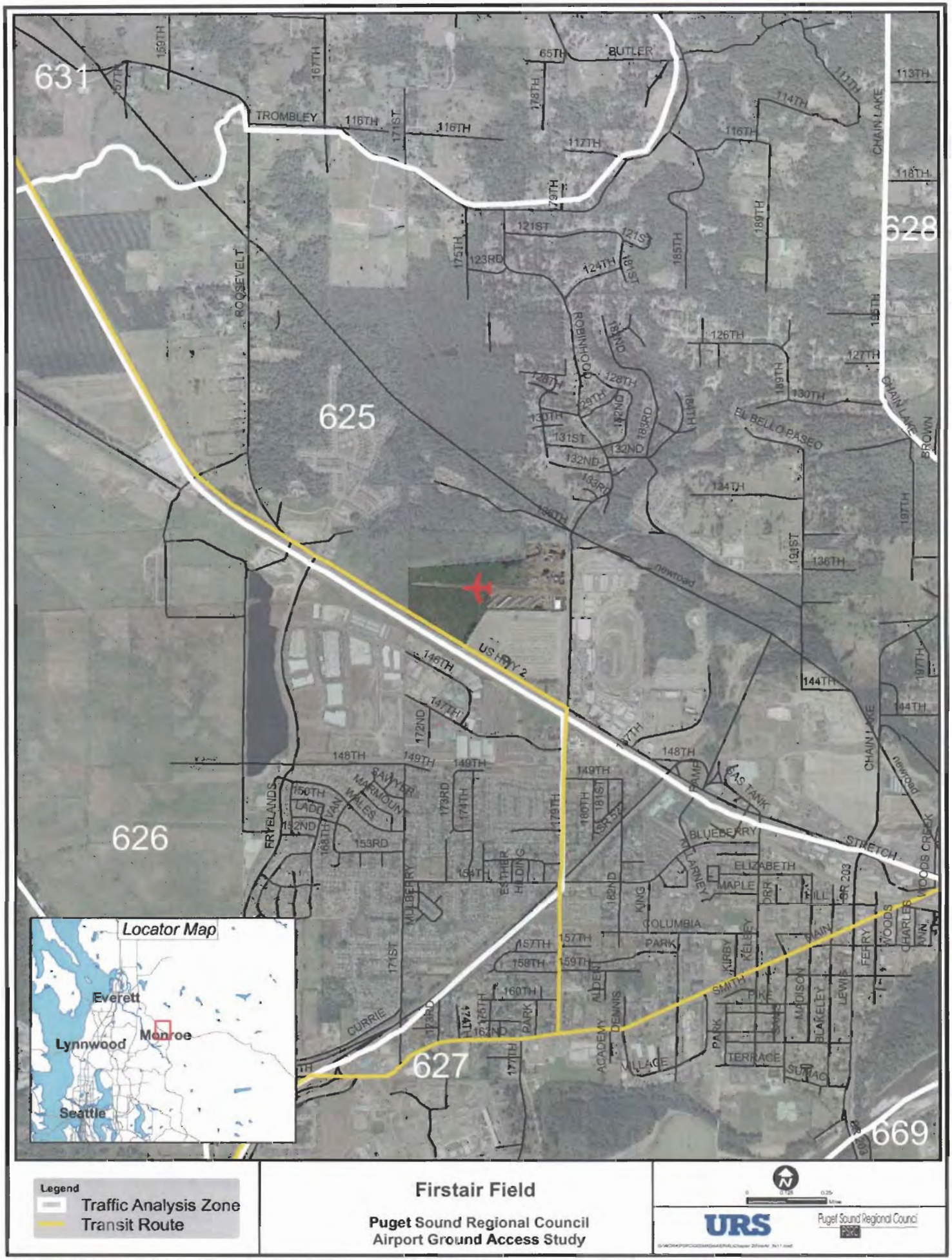
- Route 270 (Community Transit-Weekdays) serves Gold Bar Park & Ride, Sultan Park & Ride, Evergreen State Fairgrounds, Monroe Park & Ride and the Everett Station.
- Route 271 (Community Transit-Weekdays) serves Gold Bar Park & Ride, Sultan Park & Ride, Evergreen State Fairgrounds, Monroe Park & Ride, Snohomish Park & Ride and the Everett Station.
- Route 275 (Community Transit-Weekdays) serves Evergreen State Fairgrounds, Monroe Park & Ride, Snohomish Park & Ride and the Everett Station.
- Route 277 (Community Transit-Weekdays) serves Gold Bar Park & Ride, Sultan Park & Ride, Evergreen State Fairgrounds, Monroe Park & Ride, the Everett Station and Boeing/Everett.
- Route 424 (Community Transit-Weekdays) serves Snohomish Park & Ride, Evergreen State Fairgrounds, Monroe Park & Ride, Kingsgate Freeway Station, other freeway stations along I-405, SR 520, and I-5 to downtown Seattle.

Figure 2-18 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- U.S. 2 from SR 522 interchange to Campbell Road. This project is in three phases: (1) constructing a two-lane bypass of Monroe on a new alignment from the SR 522 interchange to the east Monroe City limits, (2) widening the existing roadway to four lanes from the east Monroe City limits to Fern Bluff Road, and (3) constructing a four lane limited access bypass with new interchanges from Campbell Road to the east Monroe City limits. Planned completion, 2010, 2010, and 2030 respectively.
- SR 522 from SR 9 to U.S. 2 would widen the roadway to four lanes and provide a new bridge over the Snohomish River. Planned completion, 2010.
- U.S. 2 Trail Extension from existing terminus to the planned Centennial Trail. This project is not currently in local plans. Planned completion, 2010.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Locator Map
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Lynnwood
Seattle
Legend
Traffic Analysis Zone
Transit Route
Firstair Field
Puget Sound Regional Council
Airport Ground Access Study
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Puget Sound Regional Council
PSRC

Airport Characteristics

This seaplane base is owned and operated by Kenmore Air and is located on the north side of Lake Washington. Operations at Kenmore Air Harbor total 40,000 per year comprised of 7,200 GA local flights, 800 GA itinerant flights, 8,000 air taxi flights, and 24,000 commuter flights. Kenmore Air Harbor has 109 based aircraft with 100 being single-engine piston aircraft, and nine being turbo-fan aircraft

Land Use/Employment Characteristics

Kenmore Air Harbor Seaplane Base is surrounded by retail, office, commercial and residential areas. Heavy boat traffic between April and October is prevalent. Employment in and around the area is shown in Table 2-18.

Table 2-18 Employment for Kenmore Air Harbor Seaplane Base Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
236	2	0	239	241
237	362	0	694	1,056
TOTAL	364	0	993	1,297

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

For the Kenmore Air Harbor Seaplane Base access is obtained from NE 175th Street off NE Bothell Way (SR 522).

There are five transit routes serving Kenmore Air Harbor including:

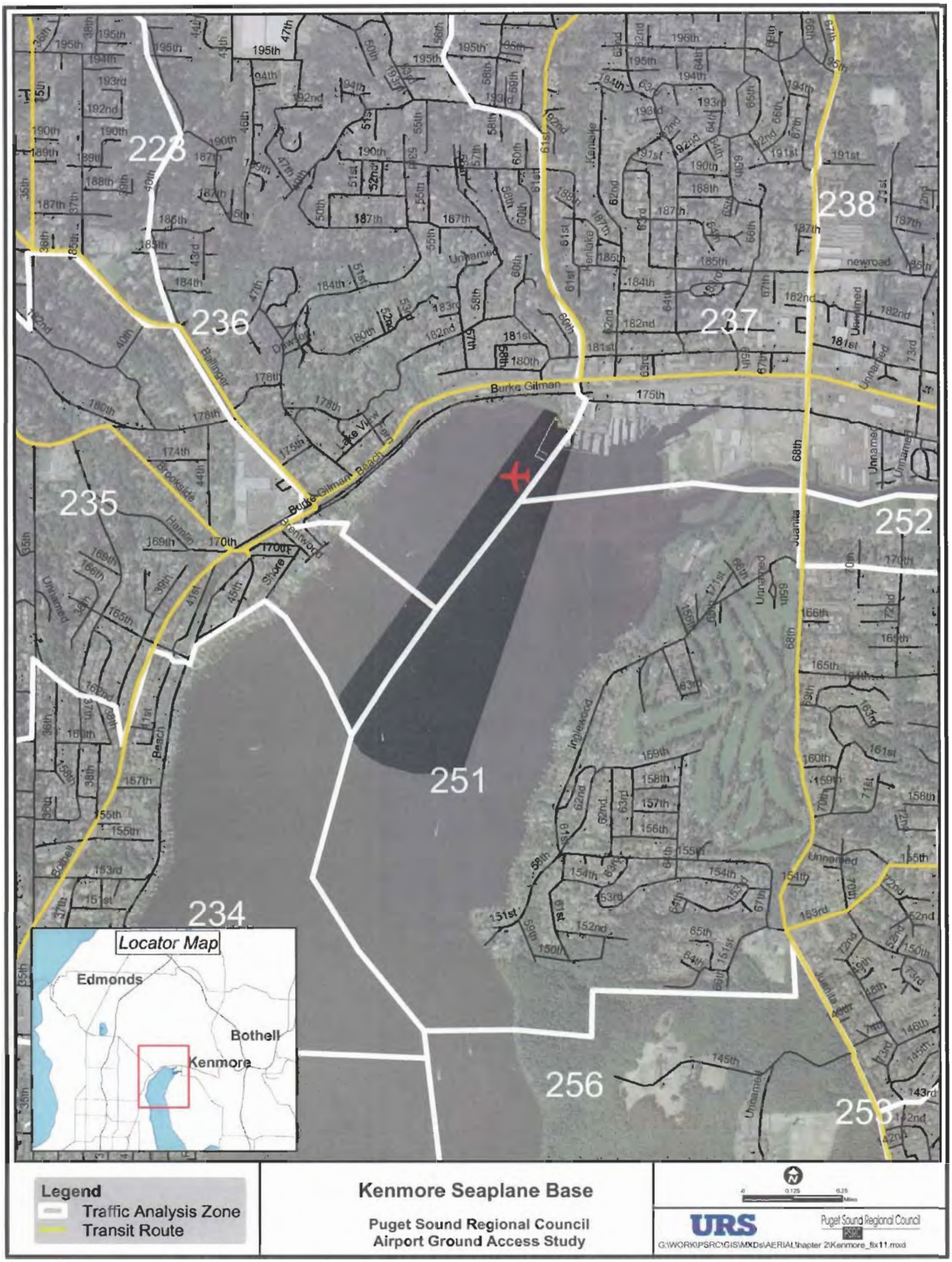
- Route 306/Route 312 (Metro Transit-Weekdays, Saturday, Sunday) serves the City of Bothell, Kenmore Park & Ride, Kenmore Air Harbor, Northshore Park & Ride, and continues along Bothell Way/Lake City Way to I-5 and downtown Seattle.
- Route 331 (Metro Transit-Weekdays, Saturday, Sunday) serves Kenmore Park & Ride, Kenmore Air Harbor, Lake Forest Park, Aurora Village Transit Center and Shoreline Community College.
- Route 342 (Metro Transit-Weekdays) serves Shoreline Park & Ride, Aurora Village Transit Center, Ballinger Terrace, Lake Forest Park, Kenmore Air Harbor, Kenmore Park & Ride, Bothell Park & Ride, Kingsgate Park & Ride, Houghton Park & Ride, Bellevue Transit Center, Wilburton Park & Ride, Newport Hills Park & Ride, Kennydale Park & Ride, Renton Boeing and the Renton Transit Center.
- Route 372 (Metro Transit-Weekday) serves Woodinville Park & Ride, UW/CCC Bothell Campus, Bothell Park & Ride, Kenmore Park & Ride, Northshore Park & Ride, Kenmore Air Harbor, Bethany Baptist Church Park & Ride, and continues along Bothell Way/Lake City Way to I-5 and downtown Seattle.
- Route 522 (Sound Transit-Weekday, Saturday, Sunday) serves Woodinville Park & Ride, UW/CCC Bothell Campus, Kenmore Park & Ride, Kenmore Air Harbor, and continues along Bothell Way/Lake City Way to I-5 and downtown Seattle.

Figure 2-19 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- SR 104 from SR 522 to 244th Street SW would construct a transit and queue bypass at major intersections along this corridor. Planned completion, 2020.
- 61st Avenue NE from NE 181st Street to north Kenmore City limits would widen the existing roadway. This project is in two phases: (1) from NE 181st Street to NE 193rd Street and (2) from NE 193rd Street to the north Kenmore City limits. Planned completion, 2020.
- SR 522 from I-5 to I-405 would construct transit improvements along the corridor. Planned completion, 2010.
- 68th Avenue NE from Simonds Road to SR 522 would construct a northbound HOV lane. Planned completion, 2010.


Locator Map
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Airport Ground Access Study
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Puget Sound Regional Council
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Airport Characteristics

This seaplane base is owned and operated by Kenmore Air and located on the south side of Lake Union. Operations at Lake Union total 30,500 a year comprised of 7,500 GA local flights, 2,500 GA itinerant flights, and 20,500 air taxi flights. No based aircraft are located at Lake Union Seaplane Base.

Land Use/Employment Characteristics

Lake Union Seaplane Base is surrounded by retail, office, commercial and residential areas. Heavy boat traffic between April and October is prevalent on the lake. Employment in and around the area is shown in Table 2-19.

Table 2-19 Employment for Lake Union Seaplane Base Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
94	739	132	6,742	7,613
95	266	50	8,402	8,718
103	796	42	3,426	4,264
107	346	0	8,473	8,819
TOTAL	2,147	224	27,043	29,414

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Lake Union Seaplane Base access is obtained from Valley Street and Terry Avenue which connects to Fairview Avenue North on the east side of Lake Union and Westlake Avenue North of the west side of Lake Union, continuing to Broad Street southwest to the Seattle Center area. Lake Union Seaplane Base has easy access to I-5 and Aurora Avenue (SR 99).

There are two transit routes serving the Lake Union Seaplane Base including:

- Route 17 (Metro Transit-Weekday, Saturday, Sunday) serves Golden Gardens, Ballard, Fisherman's Terminal, Seattle Pacific University, Lake Union Sea Plane Base and downtown Seattle.
- Route 74 (Metro Transit-Weekday, Saturday, Sunday) serves Sand Point Naval Station, The University of Washington, Lake Union Seaplane Base and Seattle Center.

Figure 2-20 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- South Lake Union Transportation Improvement from I-5 to SR 99. This project includes improvements to the Mercer Corridor including a more direct westbound route between I-5 and SR 99. Planned completion, 2010.
- I-5 at the interchanges of Mercer Street and SR 520 would construct a freeway to freeway core lane HOV connection. Planned completion, 2010.

- Eastlake Avenue E Bikeway from University Bridge to Fairview Avenue. This project is not currently in local plans. Planned completion, 2010.
- West Lake Union Path Extension from Valley Road to Prospect. This project is not currently in local plans. Planned completion, 2010.

Legend

- Traffic Analysis Zone
- Transit Route

Lake Union Seaplane Base

Puget Sound Regional Council
Airport Ground Access Study

0 0.1 0.2 Miles

URS

Puget Sound Regional Council

Airport Characteristics

Port Orchard Airport is a privately owned public use facility located in Kitsap County and has approximately 2,500 operations per year all GA itinerant flights. There are approximately 20 based aircraft, all single-engine piston aircraft at this airport.[3]

Land Use/Employment Characteristics

Port Orchard Airport is located off Sidney Road SW and Channel Road west of SR 16 just north of the Kitsap/Pierce County Line. Land use in the area is predominantly underdeveloped, but directly to the west is a gravel pit, and on the northwest, light-industrial development has recently been built.

Table 2-20 Employment for Port Orchard Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
937	10	0	145	155
938	18	0	316	334
TOTAL	28	0	461	489

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Port Orchard Airport is located to the west of SR 16. Congestion is minimal and restricted to movement along SR 16 during the am and pm peak hours. Since there are very few operations at the airport, access issues are minimal to nonexistent.

There are no transit routes that serve the area at this time.

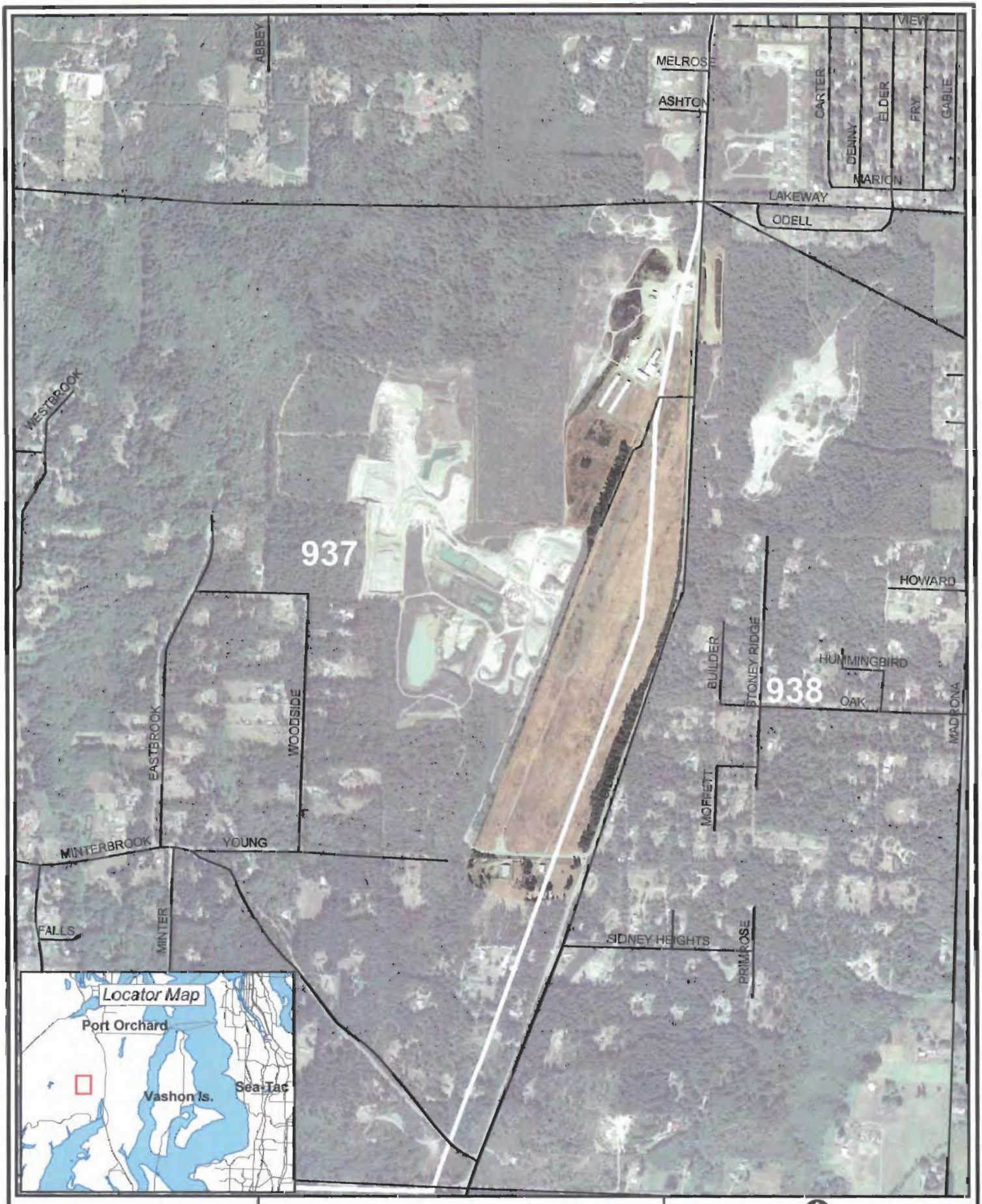
Figure 2-21 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Wright-Bliss Road KPN from SR 302 to Kitsap County line would reconstruct the existing roadway to provide non-motorized facilities. Planned completion, 2030.
- SR 16 from SR 302 to Pierce/Kitsap County line would widen the roadway from four lanes to six lanes creating HOV lanes and constructing interchange improvements. Planned completion, 2030.

[3] Operation and based aircraft numbers for this airport were taken from conversations with Ann Schnitzer, Airport Manager.



Legend

- Traffic Analysis Zone
- Transit Route

Port Orchard Airport

Puget Sound Regional Council
Airport Ground Access Study

0 0.125 0.25 Miles

URS

Puget Sound Regional Council

Airport Characteristics

Ranger Creek State Airport is owned and operated by WSDOT Aviation Division. Ranger Creek is open from June 1st to October 1st and has approximately 250 operations per year, all military flights. There are no based aircraft at this airport. There are often animals and people seen on the runway.

Land Use/Employment Characteristics

Ranger Creek Airport is surrounded by undeveloped forest land. Employment in and around the area is shown in Table 2-21.

Table 2-21 Employment for Ranger Creek State Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
741	77	53	716	846

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

The airport is accessed off SR 410 south of the town of Greenwater. Since there are very few operations at the airport, access issues are minimal to nonexistent.

There are no transit routes that serve the area.

Figure 2-22 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Foothills Trail from Wilkeson to Carbonado would construct a portion of the Foothills Trail. Planned completion, 2010.

Legend

Traffic Analysis Zone

Transit Route

Ranger Creek State

Puget Sound Regional Council
Airport Ground Access Study

0 0.125 0.25 0.5 Miles

URS

Airport Characteristics

Sky Harbor Airport is a privately owned, publicly operated airport located outside of the City of Sultan. Operations are limited to scenic flights estimated at 1,000 per year. Based aircraft totals eight with five single-engine piston and three multi-engine piston aircraft. There is helicopter parking on the north end of the runway.[4]

Land Use/Employment Characteristics

Land use around the airport consists of residential to the north, and undeveloped land to the east, west, and south but zoned commercial. Growth in the area includes additional residential to the north and commercial in and around the airport. Currently the airport is on leased land. It is likely this airport will cease to exist in 10 years or less when the lease expires. Employment in and around the area is shown in Table 2-22.

Table 2-22 Employment for Sky Harbor Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
670	41	7	805	853

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to the airport is directly off U.S. 2 east of Sultan Basin Road. Since there are very few operations, access issues to this airport are minimal to nonexistent.

There are no transit routes that serve the area.

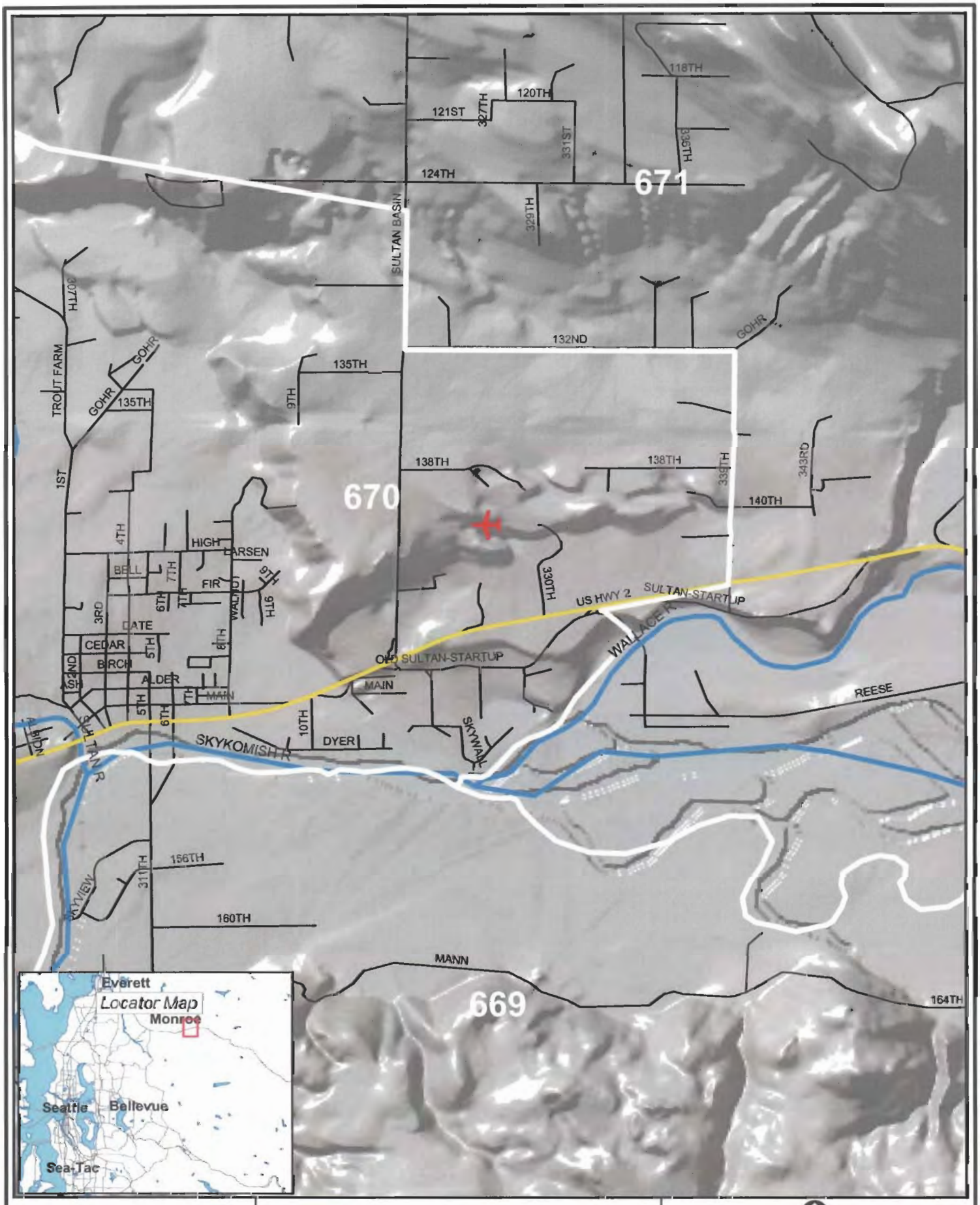
Figure 2-23 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- U.S. 2 from Fern Bluff Road to Fir Road would widen the existing roadway to four lanes. This project would be completed in two phases: (1) from Fern Bluff Road to west Sultan City limits and (2) from west Sultan City limits to Fir Road. Planned completion, 2010 and 2020 respectively.
- 1st Street Improvements from Main Street to Sultan City limits would widen roadway to include capacity and safety improvements. Planned completion, 2010.
- U.S. 2 Improvement around Sultan River Bridge. Planned completion, 2010.

[4] Operation and based aircraft numbers for this airport were taken from the 2001 Regional Airport System Plan (RASP).



Legend

- Traffic Analysis Zone
- Transit Route

Sky Harbor Airport

Puget Sound Regional Council
Airport Ground Access Study

0 0.25 0.5 Miles

URS

Puget Sound Regional Council
PSRC

Airport Characteristics

Skykomish State Airport is owned and operated by Washington State Department of Transportation – Aviation Division. Skykomish is open from June 1st to October 1st and has approximately 300 operations per year, all GA itinerant flights, many of which are Forest Service aircraft. There are no based aircraft at this airport. There are often animals and people seen on the runway.

Land Use Characteristics

Land use around the airport consists of residential, commercial, retail and some office in relation to the City of Skykomish. Employment in and around the area is shown in Table 2-23.

Table 2-23 Employment for Skykomish State Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
528	7	8	359	374

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to the airport is off U.S. 2, through the town of Skykomish, near Steven's Pass. Since there are very few operations, access issues at this airport are minimal to nonexistent.

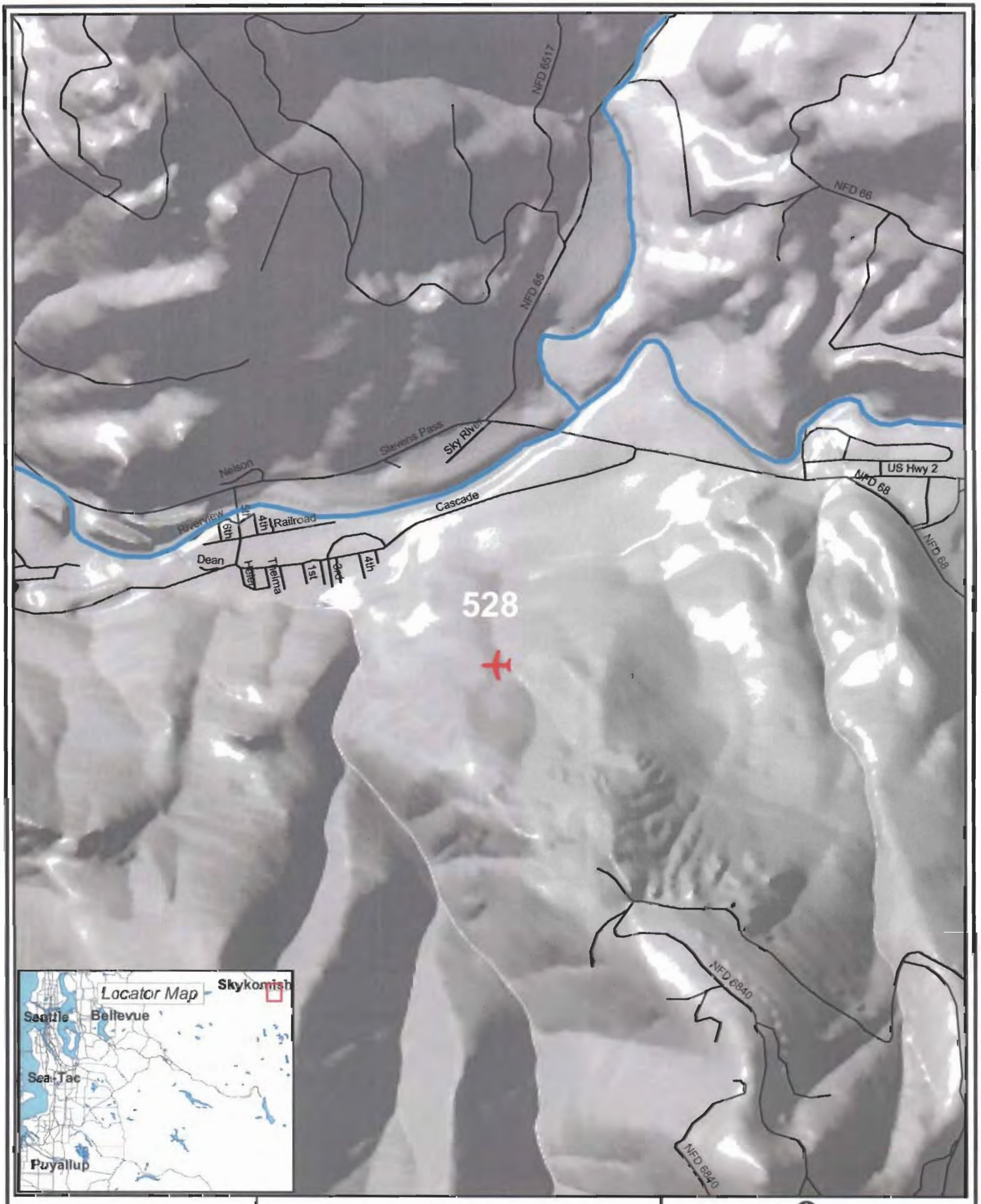
There are no transit routes that serve the area.

Figure 2-24 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- U.S. 2 from Beaver Creek to Deception Creek would widen the roadway to four lanes. This project would be completed in two phases: (1) Beaver Creek to east Skykomish City limits and (2) east Skykomish City limits to Deception Creek. Planned completion, 2030.
- U.S. 2 from 324th Avenue SE to NW 14th Street. This project is in two phases: (1) from 324th Avenue SE to north Snoqualmie City limits would widen the roadway to four lanes and (2) from north Snoqualmie City limits to NW 14th Street would provide a center two-way left-turn lane. Planned completion, 2030.
- Two bikeways are programmed: (1) Cedar Falls/Snoqualmie Valley Trails Connector, and (2) Preston Snoqualmie Trail extension to the city limits. Both projects are not currently in local plans. Planned completion, 2010.



Legend

- Traffic Analysis Zone
- Transit Route

Skykomish State Airport

Puget Sound Regional Council
Airport Ground Access Study

0 0.25 0.5 Miles

URS

Puget Sound Regional Council
PSRC

Airport Characteristics

Spanaway Airport is located one mile south of the City of Spanaway at the intersection of SR 7 and SR 507. The airport has 19,000 operations per year comprised of 4,000 GA local flights and 15,000 GA itinerant flights. Based Aircraft totals 61 of which 59 are single-engine piston aircraft and two are multi-engine piston aircraft.

Land Use/Employment Characteristics

Land use in the area is predominantly residential with commercial/retail and office located along SR 7 to the west and in the City of Spanaway to the north. Immediately across SR 7 is Fort Lewis. McChord Air Force Base is located further to the west. Employment in and around the area is shown in Table 2-24.

Table 2-24 Employment for Spanaway Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
792	65	0	1,183	1,248

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to the airport is off SR 7. From the intersection, SR 7 runs southeast toward Mount Rainier, while SR 507 runs southwest towards Roy and McKenna. Congestion can be seen on SR 7 and SR 507 as well as neighboring streets during the am and pm peak hour periods.

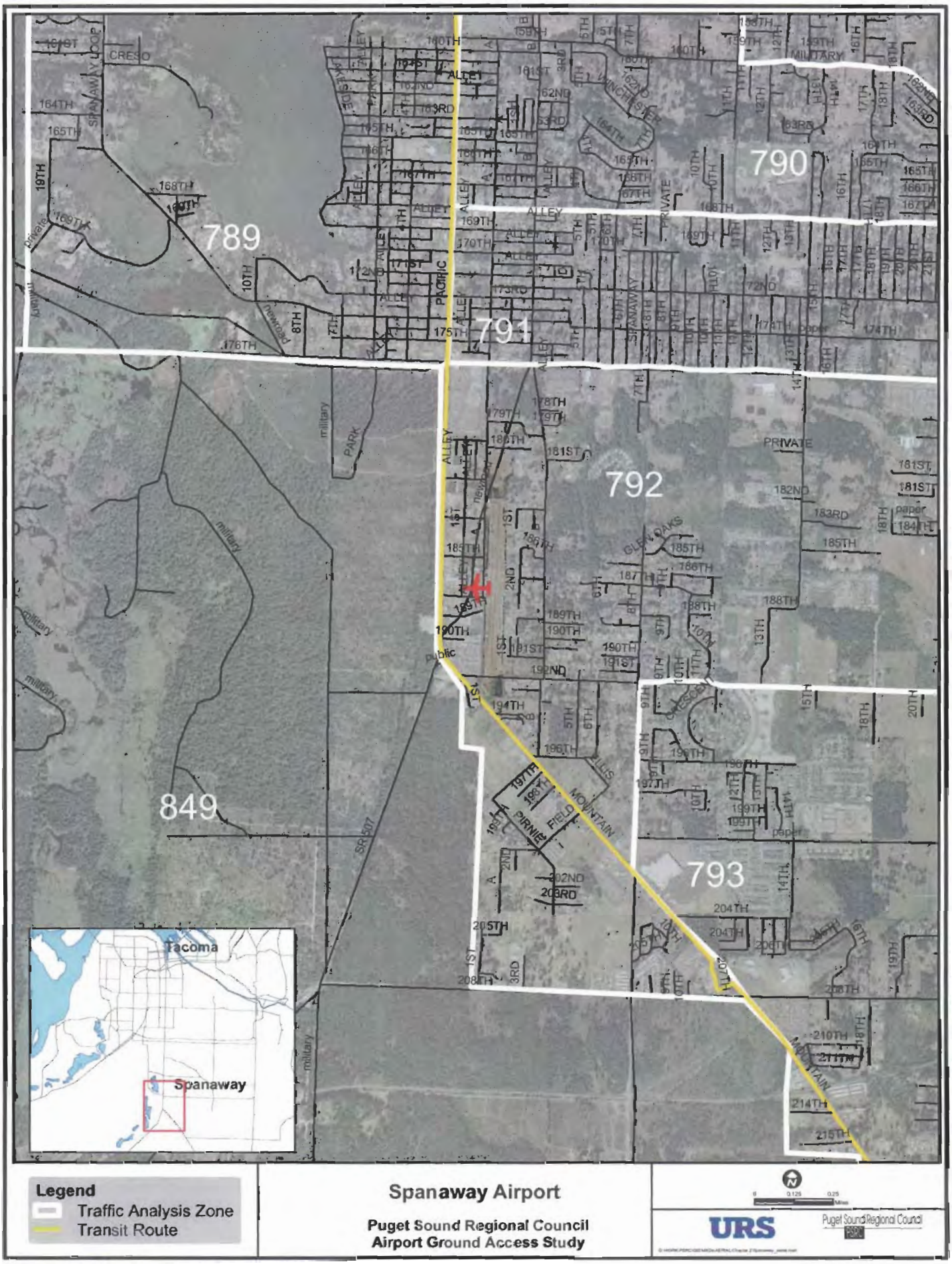
There are no transit routes that serve the area at this time.

Figure 2-25 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- 208th Street E from SR 7 to SR 161 would reconstruct and extend the existing arterial roadway. Planned completion, 2030.
- SR 507 from Water Street to SR 7 would widen the roadway to four lanes. Planned completion, 2030.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Puget Sound Regional Council
Airport Ground Access Study
URS
Puget Sound Regional Council

Airport Characteristics

Swanson Airport is located one mile north of the City of Eatonville and has 2,609 operations per year comprised of 594 GA local flights 2,000 GA itinerant flights, and 15 military flights. Based Aircraft totals 22 all of which are single-engine piston aircraft. Deer and other animals are often seen on the runway.

Land Use/Employment Characteristics

Land use in the area is underdeveloped with residential, commercial and retail located farther out. To the southwest is the City of Eatonville. Employment in and around the area is shown in Table 2-25.

Table 2-25 Employment for Swanson Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
868	69	22	955	1,046

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to the airport is directly off Lynch Creek Road connecting with the City of Eatonville as well as SR 161. Congestion is minimal and restricted to movement through the neighboring streets during the am and pm peak hour periods. Since there are very few operations, access issues at this airport are minimal to nonexistent.

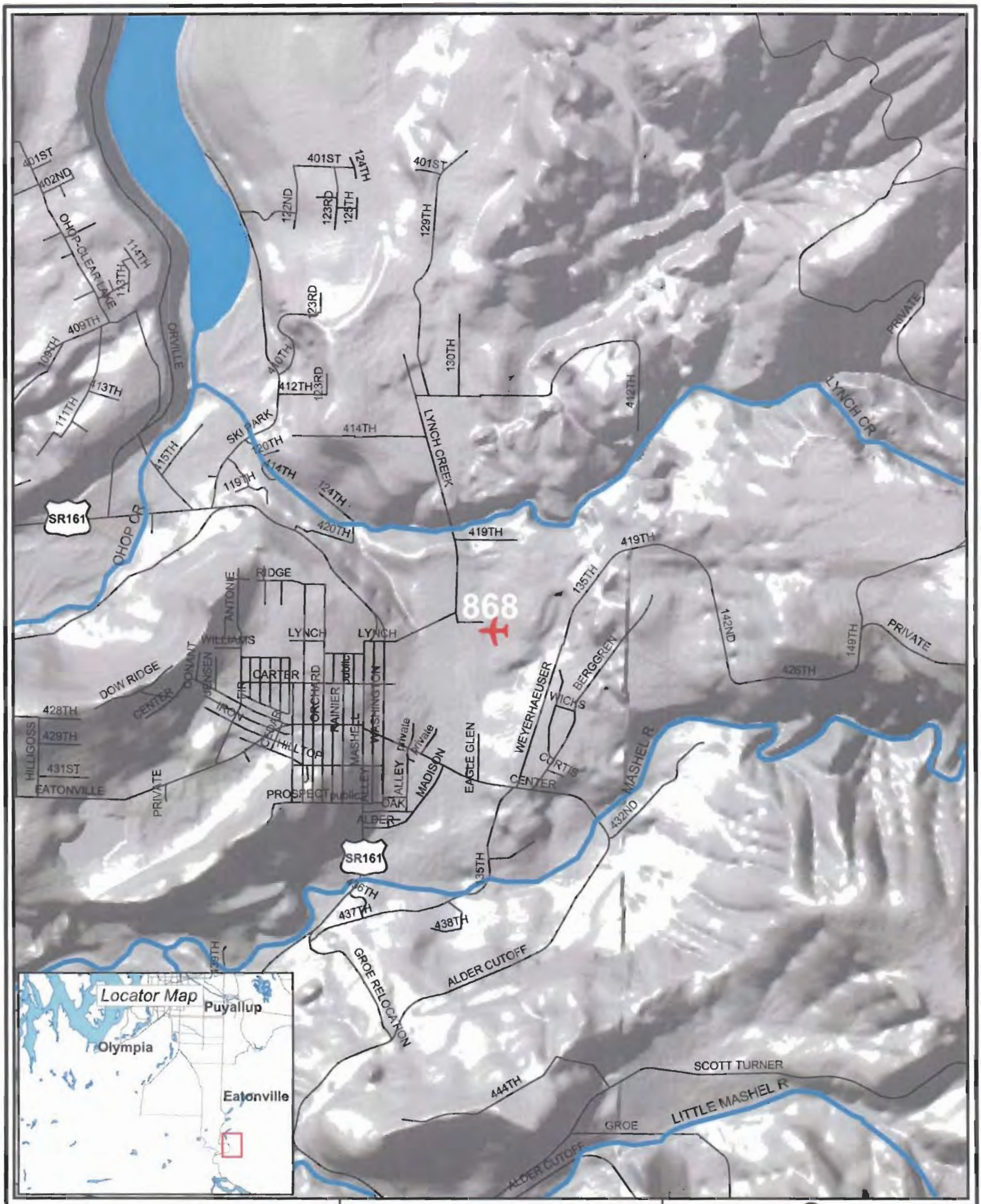
There are no transit routes that serve the area.

Figure 2-26 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Alder Cutoff Road from Eatonville City limits to SR 7 would reconstruct the existing arterial roadway. Planned completion, 2020.
- Eatonville Cutoff Road from SR 7 to SR 161 would reconstruct the existing arterial roadway. Planned completion, 2030.
- Orville Road East from 188th Street E to SR 161 would reconstruct the existing arterial roadway. Planned completion, 2030.



Legend

- Traffic Analysis Zone
- Transit Route

Swanson Airport

Puget Sound Regional Council
Airport Ground Access Study

0 0.125 0.25 Miles

URS

Puget Sound Regional Council
PSRC

Airport Characteristics

Vashon Municipal Airport is located one mile northwest of Vashon and has 7,000 operations per year comprised of 1,500 GA local flights and 5,500 GA itinerant flights. Based Aircraft totals 31, with 30 of these being single-engine piston aircraft and one ultra light.

Land Use/Employment Characteristics

Land use in the area is residential and undeveloped land. Employment in and around the area is shown in Table 2-26.

Table 2-26 Employment for Vashon Municipal Airport Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
360	114	1	1,979	2,094

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to the airport is off SW 160th Street at 115th Avenue SW. Vashon Highway SW is located to the east. This road runs the length of Vashon Island and provides access to the Fauntleroy Ferry to the north. Congestion is minimal and restricted to movement through the neighboring streets during the am and pm peak hour periods. Since there are very few operations, access issues at this airport are minimal to nonexistent.

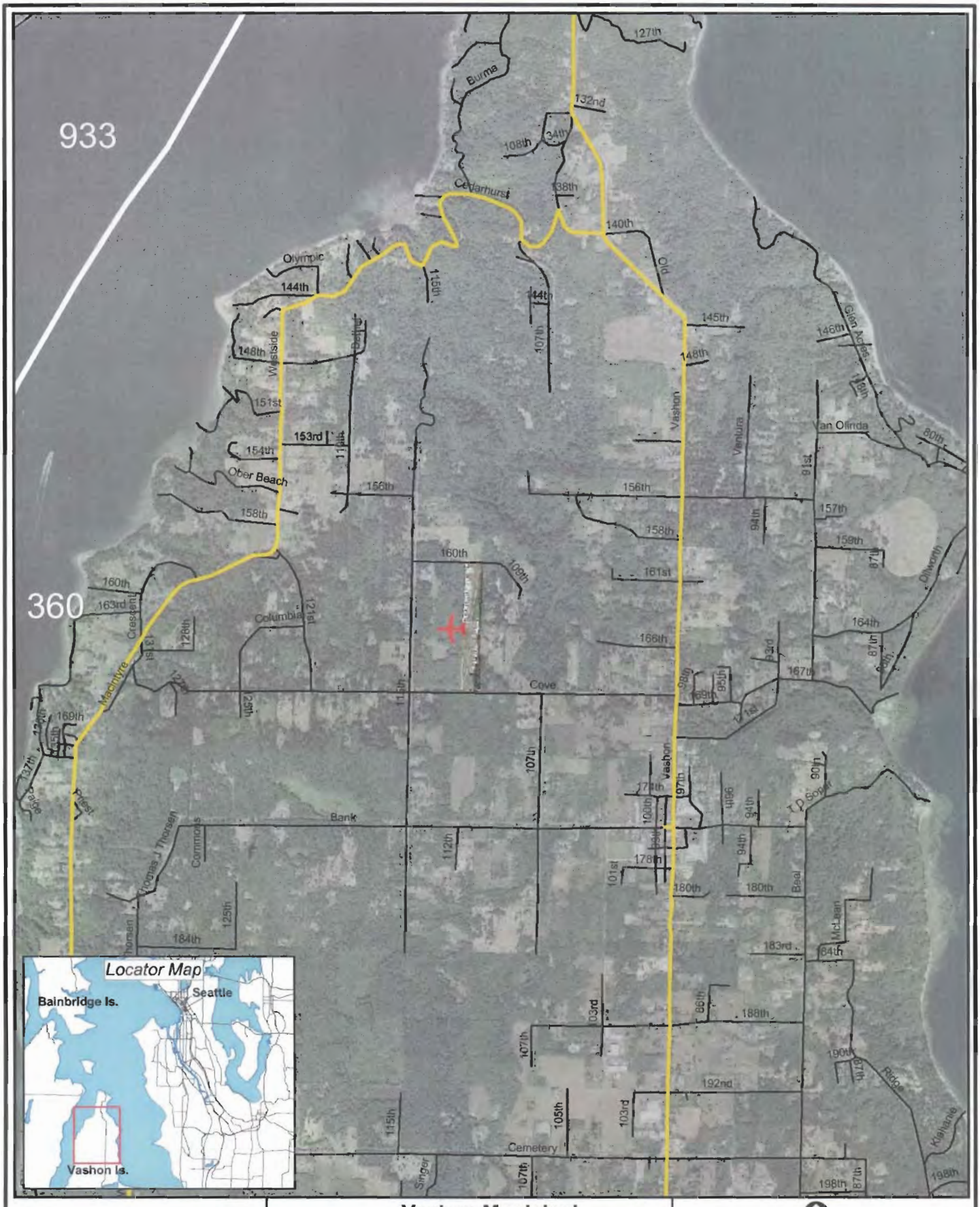
There are no transit routes that serve the area. The nearest transit route is more than one mile away (Metro Transit Route 118/119).

Figure 2-27 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Vashon Highway SW bicycle lanes from Vashon ferry terminal to 140th Street. Planned completion, 2010
- Vashon Terminal Expansion. Planned completion, 2020.



Legend

- Traffic Analysis Zone
- Transit Route

Vashon Municipal Airport

Puget Sound Regional Council
Airport Ground Access Study

0 0.125 0.25 Miles

URS

Puget Sound Regional Council
PSRC

Because this Seaplane Base is adjacent to Renton Municipal Airport and shares some of the same facilities, information regarding this airport is contained under the Major GA airports subsection for Renton Municipal Airport.

Airport Characteristics

Gray Army Airfield (Gray AAF) is located on Main Post at Fort Lewis, near Tacoma. Gray AAF is a private airfield owned and operated by the United States military. Permission is required before landing.

Land Use/Employment Characteristics

Land use around this airport is in conjunction with a military base. Numerous residential base housing areas exist which generate trips both to/from the site as well as within the Fort Lewis boundaries. Large amounts of underdeveloped land exist and are used in training exercises as well as office/warehouse space exist around the area. Employment in and around the area is shown in Table 2-27.

Table 2-27 Employment for Gray Army Airfield Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
848	64	0	517	581
850	451	13	23,272	23,736
TOTAL	515	13	23,789	24,317

Source: PSRC, 2003

* denotes a zone where only one employer was reported for that type of land use. To insure confidentiality agreements, the number of employees for this type of land use is suppressed. Note: the employment numbers are included in trip projections as detailed in Chapter 3.

SIC codes used to determine employees shown in columns above are outlined in Table 2-1.

TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

Transportation Characteristics

Access to the airfield is through special permission and gate check at the entrance to Fort Lewis off I-5 at exit 120 (41st Division Drive). Congestion is limited to the am and pm peak hour periods along I-5 as well as weekend congestion due to reservist training. Within the Base, congestion is minimal.

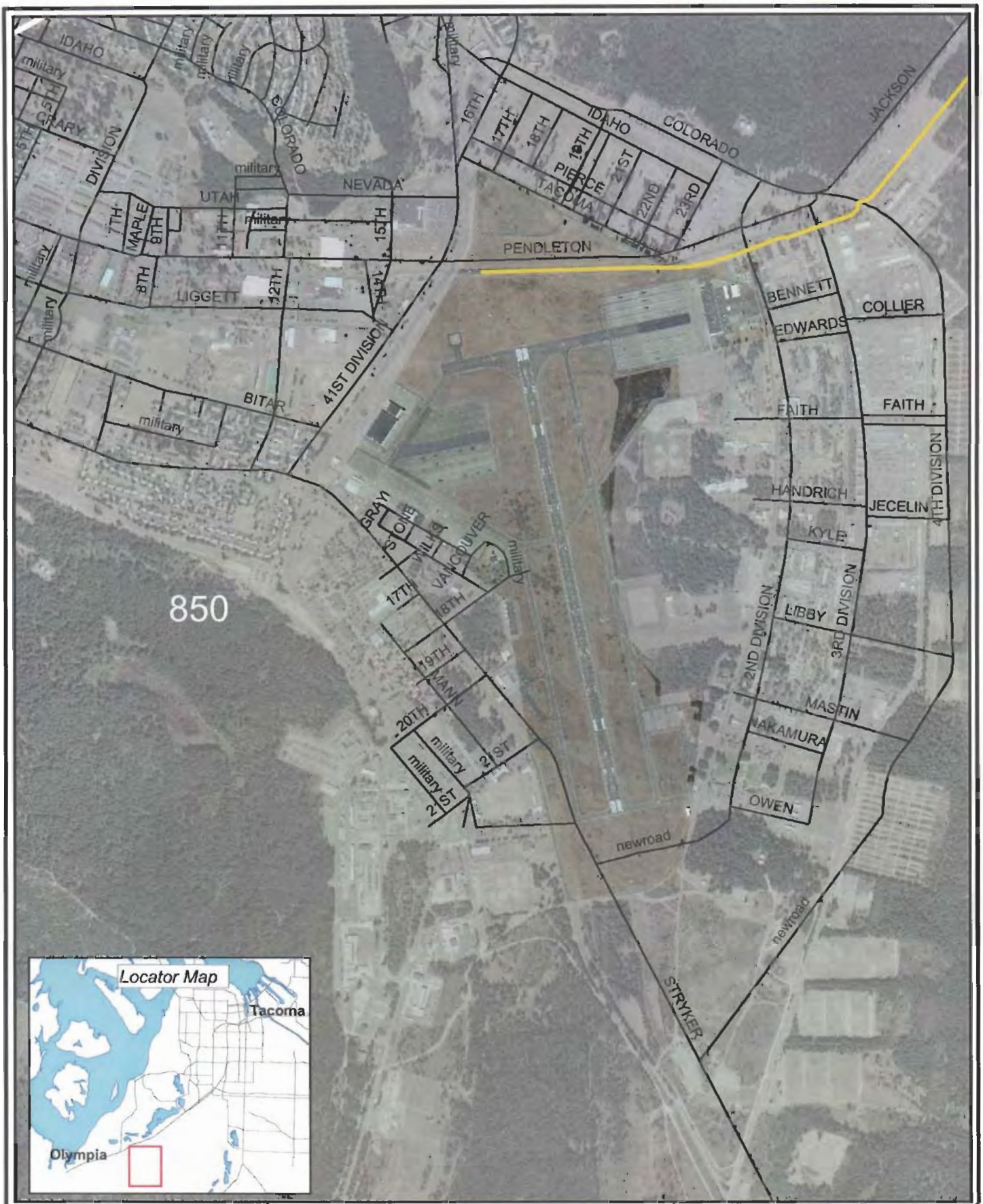
There are no transit routes that serve the area. The nearest transit route services the Fort Lewis Bus Depot (Pierce Transit Route 206).

Figure 2-28 shows the airport property, TAZ boundaries, areas surrounding the airport that have airport related uses, and major access roadways to/from the airport.

Planned Projects

Projects planned for the area include:

- Cross Base Highway from SR 7 to I-5 would construct a new roadway to access the base. Planned completion, 2030.
- I-5 from DuPont Road to Thorne Lane would widen the roadway from six lanes to eight lanes creating HOV lanes. This project is to be completed in two phases: (1) from DuPont Road to Fort Lewis Road and (2) from Fort Lewis Road to Thorne Lane. Planned completion, 2020.
- I-5 from Thurston/Pierce County Line to DuPont Road would widen the roadway. This project is to be completed in three phases: (1) widen to eight lanes creating HOV lanes from Thurston/Pierce County line to Mounts Road-Old Nisqually Road. (2) widen from six lanes to nine lanes creating HOV lanes and a southbound auxiliary lane from Mounts Road-Old Nisqually Road to the new South DuPont interchange and (3) widen from six lanes to 11 lanes creating HOV lanes, a southbound auxiliary lane and a northbound two lane collector-distributor from the new South DuPont interchange to DuPont Road. All phases have a planned completion, 2030.



Legend

- Traffic Analysis Zone
- Transit Route

Gray Army Airfield

Puget Sound Regional Council
Airport Ground Access Study

URS

Puget Sound Regional Council
PSRC

Airport Characteristics

McChord Air Force Base (McCAFB), an active Air Force facility encompassing 4,616 acres, is approximately seven miles south of Tacoma, in Pierce County.

Land Use/Employment Characteristics

The base is bounded on the north by the City of Lakewood; on the east and west by residential communities; on the southwest by a residential area (the American Lake Garden Tract); and on the southeast by Fort Lewis, a military training facility since 1917. Parts of the western side of McChord AFB are bordered by I-5. A number of communities surround the base, including Tillicum, American Lake Garden Tract, Lakeview, Lakewood, Clover Park, Ponders Corner, Parkland, and Tacoma and result in traffic trips to and from the Base as well as trips within the Base itself. Numerous residential base housing areas exist which generate trips both to/from the site as well as within the McChord Air Force Base boundaries. Clover Creek runs across the base, crosses under I-5, and then runs through Lakewood to Steilacoom Lake. A Burlington Northern/Santa Fe right-of-way bisects the base, separating the eastern industrial/operations part of the base from a munitions storage area, family housing and the Whispering Firs golf course. Employment in and around the area is shown in Table 2-28.

Table 2-28 Employment for McChord Airforce Base Area

TAZ	Aviation Related Airport Employment	Non-Aviation Airport Employment	Non Airport Employment	Total Employment (2000)
789	103	0	397	456
796	333	0	2,158	2,340
803	0	0	614	482
806	82	4	378	375
847	76	0	5,373	1,894
TOTAL	594	4	8,920	5,547

Source: PSRC, 2003
SIC codes used to determine employees shown in columns above are outlined in Table 2-1.
TAZ shown in BOLD designates the zone in which the airport is located. The remaining zones are adjacent to the airport property.

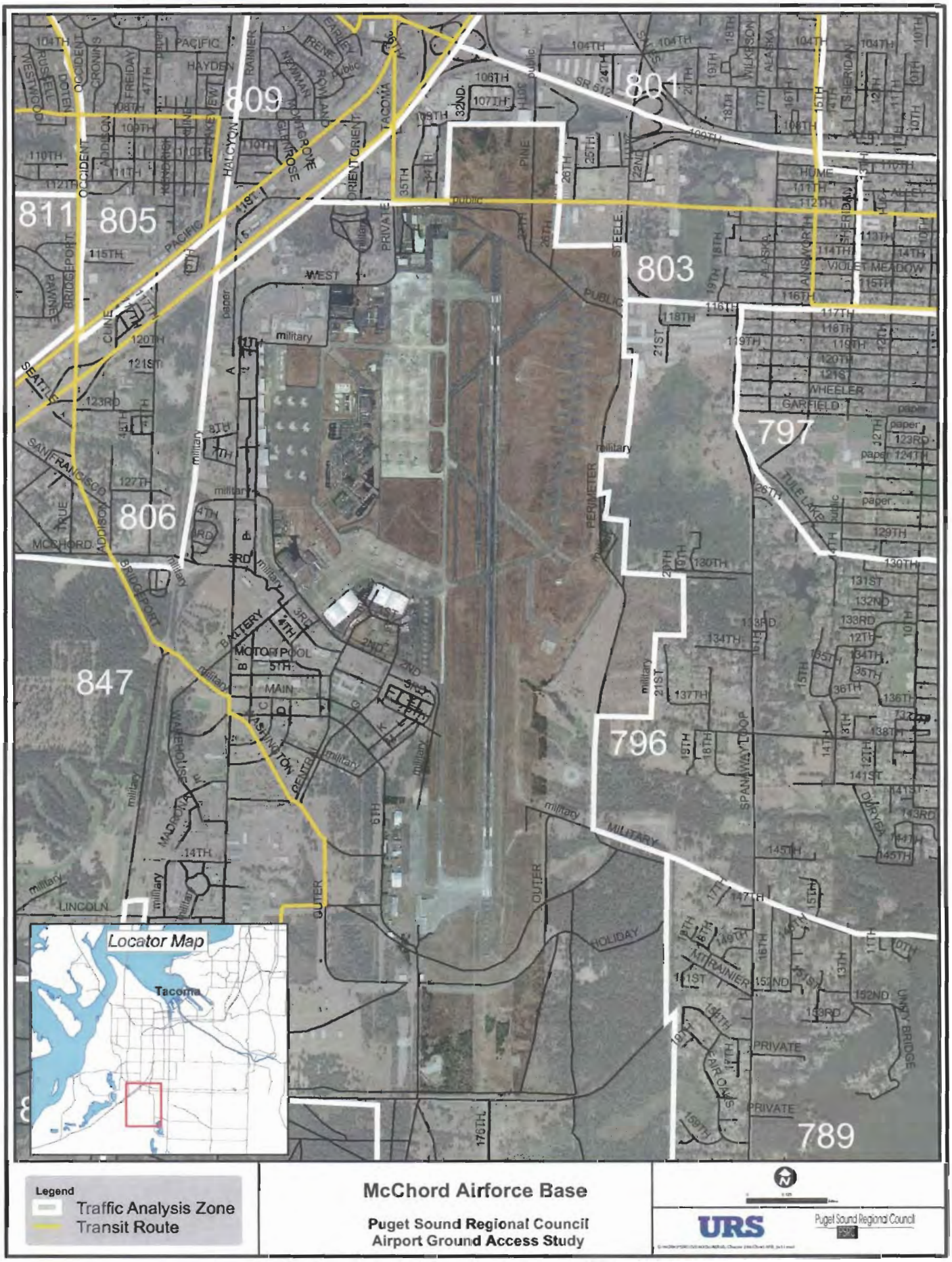
Transportation Characteristics

Access to McChord AFB is through special permission and gate check at the main entrance to McChord off I-5 at exit 125 (Bridgeport Way). Congestion is limited to the am and pm peak hour periods along I-5 and the perimeter roads of Bridgeport Way, S Tacoma Way, Steele Street, S 150th Street, and Murray Road SW as well as weekend congestion due to reservist training (Figure 2-29). Within the Base, congestion is minimal.

Planned Projects

Projects planned for the area include:

- Cross Base Highway from SR 7 to I-5 would construct a new roadway to access the base. Planned completion, 2030.


809
801
811
805
803
797
806
847
796
789
Locator Map
Tacoma
Legend
Traffic Analysis Zone
Transit Route
McChord Airforce Base
Puget Sound Regional Council
Airport Ground Access Study
URS
Puget Sound Regional Council

2.7 SUMMARY

Table 2-29 provides a summary of the information contained in this chapter including type of airport, number of based aircraft (by type) as well as number of operations (by type). Table 2-30 provides the summary of employment by airport and type to be used in conjunction with Chapter 3: Forecasts.

Table 2-29 Summary of Airport Characteristics

		Based Aircraft							Operations						
AIRPORT	City	Total	Single Engine	Multi Engine	Turbo-jet	Rotor	Glider	Ultra-light	GA Local	GA Itinerant	Air Carrier	Air Taxi	Com-muter	Military	Total
American Lake SPB	Tacoma	10	10	0	0	0	0	0	50	650	0	0	0	0	700
Apex Airpark*	Silverdale	50	50	0	0	0	0	0	15,000	4,400	0	0	0	25	19,425
Arlington Municipal	Arlington	501	390	16	7	6	21	61	76,167	58,293	0	520	0	20	135,000
Auburn Municipal	Auburn	277	264	12	0	1	0	0	60,000	98,339	0	6,100	0	100	164,539
Bandera State	Bandera	0	0	0	0	0	0	0	0	300	0	0	0	0	300
Bremerton National	Bremerton	166	149	13	0	3	0	1	54,000	41,000	0	100	0	900	96,000
Crest Airpark	Kent	332	327	3	0	2	0	0	12,000	85,000	0	0	0	0	97,000
Darrington Municipal	Darrington	8	6	0	0	1	0	1	525	2,500	0	0	0	0	3,025
Firstair Field	Monroe	70	68	2	0	0	0	0	5,044	13,125	0	0	0	0	18,169
Harvey Field	Snohomish	348	325	8	0	8	3	4	93,200	44,352	0	1,879	0	1,246	140,677
Kenmore Air Harbor, Inc.	Kenmore	109	100	0	9[a]	0	0	0	7,200	800	0	8,000	24,000	0	40,000
King County International/Boeing Field	Seattle	540	268	108	110	54	0	0	80,792	156,945	10,311	54,138	0	1,913	304,099
Lake Union SPB	Seattle	0	0	0	0	0	0	0	7,500	2,500	0	20,500	0	0	30,500
Pierce County/Thun Field	Puyallup	231	221	8	0	2	0	0	30,149	56,463	0	3,388	0	0	90,000
Port Orchard*	Gig Harbor	20	20	0	0	0	0	0	0	2,500	0	0	0	0	2,500
Ranger Creek State	Greenwater	0	0	0	0	0	0	0	0	0	0	0	0	250	250
Renton Municipal	Renton	263	239	12	4[b]	7	1	0	69,779	41,681	282	1,268	0	94	113,104
Sea-Tac International	Seattle	6	0	2	3	1	0	0	0	4,668	227,579	0	168,322	66	400,635
Sky Harbor *	Sultan	8	5	3	0	0	0	0	1,000	0	0	0	0	0	1,000
Skykomish State	Skykomish	0	0	0	0	0	0	0	0	300	0	0	0	0	300
Snohomish County/Paine Field	Everett	565	492	55	13	3	1	1	79,162	85,676	2,893	3,579	0	1,204	172,514
Spanaway	Spanaway	61	59	2	0	0	0	0	4,000	15,000	0	0	0	0	19,000
Swanson	Eatonville	22	22	0	0	0	0	0	594	2,000	0	0	0	15	2,609
Tacoma Narrows	Tacoma	200	162	31	5	2	0	0	58,734	101,571	0	1,352	0	1,241	162,898
Vashon Municipal	Vashon	31	30	0	0	0	0	1	1,500	5,500	0	0	0	0	7,000
Will Rogers-Wiley Post SPB	Renton	0	0	0	0	0	0	0	1,737	650	0	0	0	0	2,387

Source: WSDOT, 2003

[a] 9 turbo-prop aircraft reported

[b] 3 turbo-prop and 1 turbo-jet aircraft

* Information taken from 2001 RASP program

Table 2-30 Summary of Employment In and Around Airport Zone

AIRPORT	City	TAZ	Aviation Related Airport Employment (2001)	Non-Aviation Airport Employment (2001)	Non-Airport Employment (2000) +	Total Employment (2000)
American Lake SPB	Tacoma	819	5	0	179	184
Apex Airpark	Silverdale	915	24	0	339	363
Arlington Municipal	Arlington	662	567	51	5,533	5,951
Auburn Municipal	Auburn	435	460	44	2,451	2,955
Bandera State	Bandera	529	7	5	72	84
Bremerton National	Bremerton	926	93	*	*	1,540*
Crest Airpark	Kent	459	22	0	392	414
Darrington Municipal	Darrington	668	13	0	663	676
Firstair Field	Monroe	625	364	42	1,202	1,608
Harvey Field	Snohomish	616	66	2	331	379
Kenmore Air Harbor, Inc.	Kenmore	237	362	0	694	1,056
King County International/Boeing Field	Seattle	197	5,336	138	2,104	7,578
Lake Union SPB	Seattle	94	739	132	6,742	7,613
Pierce County/Thun Field	Puyallup	858	256	7	225	488
Port Orchard	Gig Harbor	937	10	0	145	155
Ranger Creek State	Greenwater	741	77	53	716	846
Renton Municipal	Renton	323	12,349	0	997	13,346
Sea-Tac International	Seattle	369	14,730	499	5,920	21,149
Sky Harbor	Sultan	670	41	7	805	853
Skykomish State	Skykomish	528	7	8	359	374
Snohomish County/Paine Field	Everett	563	4,602	35	2,609	7,246
Spanaway	Spanaway	792	65	0	1,183	1,248
Swanson	Eatonville	868	69	22	955	1,046
Tacoma Narrows	Tacoma	832	419	3	2,113	2,535
Will Rogers-Wiley Post SPB	Renton	See Renton Municipal Airport for details				
Vashon Municipal	Vashon	360	114	1	1,979	2,094
Gray Army Airfield	Ft Lewis	850	451	13	23,272	23,736
McChord Air Force Base	McChord AFB	847	76	0	5,373	5,449
Totals			41,324	1,062	68,800	110,966

NOTE: Only TAZ representing the airport is shown in this table. For surrounding areas, please consult specific airport and figure.

* denotes a zone where only one employer was reported for that type of land use. To insure confidentiality agreements, the number of employees for this type of land use is suppressed. Note: the employment numbers are included in trip projections as detailed in Chapter 3.

+ URS calculations using PSRC data for year 2001 Covered Employment and year 2000 Total Employment.

SIC codes used to determine employees shown in columns above are outlined in Table 2-1.

Source: PSRC, 2003; URS, 2003

Chapter 3: Airport Access Demand Forecasts

3.1 INTRODUCTION

A transportation system serves the population and commerce of an area. As such, there is a direct relationship between land use and transportation. This chapter will outline the relationship based on the existing PSRC Travel Demand Model and it's relationship with airport traffic generation. At the present time, in the current travel demand model, only Sea-Tac Airport is singled out for analysis. The remaining airports in the region have trips generated based on employees and employment type. This chapter will provide a further calculation that can be used when looking at the impact of specific airport traffic on the existing transportation system.

3.2 FORECASTING OPTIONS

There are numerous ways to forecast traffic for airports but all are related to independent variables. Some independent variables include based aircraft, employees, and operations. The Institute of Transportation Engineers (ITE) has produced a book looking at how traffic is generated by type of land use and how independent variables can be used to determine the impact. The three main independent variables for airports as outlined by ITE and their basis are discussed below.

Based Aircraft

The number of based aircraft at any given airport can provide one way of determining the possible influx of traffic to the system based on the existence of the airport. Using the Institute of Transportation Engineers (ITE) *Trip Generation* manual for general aviation airports the average number of ground transportation trips per based aircraft for a weekday is 5 trips. The average number of based aircraft in the studies used to calculate this number was 267 which is higher than all but six of the airports in the region.

Operations

As with using based aircraft as a variable to determine the number of trips per day to a given airport, the number of operations can also be used to calculate trips. Again looking at the ITE *Trip Generation* manual, the average number of ground transportation trips per operation has been calculated at 1.97 with an average number of operations per airport surveyed of 674 flights per day (246,010 flights per year) which is higher than all but two of the airports in the region.

Employees

The third variable that can be used in conjunction with calculating the number of trips to/from an airport is employees. Each employee generates at least 2 trips per day to the site (one to work, one from work). Additional trips can be attributed to the services provided at each airport because they have employees there. With the way the PSRC Travel Demand Model characterizes Traffic Analysis Zones (TAZ's) and the method in which employment data is stored, privacy regulations make it difficult to publicly report how many employees are at each airport (in Chapter 2 a total of aviation-related employees but not the actual airport employees was given). Additionally, it is not only the employees at the specific airport that we are interested in but the trips made to the area that are aviation related. Therefore, a calculation was created for each type of airport in the region (see below) and an appropriate trip generation factor was used.

Forecasting Summary

Looking at the above three independent variables, both based aircraft and operation calculations are much higher in the overall national projections than what has been reported for the regional airports. With this in mind, the use of employees is the most realistic approach to use for this project. Additionally, the existing PSRC Travel Demand Model uses employees to determine the number of trips to and from each zone. Although using any of the above variables would result in trips that could then be compared to the

overall trips as calculated by the PSRC Travel Demand Model, by using the employee variable, fewer errors should exist when comparing trips determined from different independent sources.

3.3 NETWORK DEVELOPMENT AND MODEL INPUTS

For more information on the development of the Puget Sound Regional Model consult the Puget Sound Regional Council website at www.psrc.org. The paragraphs below briefly explain the process.

Existing Travel Demand

A computerized network of the existing street and highway system in the Puget Sound area is currently in use by the PSRC and developed using EMME/2 computer software. The network includes most streets within the region from freeways to collector roads. The Puget Sound Region was divided into 938 Traffic Analysis Zones (TAZs) each with specific boundaries (as shown in Chapter 2 for each respective airport). These TAZs are used as the structure to collect both residential and employment data for the region as a whole and each area specifically. The residential and employment data is then converted to the number of projected vehicle trips based on calculations by the type of employment or residence, the average occupancy of a vehicle, and the purpose of the anticipated trip (e.g., home to work, home to shopping, home to school, etc.). Different land use types and trip purpose generate different number of trips. e.g., retail employment generates different amounts and types of trips than does manufacturing employment.

Employment estimates were obtained from individual employers and reported to Washington State Employment Security Department (ESD). For use with the PSRC Travel Demand Model, employment data for the region was then summarized into the following six categories:

- Retail
- FIRES (Financial, Real Estate, & Services)
- Government
- Education – both K-12 and college
- WTCU (Wholesale, Transportation, Communications, Utilities)
- Manufacturing

These six categories were assigned trip generation factors based on the type(s) of trips usually made. Six types of trips were used:

- Home-based work trips (HBW)
- Home-based school trips (k-12) (HBS)
- Home-based school trips (college) (HBC)
- Home-based shopping trips (HBSh)
- Home-based other trips (HBO)
- Non-home based trips (NHB)

A trip is the combination of an origin and destination by a mode of transport. In other words, if in a day you were to travel from home to work in the morning, and then in the evening the trip from work included stops at the dry cleaner and the grocery store before arriving home in the evening, a total of 4 trips were made:

(1) home to work (HBW)
(2) work to the drycleaners (NHB)
(3) drycleaners to the grocery store (NHB)
(4) grocery store to home (HBSh)

Reported employment numbers were broken into two categories; attractions and productions. Each type of employment will have a certain amount of trips to and from the employment facility based on the nature of the employment. Table 3-1 shows trip generation by employment type used by PSRC. For more information related to trip generation see *Model Calibration and Validation* (PSRC, 2003). As shown in Table 3-1 the productions and attractions for non-home based trips are equal. But, each type of employment also generates a certain amount of home-based travel as shown.

Table 3-1 Production and Attraction Trip Generation Rates

Employment Type	Productions	Attractions					
	Non-Home Based	Home Based Work	Home Based School	Home Based College	Home Based Shopping	Home Based Other	Non-Home Based
Retail	6.06	1.57	0	0	4.36	3.74	6.06
FIRES	1.42	1.35	0	0	0	3.44	1.42
Government	1.6	1.35	0	0	0	3.74	1.6
Education	0.2	1.48	7.9	1.9	0	1.2	0.2
WTCU	0.3	1.46	0	0	0	0.2	0.3
Manufacturing	1.29	1.46	0	0	0	0.21	1.29

Source: PSRC, 2003
Note, PSRC uses more than one category for Retail, FIRES, and government. Only the highest rate of generation is shown in this table.

Both the productions and the attractions are calculated as person trips. These numbers are then converted to vehicle trips based on an average vehicle occupancy for the region of approximately 1.6 persons per vehicle.

Once the number of trips by employment type and purpose were known, these trips were distributed to the network within the model. The process of distributing trips was accomplished using a gravity model formulation where traffic is assigned the shortest path between zones based primarily on travel time. An incremental assignment approach is used where the trips area allocated in increments allowing for alternative routes to be used when primary routes are congested resulting in a more realistic model of traffic conditions.

With the above in mind, Table 3-2 shows the number of attractions and productions for the zone(s) in which airports are located around the region. NOTE, the productions and attractions will usually not be equal. This is due to the characteristics of the zone (if it is a zone with a significant amount of housing, there will be more productions than attractions and vice versa for an employment center). Remember, these numbers are person trips.

Table 3-2 Productions/Attractions for Airport Zones (person trips)

Name	City	Type of Airport	TAZ	Productions	Attractions	2000 Population	2000 Employment
American Lake SPB	Tacoma	Other GA	819	12,657	3,068	5,050	184
Apex Airpark	Silverdale	Other GA	915	12,932	4,176	5,033	363
Arlington Municipal	Arlington	Major GA	662	27,219	24,990	7,579	5,951
Auburn Municipal	Auburn	Major GA	435	8,037	19,121	264	2,955
Bandera State	Bandera	Other GA	529	1,594	676	495	84
Bremerton National	Bremerton	Major GA	926	14,372	10,484	4,896	1,540
Crest Airpark	Kent	Major GA	459	11,063	3,688	4,353	414
Darrington Municipal	Darrington	Other GA	668	7,647	4,804	2,821	676
Firstair Field	Monroe	Other GA	625	13,682	14,725	3,379	1,608
Harvey Field	Snohomish	Major GA	616	5,105	2,199	1,855	379
Kenmore Air Harbor, Inc.	Kenmore	Other GA	237	13,953	8,660	4,726	1,056
King County International/Boeing Field	Seattle	Major GA	197	9,357	20,740	675	7,578
Lake Union SPB	Seattle	Other GA	94	21,610	42,790	2,954	7,613
Pierce County/Thun Field	Puyallup	Major GA	858	12,995	4,547	4,453	488
Port Orchard	Gig Harbor	Other GA	937	11,278	2,080	4,783	155
Ranger Creek State	Greenwater	Other GA	741	7,315	5,465	2,477	846
Renton Municipal	Renton	Major GA	323	24,159	35,476	2,690	13,346
Sea-Tac International*	Seattle	Commercial	369	16,633	62,478	1,030	21,149
Sky Harbor	Sultan	Other GA	670	10,372	7,268	4,112	853
Skykomish State	Skykomish	Other GA	528	7,772	2,489	2,696	374
Snohomish County/Paine Field	Everett	Major GA	563	16,884	27,766	2,759	7,246
Spanaway	Spanaway	Other GA	792	11,324	12,060	3,376	1,248
Swanson	Eatonville	Other GA	868	15,536	9,409	5,154	1,046
Tacoma Narrows	Tacoma	Major GA	832	20,971	20,023	5,541	2,535
Will Rogers-Wiley Post SPB	Renton	Other GA	323	See Renton Municipal Airport			
Vashon Municipal	Vashon	Other GA	360	17,798	13,555	5,161	2,094
Gray Army Airfield	Ft Lewis	Military	850	58,626	110,940	16,698	23,736
McChord Air Force Base	McChord AFB	Military	847	14,341	25,892	4,100	5,449
TOTAL				405,232	499,569	109,110	110,966

Source: PSRC, 2003

Note, Attraction and projection figures are based on 2000 population and 2001 employment data.

* in addition to the productions and attractions for Sea-Tac, the PSRC Travel Demand Model has 79,730 person trips allocated to this zone as a special generator as well as 22,919 truck trips. This totals 158,841 person trips for Sea-Tac.

The goal of this project is to determine how many of the attractions/productions are directly related to the operation of the airport. Therefore, the next step would be to determine the number of aviation-related trips for each of the airports as reported in Table 3-2. Again, due to the different natures of airports, one of four calculations was performed based on whether or not the airport was a Commercial, Major GA, Other GA, or Military airport.

Commercial

With the amount of work previously completed by numerous individuals, calculations for Sea-Tac International Airport were taken directly from the PSRC Travel Demand Model. As shown in the note above, for Sea-Tac International Airport only, the PSRC Travel Demand Model treats the airport as a special generator (a location that differs from the norm for that type of employment). With the number of drop-off and pick-up activities that occur at the airport, the number of trips calculated by the model given the types of employment are significantly lower then the number of trips actually on the roadway. Therefore, the number of trips to and from this zone (#369) is treated differently. A special generator resulting in 79,730 additional person trips as well as 22,919 truck trips were added to the calculations. A total of approximately 123,858 average daily trips to and from the airport each day occur. (16,633 productions + 62,478 attractions + 79,730 special generator trips = 158,841 person trips. 158,841/1.5736

(persons per vehicle) = 100,939 (vehicle trips). 100,939 + 22,919 (truck trips) = 123,858 total trips). See Appendix A for specific information regarding the PSRC model and it's interaction with Sea-Tac Airport.

Major GA

For airports designated Major GA, these fall into one of three categories: (1) Industrial/Manufacturing related airfields, (2) Business Airports, and (3) Recreation airfields.

For industrial/manufacturing centers (Paine Field, Boeing Field, Renton Municipal Airport), the predominance of trips are within the Monday through Friday work hours accommodating those individuals on the roadways accessing the airfields for both work and pleasure. Weekend use of the airport is also high as general aviation users and corporate jets are based at these airports. Travel to and from these airports (at least the manufacturing portion of the TAZ), operate like Manufacturing land uses. Traffic projections can be calculated using the Institute of Traffic Engineers *Trip Generation Manual.* This manual calculates the number of anticipated trips based on land use type. Therefore, for Manufacturing areas (land use 140), the average daily number of trips per employee is 2.10. For those zones that are predominantly occupied by manufacturing uses, a trip generation of 2.10 was used. For neighboring zones that not only include the manufacturing components of the area around the airport, but also different land uses, it was determined that an average of 5.14 trips per employee is completed for industrial/manufacturing airfields. An example follows for Paine Field:

(4,637 airport related employees x 5.14 trips/employee/day) / 1.6 persons/vehicle = 23,834 vehicle trips/day

It is difficult to attribute these trips to singular roadways around the three industrial/manufacturing airfields because of the multiple access points to and from the area and the freeway sections that are within the vicinity. Traffic on adjacent roadways range from 5,000 vehicles per day to close to 100,000 vehicles/day on individual roadway segments (with the highest volumes associated with the I-5 corridor).

Business airports (Arlington Municipal, Auburn Municipal, Thun Field, Tacoma Narrows, Bremerton National) are busy usually throughout the week and on weekends, but trips to/from the airport are not usually work related. Travel to and from the airport is usually directly related to aviation. Again using the *Trip Generation Manual* the number of anticipated trips per employee based on land use type (general aviation) is calculated at 14.24 and the calculation used is the following (# of employees x 14.24 trips/day/employee) persons/vehicle. An example follows for Bremerton National:

(93 airport related employees x 14.24 trips/employee/day) / 1.6 persons/vehicle = 1,324 vehicle trips/day

On the section of SR 3 bordering the Bremerton National Airport, approximately 7,739 trips per day in each direction were being made in the year 2000. Therefore, approximately 17% of the total trips on the roadway were being made to and from airport-related employment including the restaurant found on-site, some cargo and industrial areas mainly to the west of the airport off Barney White Road or Imperial Road, aviation, and other businesses on airport property.

The recreational Major GA airports (Harvey Field, Crest Airpark) have higher traffic in the summer months and on weekends to accommodate the activities seen at these airports. Regular daily use at these airports is also high but travel to and from the airport is usually directly related to aviation and therefore, on an average weekday, the operation of a recreational airport will function much like Business airports as shown above. NOTE: With Crest Airpark being surrounded by private residences, the number of trips based on location of housing is not figured into this equation. Only trips made directly for aviation purposes are included in this calculation.

Other GA

As stated in Chapter 2, overall Other GA airports (with the exceptions noted below) are designated primarily for the use of small private and corporate aircraft. They are usually characterized by short runways, few or no terminal facilities and many small aircraft. With this in mind, calculations related to 13 of the 15 Other GA airports were consistent with those used in Business Major GA airports above or:

(# of airport related X 14.24 trips/day/employee) / 1.6 persons/vehicle = # of vehicle trips/day

The remaining two Other GA airports are Kenmore SPB and Lake Union SPB. Both of these airports are used highly with the surrounding area predominantly commercial and residentially developed and not with high uses of aviation related uses. Therefore, for these two airports, the number of employees reported at each airport is the number of employees used in the calculations as described above.

Military

On an average weekday, the military bases function much like other GA airports, but have other uses as well as are mostly self-contained. Therefore, the increased number of housing in and around the military base does increase the number of overall trips in the area but the predominance of these additional trips are on-base and therefore, do not disturb the surrounding infrastructure and are ignored in this report. The majority of activity (when not in an activation mode) is related to the weekend when reservists are more likely to be on-base. Using the ITE Trip Generation Manual for Military Bases (Land Use 501), the average number of trips per day per employee is 1.78. An example follows:

(# of airport related employees X 1.78 trips/day/employee) / 1.6 persons/vehicle = # of vehicle trips/day

Using the calculations above, Table 3-3 shows the anticipated existing vehicle trips to each of the regional airports.

Table 3-3 Anticipated Existing Vehicle Trips for Regional Airports TAZs (year 2001)

Airport	City	Type of Airport	Airport TAZ	# of Aviation Related Employees	Trip Generation Rate	# of Vehicle Aviation Related Trips Anticipated
American Lake SPB	Tacoma	Other GA	819	5	14.24	40
Apex Airpark	Silverdale	Other GA	915	24	14.24	192
Arlington Municipal	Arlington	Major GA	662	567	14.24	4,536
Auburn Municipal	Auburn	Major GA	435	460	14.24	3,680
Bandera State	Bandera	Other GA	529	7	14.24	56
Bremerton National	Bremerton	Major GA	926	93	14.24	744
Crest Airpark	Kent	Major GA	459	22	14.24	176
Darrington Municipal	Darrington	Other GA	668	13	14.24	104
Firstair Field	Monroe	Other GA	625	364	14.24	2,912
Harvey Field	Snohomish	Major GA	616	66	14.24	528
Kenmore Air Harbor, Inc.	Kenmore	Other GA	237	362	14.24	2,896
King County International/Boeing Field+	Seattle	Major GA	197	5,336	5.14	24,522
Lake Union SPB	Seattle	Other GA	94	739	14.24	5,912
Pierce County/Thun Field	Puyallup	Major GA	858	256	14.24	2,048
Port Orchard	Gig Harbor	Other GA	937	10	14.24	80
Ranger Creek State	Greenwater	Other GA	741	77	14.24	616
Renton Municipal+	Renton	Major GA	323	12,349	2.10	56,751
Sea-Tac International*+	Seattle	Commercial	369	14,730		117,840
Sky Harbor	Sultan	Other GA	670	41	14.24	328
Skykomish State	Skykomish	Other GA	528	7	14.24	56
Snohomish County/Paine Field+	Everett	Major GA	563	4,602	5.14	21,149
Spanaway	Spanaway	Other GA	792	65	14.24	520
Swanson	Eatonville	Other GA	868	69	14.24	552
Tacoma Narrows	Tacoma	Major GA	832	419	14.24	3,352
Will Rogers-Wiley Post SPB	Renton	Other GA	323	See Renton Municipal Airport		
Vashon Municipal	Vashon	Other GA	360	114	14.24	912
Gray Army Airfield[a]	Ft Lewis	Military	850	451	1.78	3,608
McChord Air Force Base[a]	McChord AFB	Military	847	76	1.78	608
TOTAL				41,324		254,719

Source: PSRC, 2003

[a] The numbers used here are enlisted personnel.

+ Airport where alternative calculation was made. For Sea-Tac International Airport, the Trip Generation Rate was determined as shown in the text above based on additional analysis completed by Sea-Tac International Airport and PSRC. Only totals from that work are presented here.

3.4 FUTURE TRAVEL DEMAND

Future growth estimates in travel were calculated based on projected number of employees in each of the TAZ's in the same manner that PSRC forecasts employees per zone. This calculation was used because PSRC calculates and projects employment based on the 6 employment sectors (Retail FIRES, WTCU, Government, Education, and Manufacturing. For this project the SIC codes that are used to subdivide the employment into the 6 categories above were used to determine whether or not the employment in question was aviation-related or non-aviation related (as shown in Table 2-1). Table 3-4 shows the projected number of employees per zone for just the zone including the airport, Table 3-5 shows the projected number of productions and attractions per zone for the zone including the airport, and Table 3-6 shows the calculated trips for aviation related travel for just the zone including the airport. For this chapter only the zone including the airport property is represented and employment and trips forecasted. In Chapter 4 the area of influence of the airport is used which sometimes contained more then the TAZ in which the airport is located. The same trip generation factors were used for the area of influence TAZ but not all TAZ's in the region. A case can be made that a restaurant on the airport property can produce

aviation related trips, but a restaurant a mile away (possibly located in an adjacent TAZ) would not. Therefore, the calculations above only work in the direct vicinity of the airport.

Table 3-4 Existing and Future Employment for Airport Zones

Airport	City	Type of Airport	Airport TAZ	2000 Employment	2010 Employment	2030 Employment
American Lake SPB	Tacoma	Other GA	819	184	235	294
Apex Airpark	Silverdale	Other GA	915	363	343	295
Arlington Municipal	Arlington	Major GA	662	5,951	6,997	9.965
Auburn Municipal	Auburn	Major GA	435	2,955	2,983	3,513
Bandera State	Bandera	Other GA	529	84	503	447
Bremerton National	Bremerton	Major GA	926	1,540	2,113	2,889
Crest Airpark	Kent	Major GA	459	414	544	605
Darrington Municipal	Darrington	Other GA	668	676	611	550
Firstair Field	Monroe	Other GA	625	1,608	2,324	3,029
Harvey Field	Snohomish	Major GA	616	379	309	368
Kenmore Air Harbor, Inc.	Kenmore	Other GA	237	1,056	1,287	1,610
King County International/Boeing Field	Seattle	Major GA	197	7,578	7,167	6,911
Lake Union SPB	Seattle	Other GA	94	7,613	10,938	13,477
Pierce County/Thun Field	Puyallup	Major GA	858	488	730	1,488
Port Orchard	Gig Harbor	Other GA	937	155	272	367
Ranger Creek State	Greenwater	Other GA	741	846	832	1,026
Renton Municipal	Renton	Major GA	323	13,346	13,154	13,667
Sea-Tac International*	Seattle	Commercial	369	21,149	22,067	29,737
Sky Harbor	Sultan	Other GA	670	853	924	1,278
Skykomish State	Skykomish	Other GA	528	374	839	783
Snohomish County/Paine Field	Everett	Major GA	563	7,246	8,090	10,900
Spanaway	Spanaway	Other GA	792	1,248	1,433	1,767
Swanson	Eatonville	Other GA	868	1,046	973	986
Tacoma Narrows	Tacoma	Major GA	832	2,535	2,872	3,101
Will Rogers-Wiley Post SPB	Renton	Other GA	323	See Renton Municipal Airport		
Vashon Municipal	Vashon	Other GA	360	2,094	1,865	1,835
Gray Army Airfield	Ft Lewis	Military	850	23,736	25,088	25,328
McChord Air Force Base	McChord AFB	Military	847	5,449	5,848	5,830
TOTAL				110,966	117,963	127,231

Source: PSRC, 2004

Table 3-5 Existing and Future Attractions/Productions in Person Trips for Airport Zones

Airport	City	Type of Airport	Airport TAZ	2000 Prod	2000 Attract	2010 Prod	2010 Attract	2030 Prod	2030 Attract
American Lake SPB	Tacoma	Other GA	819	12,657	3,068	14,068	3,787	16,204	4,631
Apex Airpark	Silverdale	Other GA	915	12,932	4,176	15,081	4,291	20,432	4,315
Arlington Municipal	Arlington	Major GA	662	27,219	24,990	34,142	31,465	47,002	45,508
Auburn Municipal	Auburn	Major GA	435	8,037	19,121	8,369	19,925	9,688	23,164
Bandera State	Bandera	Other GA	529	1,594	676	2,041	2,775	2,279	2,758
Bremerton National	Bremerton	Major GA	926	14,372	10,484	15,783	12,921	19,956	16,142
Crest Airpark	Kent	Major GA	459	11,063	3,688	13,109	4,672	18,621	5,557
Darrington Municipal	Darrington	Other GA	668	7,647	4,804	8,694	4,832	10,443	4,841
Firstair Field	Monroe	Other GA	625	13,682	14,725	19,036	21,315	26,694	28,617
Harvey Field	Snohomish	Major GA	616	5,105	2,199	5,711	2,093	6,854	3,117
Kenmore Air Harbor, Inc.	Kenmore	Other GA	237	13,953	8,660	15,847	10,967	17,861	13,228
King County International/Boeing Field	Seattle	Major GA	197	9,357	20,740	9,075	20,030	9,186	20,146
Lake Union SPB	Seattle	Other GA	94	21,610	42,790	30,439	60,358	51,968	76,974
Pierce County/Thun Field	Puyallup	Major GA	858	12,995	4,547	19,087	6,851	32,758	13,660
Port Orchard	Gig Harbor	Other GA	937	11,278	2,080	12,078	2,715	15,451	3,543
Ranger Creek State	Greenwater	Other GA	741	7,315	5,465	8,287	5,345	12,562	6,325
Renton Municipal	Renton	Major GA	323	24,159	35,476	26,005	36,583	31,387	41,074
Sea-Tac International*	Seattle	Commercial	369	16,407	59,546	17,687	64,680	23,396	87,831
Sky Harbor	Sultan	Other GA	670	10,372	7,268	14,512	8,527	20,989	12,004
Skykomish State	Skykomish	Other GA	528	7,772	2,489	8,276	4,968	9,052	5,374
Snohomish County/Paine Field	Everett	Major GA	563	16,884	27,766	21,417	33,111	28,967	43,893
Spanaway	Spanaway	Other GA	792	11,324	12,060	12,924	13,547	15,725	16,090
Swanson	Eatonville	Other GA	868	15,536	9,409	16,688	9,137	21,446	9,938
Tacoma Narrows	Tacoma	Major GA	832	20,971	20,023	24,186	23,106	28,537	25,397
Will Rogers-Wiley Post SPB	Renton	Other GA	323	See Renton Municipal Airport					
Vashon Municipal	Vashon	Other GA	360	17,798	13,555	18,424	12,944	23,695	13,729
Gray Army Airfield	Ft Lewis	Military	850	58,626	110,940	59,467	110,169	60,703	112,483
McChord Air Force Base	McChord AFB	Military	847	14,341	25,892	14,882	25,597	15,598	25,719
TOTAL				405,006	496,637	465,315	556,711	597,454	666,058

Source: PSRC, 2003

Note, Attraction and Production figures are based on 2000 population and 2001 employment.

* Sea-Tac projections shown here do NOT include special generator trips as outlined previously.

Table 3-6 Existing and Future Aviation Related Trips for Regional Airports TAZs

Airport	City	Type of Airport	Airport TAZ	# of Aviation Related Employees			# of Aviation Related Vehicle Trips Anticipated		
				2001	2010	2030	2001	2010	2030
American Lake SPB	Tacoma	Other GA	819	5	6	8	71	91	114
Apex Airpark	Silverdale	Other GA	915	24	23	20	342	323	278
Arlington Municipal	Arlington	Major GA	662	567	667	949	8,800	10,347	14,736
Auburn Municipal	Auburn	Major GA	435	460	464	547	7,177	7,245	8,532
Bandera State	Bandera	Other GA	529	7	42	37	171	1,023	909
Bremerton National	Bremerton	Major GA	926	93	128	174	1,324	1,817	2,484
Crest Airpark	Kent	Major GA	459	22	29	32	313	412	458
Darrington Municipal	Darrington	Other GA	668	13	12	11	185	167	151
Firstair Field	Monroe	Other GA	625	364	526	686	5,781	8,356	10,891
Harvey Field	Snohomish	Major GA	616	66	54	64	968	789	940
Kenmore Air Harbor, Inc.	Kenmore	Other GA	237	166	202	253	2,364	2,881	3,604
King County International/Boeing Field+	Seattle	Major GA	197	5,336	5,047	4,866	11,495	10,872	10,484
Lake Union SPB	Seattle	Other GA	94	92	132	163	1,310	1,882	2,319
Pierce County/Thun Field	Puyallup	Major GA	858	256	383	781	3,745	5,602	11,420
Port Orchard	Gig Harbor	Other GA	937	10	18	24	142	250	337
Ranger Creek State	Greenwater	Other GA	741	77	76	93	1,851	1,821	2,245
Renton Municipal+	Renton	Major GA	323	12,349	12,171	12,646	25,933	25,560	26,557
Sea-Tac International*+	Seattle	Commercial	369	14,730	15,369	20,711	117,840	122,955	165,691
Sky Harbor	Sultan	Other GA	670	41	44	61	684	740	1,024
Skykomish State	Skykomish	Other GA	528	7	16	15	214	479	447
Snohomish County/Paine Field+	Everett	Major GA	563	4,602	5,138	6,923	23,834	26,610	35,853
Spanaway	Spanaway	Other GA	792	65	75	92	926	1,063	1,311
Swanson	Eatonville	Other GA	868	69	64	65	1,296	1,205	1,222
Tacoma Narrows	Tacoma	Major GA	832	419	475	513	6,009	6,808	7,351
Will Rogers-Wiley Post SPB	Renton	Other GA	323	See Renton Municipal Airport					
Vashon Municipal	Vashon	Other GA	360	114	102	100	1,638	1,459	1,435
Gray Army Airfield	Ft Lewis	Military	850	451	477	481	826	827	835
McChord Air Force Base	McChord AFB	Military	847	76	82	81	135	135	134
TOTAL				40,481	41,789	50,365	225,375	241,715	311,761

Source: PSRC, 2003; URS, 2003

Note, Attraction and projection figures are based on 2000 population and 2001 employment. URS estimates using PSRC covered employment data for 2001, PSRC forecasts of Total Employment to 2030, and production and attraction rates from PSRC trip generation model.

* In addition to the productions and attractions for Sea-Tac, the PSRC Travel Demand Model has 79,730 person trips allocated to this zone as a special generator as well as 22,919 truck trips. This totals 158,841 person trips for Sea-Tac.

+ Airport where alternative calculation was made.

3.5 DISTRIBUTION OF TRAFFIC

Existing

For each TAZ above, the anticipated airport traffic was distributed to the existing infrastructure. The PSRC Travel Demand Model was used to determine the overall traffic in and around each airport and then the number of trips above were proportioned to the overall trip generation for each airport. For airport related areas, the SR 531 corridor associated with Arlington Municipal Airport does not meet acceptable LOS standards (as detailed in Chapter 2).

Future

Distribution of traffic is dependent on different components for each airport. Some of these components include: location of airport in relation to major roadways and/or metropolitan (city) areas, type of airport (commercial, major GA, minor GA, etc.), additional amenities in the area either aviation related or not, etc. Therefore, the distribution of each airport's aviation-related traffic to the surrounding street system is

unique. For some of the airports this is a simple task with one roadway connecting to/from the airport. With other airports, this is a much more difficult task with multiple access areas in and around the airport resulting in a myriad of routes each trip can take depending on traffic on a given day and the origin and destination of the individual traveler.

3.6 SUMMARY

Using the methodology and calculations shown above, the basis for estimating aviation-related traffic in and around each airport is outlined. The next step, as shown in Chapter 4, is to determine how much of the overall traffic on the roadways surrounding the airport(s) is related to the operation of the airport. Once that is known, in areas where congestion is a problem, the number of vehicles attributable to the operation of the airport can be determined. Therefore, a list of proposed projects related to congestion due to airport activity will be proposed.

Chapter 4: Airport Access Needs

Using information regarding future access demand at the region's airports developed in Chapter 3, we have calculated the number of daily trips likely to occur on the roadways surrounding each airport. In addition, we have expanded the traffic impact analysis to include TAZ areas surrounding the airports. This was important because the information presented in the trip generation tables shown in Chapter 3 were based on activity generated within the TAZ that included the airport itself. In the analysis contained in this chapter we have only extended into the neighboring zones where the airport's influence is likely to be felt. Table 4-1 shows the number of aviation related trips in and around each regional airport. Numbers shown in the table represent the total aviation-related employees and trips associated with each airport for the present time (2001) as well as the 2010, and 2030 year timeframes. The definition of aviation related employees included in the analysis was presented in Chapter 2, Table 2-1. As Table 2-1 notes, aviation related airport employment included all of the following Standard Industrial Classification (SIC) code activities.

Manufacturing

3721-Aircraft-with and without research & development

3724-Aircraft engines and engine parts (with and without research & development)

3728- Aircraft parts & Auxiliary Equipment, NEC

Transportation

4111-Local and Suburban Transit

4725-Transportation Services - tour operators

4731-Transportation Services - arrangement of transportation of freight and cargo

4489-Water Transportation of Passengers NEC

4512-Transportation by air - scheduled air transportation (passenger & freight)

4513-Transportation by air - courier services

4522-Transportation by air - non-scheduled

4581-Transportation by air - airports, flying fields, airport terminal services

Retail

5812-Eating & Drinking Places - Food Service Contractors

Services

7349-Building Cleaning and Maintenance Services, Not Elsewhere

8299-Schools & Education – Flying instruction

It is important to note that, due to the geography of the TAZs, some of the employment numbers reported are higher than those for the airport alone. In these cases, the TAZ boundary includes surrounding areas where employment is high, but not necessarily airport related.

Table 4-1 Anticipated Number of Average Daily Trips in and around Regional Airports

				2001		2010		2030	
Airport	City	Type of Airport	TAZ	Aviation Related Employees	Aviation Related Trips	Aviation Related Employees	Aviation Related Trips	Aviation Related Employees	Aviation Related Trips
American Lake SPB	Tacoma	Other GA	819	5	71	6	91	8	114
Apex Airpark	Silverdale	Other GA	915	24	342	23	323	20	278
Arlington Municipal	Arlington	Major GA	646, 662, 663	1,581	23,439	1,884	27,911	2,408	35,775
Auburn Municipal	Auburn	Major GA	433, 434, 435, 436, 437	1,640	24,550	1,600	23,996	1,905	28,569
Bandera State	Bandera	Other GA	529	7	171	42	1,023	37	909
Bremerton National	Bremerton	Major GA	925, 926	93	1,324	128	1,817	174	2,484
Crest Airpark	Kent	Major GA	459	22	313	29	412	32	458
Darrington Municipal	Darrington	Other GA	668	13	185	12	167	11	151
Firstair Field	Monroe	Other GA	625, 626, 627	807	12,090	1,066	16,038	1,350	20,344
Harvey Field	Snohomish	Major GA	616, 632	521	7,462	533	7,622	669	9,573
Kenmore Air Harbor, Inc.	Kenmore	Other GA	236, 237	168	2,392	205	2,912	257	3,658
King County International/ Boeing Field+	Seattle	Major GA	196, 197, 199, 213, 343, 344	13,145	30,059	12,237	28,202	12,859	29,958
Lake Union SPB	Seattle	Other GA	94, 95, 103, 107	92	1,310	132	1,882	163	2,319
Pierce County/Thun Field	Puyallup	Major GA	855, 857, 858, 859, 860	585	8,459	841	12,164	1,490	21,580
Port Orchard	Gig Harbor	Other GA	937, 938	28	399	46	660	64	918
Ranger Creek State	Greenwater	Other GA	741	77	1,851	76	1,821	93	2,245
Renton Municipal+	Renton	Major GA	323, 324	15,167	49,651	16,326	60,527	19,117	81,024
Sea-Tac International*+	Sea-Tac	Commercial	356, 364, 365, 366, 369, 370, 371, 372, 376, 377	19,230	80,087	20,446	89,119	27,436	116,995
Sky Harbor	Sultan	Other GA	670	41	684	44	740	61	1,024
Skykomish State	Skykomish	Other GA	528	7	214	16	479	15	447
Snohomish County/Paine Field+	Everett	Major GA	545, 546, 563, 564, 567, 569	28,757	81,250	32,748	93,587	40,912	120,858
Spanaway	Spanaway	Other GA	792	65	926	75	1,063	92	1,311
Swanson	Eatonville	Other GA	868	69	1,296	64	1,205	65	1,222
Tacoma Narrows	Tacoma	Major GA	832, 833	683	10,723	763	11,954	813	12,720
Will Rogers-Wiley Post SPB	Renton	Other GA	323			See Renton Municipal Airport			
Vashon Municipal	Vashon	Other GA	360	114	1,638	102	1,459	100	1,435
Gray Army Airfield	Ft Lewis	Military	848, 850	515	940	515	941	520	950
McChord Air Force Base	McChord AFB	Military	847	594	1,064	679	1,218	840	1,508
TOTALS				84,050	342,890	90,638	389,333	111,511	498,827

Source: PSRC 2004, URS 2004

Note: Attraction and projection figures are based on 2000 population and 2000 employment.

+ Airport where alternative calculation was made-See Chapter 3.

* Sea-Tac International Airport numbers were provided by PSRC.

4.1 AIRPORT TRAFFIC CONTRIBUTION ON REGIONAL ROADS

To measure the traffic contribution that the individual airport will have on the regional roadway network, the airport's contribution to total traffic volumes on specific roadways was estimated and evaluated relative to the congestion on those roadways. The airport's contribution was measured as the airport's percentage share of the total roadway traffic and congestion was measured using standard level of service analysis and volume-to-capacity ratios.

The best measure of the contribution that an airport will have on the surrounding access roads is the Level of Service (LOS). The LOS is an estimate of the performance efficiency and quality of a roadway as established by the Transportation Research Board's (TRB) *Highway Capacity Manual* (2000) methodology.

For roads, the LOS calculation is based on the functional classification of the roadway (i.e., freeway, arterials, etc.), the number of lanes, the speed limit, the average speed of vehicles on the road, and the frequency of traffic signals or stop signs. These factors combine to determine the capacity of each lane of traffic. The acceptable level of service for a given roadway section depends on the responsible jurisdiction (WSDOT, County or City) as stated in Chapter 2, and with the functional classification of the road itself. For example, freeways have an average capacity of 1,600 vehicles/lane/hour, in contrast to major arterial roadways within city boundaries, which have an average capacity of 800 vehicles/lane/hour. Therefore, both the number of lanes available and the functional classification of the road are significant factors in determining the capacity. The TRB methodology measures the degree of congestion on a road by comparing the number of vehicles traveling on the roadway (volume) to the calculated capacity of the roadway. The result is a volume to capacity ratio (v/c ratio) for the road. From this a letter is assigned to correspond with the v/c ratio with an "A" representing the least amount of congestion (the best v/c ratio) and an "F" representing the most amount of congestion (v/c ratio's above 1.00), as shown in Table 4-2.

Table 4-2 Level of Service Standards for Roadways

Level of Service	v/c ratio	Expected Delay
A	less than 0.60	Little or no delay
B	greater than 0.60 but less than 0.70	Short traffic delay
C	greater than 0.70 and less than 0.80	Average traffic delay
D	greater than 0.80 and less than 0.90	Long traffic delay
E	greater than 0.90 and less than 1.00	Very long traffic delay
F	greater than 1.00	Even longer traffic delays

Source: *Highway Capacity Manual, 2000,* page 10-15

One of the primary goals of the study, as stated in Chapter 1, was to identify the impact to regional roadways that result from airport traffic. Looking at the traffic contribution each airport has on the roadway system we can calculate the aviation-related traffic on the roadways by correlating traffic with employment. This method was described in Chapter 3. Table 4-3 shows the individual roadway segments and the percentage of aviation-related traffic on each. Only roadways where the aviation-related traffic was calculated at more than 5-percent of the total traffic on the roadway segment and where a v/c ratio for that segment was 0.80 or greater (LOS D) are shown in the table. Only 13 airports were found to create traffic levels that met both criteria. (NOTE: the percentage of aviation-related traffic on any given roadway segment is dependant on the overall number of vehicles traveling on that same segment. An airport contribution of five percent was chosen because it was felt that this percentage represented the point where aviation related traffic began to be a significant contribution to overall traffic volumes, therefore contributing to roadway congestion).

The aviation-related traffic volumes shown in Table 4-3 represent all traffic on the referenced road segment from all regional airports cumulatively. For this study airport contribution to roadway traffic was grouped into three ranges: 5 to 10 percent, 10 to 20 percent, and above 20 percent. It should be noted that

although a roadway segment may have more than a 5 percent aviation-related traffic component, and is located near an airport, the traffic may not all be attributable to that one airport. The ranges are cumulative for traffic to and from all regional airports. An example of this can be seen in the Boeing Field area where aviation-related traffic includes not only airport trips but also trips to Boeing's manufacturing and operations centers. Because Boeing Field is only six miles from Sea-Tac Airport some of the total aviation-related traffic on the roadways surrounding Boeing Field is traveling to/from Sea-Tac. Table 4-3 shows the aviation-related traffic for all three study years (2001, 2010 and 2030). Information on the table also shows whether or not the segment identified has been included in the region's Transportation Plan *Destination 2030 Appendix 9* (MTP Project List). Projects on the MTP Project List have been identified by local (city, county, state, and regional) agencies and integrated into the Regional Transportation Plan.

Table 4-3 Anticipated Aviation Related Traffic on Affected Roadways

		2001		2010		2030		
Nearest Airport	Roadway Segment	Aviation - related traffic*	v/c ratio[1]	Aviation - related traffic*	v/c ratio[1]	Aviation - related traffic*	v/c ratio[1]	MTP Project[2]
Arlington	SR 530 from I-5 to 211th Pl NE	5 - 10%	--	5 - 10%	--	5 - 10%	0.94	YES
Arlington	SR 531 from Smokey Point Blvd to 51st Ave S	10 - 20%	--	10 - 20%	--	10 - 20%	1.00	YES
Auburn	28th Ave S from S 360th St to S 349th St	--	--	--	--	5 - 10%	0.95	--
Auburn	8th St E from SR 161 to 122nd Ave E	--	--	--	--	5 - 10%	0.83	--
Auburn	8th St E from SR 167 to 137th Ave E	--	--	--	--	5 - 10%	1.41	YES
Auburn	9th St E/12th St E/210th Ave E from 182nd Ave E to 40th St E	--	--	--	--	5 - 10%	0.87-1.00	--
Auburn	Auburn Enumclaw Rd from SR 410 St to SE 368th Pl	5 - 10%	--	--	--	10 - 20%	1.00	--
Auburn	Auburn Way S from 32nd St SE to SR 18	0 - 10%	0.95	0 - 10%	0.93	5 - 10%	0.81-0.90	--
Auburn	Auburn Way S from SR 18 to 3rd St NE	5 - 10%	0.90	5 - 10%	0.80-0.94	5 - 10%	0.97	--
Auburn	B St NW from 15th St NW to 37th St NW	--	--	--	--	5 - 10%	0.96-1.10	--
Auburn	C St SE from Ellingson Rd to 15th St NW	--	0.88-0.98	5 - 10%	0.97	5 - 10%	1.01-1.25	--
Auburn	E Valley Hwy (A St or Auburn Ave) from 24th St E to Ellingson Rd	--	0.90-0.99	5 - 10%	1.08	5 - 10%	1.06-1.30	--
Auburn	E Valley Hwy (A St or Auburn Ave) from Ellingson Rd to SR 18	--	0.88-0.90	5 - 10%	1.01	5 - 10%	0.84-1.25	--
Auburn	E Valley Hwy (A St or Auburn Ave) from SR 18 to S 277th St	--	1.23	5 - 20%	0.80-0.98	5 - 10%	1.05-1.20	--
Auburn	Harvey Rd from 8th St NE to Auburn Way N	5 - 10%	0.96	10 - 20%	1.00	10 - 20%	0.96-1.08	--
Auburn	I-5 from SR 16 to SR 167	5 - 10%	1.06-1.15	5 - 10%	0.82-1.03	5 - 10%	1.03-1.22	YES
Auburn	I-5 from SR 167 to SR 18	5 - 10%	1.19-1.25	5 - 10%	0.82-1.03	5 - 10%	1.48	YES
Auburn	Old Military Rd from S 326th St to 304th St S	--	--	--	--	5 - 10%	1.51	YES
Auburn	Old Military Rd from S 360th St to S 340th St	--	--	5 - 10%	--	5 - 10%	0.83	--
Auburn	R St SE/Kersey Way from 21st St SE to 53rd St SE	--	1.05	--	0.94-1.00	5 - 10%	1.05-1.27	--
Auburn	S 277th St from SR 167 to G St NE	5 - 20%	--	5 - 20%	0.89-1.36	5 - 20%	0.94-1.60	YES
Auburn	S 277th St from W Valley Hwy to SR 167	5 - 10%	0.96	--	1.47	5 - 10%	1.78	YES
Auburn	S 348th St from SR 161 to I-5	--	1.06	5 - 10%	1.27	5 - 10%	1.19	--
Auburn	S 359th St from 28th Ave S to S Weyerhaeuser Way	--	--	--	--	5 - 10%	0.90	--
Auburn	S Weyerhaeuser Way from S 349th St to SR 18	--	--	--	--	5 - 10%	0.90	--
Auburn	SR 161/Enchanted Parkway from I-5 to 36th St E	--	1.14	5 - 10%	1.17	5 - 10%	1.31-2.10	YES
Auburn	SR 167 from Jovita Blvd E/8th St E to SR 18	--	1.24	--	1.13-1.33	5 - 10%	1.29-1.39	YES
Auburn	SR 167 from Spencer to Jovita Blvd E/8th St E	--	1.24	--	0.85	5 - 10%	1.27	YES
Auburn	SR 167 from SR 18 to SR 516	--	1.15-1.40	--	1.20-1.35	5 - 10%	1.31-2.15	YES
Auburn	West Valley Hwy from SR 18 to SR 516	--	0.95-1.01	--	0.98-1.98	5 - 10%	1.18-2.30	YES
Auburn	West Valley Hwy from Jovita Blvd E to SR 18	--	1.24	10 - >20%	0.93-1.15	5 - 10%	0.85-1.37	--
Firstair	U.S. 2 from 179th Ave SE to SR 522		0.85	5 - 10%	0.98	5 - 10%	0.88	YES
Firstair	U.S.2 from SR 203 to Old Owen Rd	10 - 20%	--	>20%	--	>20%	0.86	YES
Firstair	West Main St from 179th Ave SE to Woods Creek Rd	5 - 10%	0.88	--	0.87	5 - 10%	0.82	--
Harvey Field	2nd St from Ave D to Lincoln Ave	5 - 10%	0.88	--	--	--	--	YES
Harvey Field	Airport Way from SR 9 to 2nd St	5 - 10%	0.86	5 - 10%	1.09	5 - 10%	1.24	YES
Harvey Field	Ave D from 2nd St to 5th St	5 - 10%	--	10 - 20%	1.10	10 - 20%	1.20	--
Harvey Field	Marsh Rd from Lowell-Larimer Rd to SR 9	5 - 10%	--	5 - 10%	0.91	--	1.67	YES
Harvey Field	U.S. 2 from I-5 to SR 204	--	1.23	--	1.01-1.37	5 - 10%	0.80	YES
King Co Int'l/Boeing Field	16tth Ave S from S Cloverdale St to Marginal Way S	>20%	0.95	10 - 20%	--	10 - 20%	0.85	YES
King Co Int'l/Boeing Field	East Marginal Way S from 16th Ave S south 7 blocks	10 - 20%	--	10 - 20%	0.82	>20%	0.81	--
King Co Int'l/Boeing Field	East Marginal Way S from 16th Ave S to Carleton Ave S	>20%	--	10 - 20%	--	10 - 20%	0.80	--
King Co Int'l/Boeing Field	MLK Jr Way S from Boeing Access Rd to S Henderson St	5 - 10%	--	5 - 10%	--	5 - 10%	0.85-0.93	--
King Co Int'l/Boeing Field	S Boeing Access Rd from I-5 to 47th Ave S	10 - 20%	0.80	5 - 20%	1.02	10 - 20%	0.86	--
King Co Int'l/Boeing Field	S Boeing Access Rd from SR 599 to I-5	10 - 20%	0.80	10 - 20%		10 - 20%	0.81-0.86	YES (P&R)

Table 4-3 Anticipated Aviation Related Traffic on Affected Roadways (Continued)

		2001		2010		2030		
Nearest Airport	Roadway Segment	Aviation - related traffic*	v/c ratio[1]	Aviation - related traffic*	v/c ratio[1]	Aviation - related traffic*	v/c ratio[1]	MTP Project[2]
King Co Int'l/Boeing Field	S Cloverdale St from SR 509 to SR 99	5 - 10%	--	5 - 10%	0.92	5 - 10%	0.93	--
McChord AFB	SR 507/SR 7 from 176th to SR 512	--	--	--	--	5 - 10%	0.90-0.95	--
Pierce Co/Thun Field	122nd from 152nd St E to 136th St E	10 - 20%	0.82	10 - 20%	0.87	10 - 20%	1.03-1.40	--
Pierce Co/Thun Field	94th Ave E from 152nd St E to SR 512	5 - 20%	0.92-0.96	5 - 20%	--	5 - 20%	0.88-1.46	YES
Pierce Co/Thun Field	Canyon Rd from 192nd to SR 512	--	--	--	--	5 - 10%	1.10-1.84	YES
Pierce Co/Thun Field	Shaw Rd from Old Military Rd to Pioneer Way	5 - 20%	1.02	0 - 10%	0.84-0.86	5 - 20%	1.90-2.12	YES
Pierce Co/Thun Field	SR 161 (Meridian Ave) from 160th St E to SR 512	--	--	5 - 10%	0.83	5 - 20%	0.80-1.10	--
Pierce Co/Thun Field	SR 162 (Old Pioneer) from Calistoga Ave to Bowman/Hilton	--	0.83-1.00	--	1.00	5 - 10%	1.14-2.41	--
Pierce Co/Thun Field	SR 410 from Main St to SR 162	--	--	--	1.14	5 - 10%	1.47	YES
Pierce Co/Thun Field	SR 410 from Old Sumner-Buckley Hwy to 214th Ave E	--	--	--	0.96	5 - 10%	1.06-1.63	YES
Pierce Co/Thun Field	SR 512 from 94th Ave E to SR 167	--	1.00-1.25	--	1.00	5 - 10%	1.14-2.41	YES
Ranger Creek	244th Ave SE from SR 165 to SR 164	--	--	--	--	5 - 10%	0.92-0.95	--
Renton	108th Ave SE from SE 222nd St to SE 176th St	--	0.88-0.90	0 - 10%	0.94-0.98	5 - 20%	1.13-1.34	--
Renton	179th St SE/Carr Rd from Talbot Rd S to 108th Ave SE	--	--	5 - 10%	0.83	10 - 20%	1.15	--
Renton	Benson Rd S from S Puget Dr to Grady Way	5 - 10%	1.00	5 - 10%	0.96	10 - 20%	0.91	--
Renton	Benson Rd S from SE 168th St to S Puget Dr	5 - 10%	0.82	5 - 10%	0.92	5 - 10%	0.89	--
Renton	Bronson Way N from Main Ave S to I-405	10 - 20%	--	5 - 10%	--	10 - 20%	0.82	--
Renton	Grady Way from 68th Ave S to Interurban Ave S/SR 181	--	--	5 - 10%	0.93	5 - 10%	0.96	--
Renton	Grady Way from Interurban Ave S/SR 181 to Oaksdale Rd	5 - 10%	1.00	5 - 10%	1.00	5 - 10%	0.98	--
Renton	Grady Way from SR 167 to Talbot Rd S	5 - 10%	--	5 - 10%	--	5 - 10%	0.98	YES
Renton	I-405 from I-5 south interchange to SR 181	5 - 20%	0.87-0.88	5 - 20%	0.94-0.98	10 - 20%	0.96	YES
Renton	I-405 from I-90 to NE 8th St	0 - 10%	0.92-1.73	5 - 10%	1.04-1.15	10 - 20%	1..03-1.69	YES
Renton	I-405 from NE 44t St to I-90	5 - 10%	1.03-2.05	5 - 10%	1.09-1.28	10 - 20%	1.79-1.31	YES
Renton	I-405 from NE 8th St to SR 520	--	1.02-2.00	--	1.08-1.16	5 - 10%	1.07-2.08	YES
Renton	I-405 from SR 167 to SR 169	5 - 10%	0.87-1.94	5 - 10%	1.01-1.12	10 - 20%	1.06-2.12	YES
Renton	I-405 from SR 169 to SR 900 (NE Park Dr)	5 - 10%	0.97-2.10	5 - 10%	0.96-1.18	10 - 20%	2.09	YES
Renton	I-405 from SR 900 (NE Park Dr) to NE 44th St	5 - 10%	1.09-2.40	5 - 10%	0.99-1.22	10 - 20%	1.20	YES
Renton	NE 4th St from Edmonds Ave NE to Union Ave NE	5 - 10%	0.85	10 - 20%	0.90	10 - 20%	0.95	YES
Renton	NE 4th St from Pelly Ave N to Factory Pl N	0 - 10%	--	5 - 10%	--	10 - 20%	0.99	--
Renton	Rainier Ave N from Airport Way to 68th Ave S	5 - 10%	--	5 - 10%	--	5 - 10%	0.81-0.91	--
Renton	S 43rd St from SR 167 to Talbot Rd S	--	1.31	5 - 10%	1.07	5 - 10%	1.12	YES
Renton	SE 176th St/Petrovitsky Rd from 108th Ave SE-196th Ave SE	0 - 10%	<0.80-1.10	0 - 10%	0.90-1.17	5 - 10%	0.85-1.19	YES
Renton	SE 208th St from 108th Ave SE to 114th Ave SE	--	1.11	--	1.09	5 - 10%	1.36	YES
Renton	SE 208th St from 96th Ave SE to 108th Ave SE	--	1.08	--	1.35	5 - 10%	1.15	YES
Renton	SR 167 from S 43rd St to I-405	--	0.87-1.35	--	1.11-1.30	5 - 10%	1.13-1.93	YES
Renton	SR 169 (Maple Valley Hwy) from I-405 to 149th Ave SE	5 - 20%	<0.80-0.98	0 - 10%	<0.80-1.02	5 - 10%	0.87-1.01	YES
Renton	SR 181 from Strander Blvd to I-405	--	<0.80-0.82	--	<0.80-0.81	5 - 10%	0.88-1.31	YES
Sea-Tac International	1st Ave S from SW 152nd St to S 160th St	5 - 10%	--	5 - 10%	--	5 - 10%	0.85	--
Sea-Tac International	Air Cargo Rd from S 170th Street to SR 518	>20%	--	>20%	0.91	>20%	1.10	--
Sea-Tac International	Ambaum Blvd SW from SW 128th St to 16th St SW	5 - 10%	--	5 - 10%	--	10 - 20%	0.89	YES
Sea-Tac International	Des Moines Mem Dr S from S 200th St to S 216th St	5 - 10%	--	--	0.84-1.02	5 - 10%	0.82-0.92	--
Sea-Tac International	Des Moines Mem Dr S from SR 509/S 188th St to S 200th St	0 - >20%	--	--	0.88	5 - 20%	0.82-0.90	YES
Sea-Tac International	I-405 from SR 181 to SR 167	5 - 10%	1.00-1.65	5 - 10%	1.04-1.17	10 - 20%	0.99	YES
Sea-Tac International	I-5 from SR 18 to 216th St S	5 - 10%	0.82-1.16	5 - 10%	0.91-1.64	5 - 10%	1.30-1.82	YES
Sea-Tac International	Military Rd S from 204th St S to S 272nd St	--	1.11	--	0.80-1.07	5 - 10%	1.35	--
Sea-Tac International	Military Rd S from S 176th St to S 164th St	>20%	--	10 - 20%	--	10 - 20%	0.82	--
Sea-Tac International	Military Rd S from S 188th St to S 176th St	10 - 20%	--	10 - 20%	0.93	>20%	1.04	--

Table 4-3 Anticipated Aviation Related Traffic on Affected Roadways (Continued)

		2001		2010		2030		
Nearest Airport	Roadway Segment	Aviation - related traffic*	v/c ratio[1]	Aviation - related traffic*	v/c ratio[1]	Aviation - related traffic*	v/c ratio[1]	MTP Project[2]
Sea-Tac International	Military Rd S from S 216th St to S 200th St	>20%	0.86	--	--	--	--	--
Sea-Tac International	Military Rd S from S 272nd St to SR 516	0 - 20%	0.96-1.13	0 - 20%	0.80-0.84	5 - 10%	0.90-1.05	--
Sea-Tac International	Military Rd S from SR 516 to S 216th St	>20%	0.95	--	0.80-0.90	10 - 20%	1.26	--
Sea-Tac International	S 154th St from SR 99 to I-5	>20%	--	>20%	--	>20%	0.82	YES (P&R)
Sea-Tac International	S 170th St from Air Cargo Rd N to SR 99	10 - 20%	--	5 - 10%	0.83	5 - 10%	0.80	YES
Sea-Tac International	S 178th St from Military Rd S to Southcenter Pkwy	10 - 20%	0.89	10 - 20%	0.88	10 - 20%	0.80	--
Sea-Tac International	S 188th St from Southcenter Pkwy to Andover Park W	5 - 10%	0.89	5 - 10%	--	5 - 10%	0.87	--
Sea-Tac International	S 212th St from Russell Rd to SR 181	10 - 20%	0.82	10 - 20%	0.92	10 - >20%	0.80-1.20	YES
Sea-Tac International	S 212th St from SR 181 to SR 167	0 - 10%	--	0 - 10%	0.80-0.91	5 - 20%	0.86-1.05	YES
Sea-Tac International	Southcenter Blvd SW from I-5 to SR 181	5 - 10%	0.98	5 - 10%	1.03	5 - 10%	1.24	--
Sea-Tac International	SR 516 from I-5 to Military Rd	--	1.01	10 - 20%	0.81	10 - 20%	1.25	YES
Sea-Tac International	SR 516 from Military Rd to SR 167	5 - 10%	0.89-1.15	5 - 20%	1.18-1.25	10 - 20%	1.33-1.55	YES
Sea-Tac International	SR 516 from SR 99 to I-5	10 - 20%	1.01	5 - 10%	0.85	10 - 20%	0.80	YES
Sea-Tac International	SR 518 from I-5 to SR 99	>20%	0.86-1.02	>20%	0.86-1.01	>20%	0.86-1.01	YES
Sea-Tac International	SR 518 from SR 99 to S 154th St	>20%	1.07-1.43	>20%	0.93-1.13	>20%	0.96-1.54	YES
Sea-Tac International	SR 99 from Dash Point Rd to SR 516	5 - 20%	0.80-1.16	0 - 10%	0.83-1.10	5 - 20%	0.83-1.30	YES
Sea-Tac International	SR 99 from S 160th St to SR 518	10 - 20%	0.81	5 - 10%	0.86	>20%	1.04	YES
Sea-Tac International	SR 99 from S 188th St to S 170th St	5 - >20%	0.80-1.03	10 - >20%	0.92-0.93	5 - >20%	1.00-1.15	YES
Sea-Tac International	SR 99 from S 216th St to S 188th St	>20%	1.00-1.21	10 - 20%	0.88-0.95	>20%	1.03-1.16	YES
Sea-Tac International	SR 99 from SR 516 to S 216th St	>20%	1.00-1.21	10 - 20%	0.95-1.01	10 - 20%	0.88	YES
Sea-Tac International	SR 99 from SR 518 to SR 599	5 - 20%	--	10 - 20%	0.89-1.00	10 - >20%	0.91-1.05	YES
Sea-Tac International	SW 116th St from 28th Ave SW to 16th Ave SW	5 - 10%	--	10 - 20%	--	10 - 20%	0.82	--
Sea-Tac International	SW 148th St/SR 518 from 1st Ave S to SR 509	10 - 20%	--	10 - 20%	--	10 - 20%	0.86	--
Sea-Tac International	SW 148th St/SR 518 from SR 509 to Des Moines Mem Pkwy	10 - 20%	0.96	>20%	0.97	>20%	1.01	--
Sea-Tac International	SW 320th St from SR 99 to I-5	--	0.90	5 - 10%	0.82	5 - 10%	0.90	YES
Sea-Tac International	SW 328th St from 21st Ave SW to SR 99	--	0.86	--	0.82-1.01	5 - 10%	0.86-0.99	--
Sea-Tac International	Tukwila International Blvd from SR 599 to S Boeing Access Rd	10 - 20%	0.86-0.90	5 - 10%	0.84-1.46	5 - 10%	0.92	YES
Snohomish Co/Paine Field	100th St SE from 19th Ave SE to 27th Ave SE	10 - 20%	0.83	5 - 10%	0.82	5 - 10%	0.81	YES
Snohomish Co/Paine Field	112th St SW from Beverly Park Rd to Airport Rd	>20%	--	>20%	--	>20%	--	YES
Snohomish Co/Paine Field	19th Ave SE from 100th St SE to I-5	10 - 20%	--	0 - 10%	--	10 - 20%	0.84	--
Snohomish Co/Paine Field	41st St SE from Colby Ave to I-5	10 - 20%	0.96		1.00	5 - 10%	1.27	--
Snohomish Co/Paine Field	52nd St SE from Evergreen Way to I-5	5 - 10%	--	5 - 10%	--	5 - 10%	0.96	--
Snohomish Co/Paine Field	52nd Ave W from 148th St SW to Beverly Park Rd	10 - 20%	--	5 - 10%	--	5 - 10%	0.88-1.08	YES
Snohomish Co/Paine Field	Beverly Park Rd from 112th St SW to Airport Rd	5 - 10%	--	10 - 20%	0.96	5 - 10%	0.98	YES
Snohomish Co/Paine Field	Beverly Park Rd from 52nd Ave W to SR 525	10 - 20%	--	10 - 20%	--	10 - 20%	0.92-0.94	--
Snohomish Co/Paine Field	Beverly Park Rd from SR 525 to 112th St SW	>20%	--	>20%	0.90-1.26	10 - 20%	1.62-1.93	YES
Snohomish Co/Paine Field	Evergreen Way from Madison St to 52nd St SE	5 - 10%	--	5 - 10%	--	5 - 10%	0.91	--
Snohomish Co/Paine Field	Evergreen Way from SR 526 to 75th St SE	5 - 10%	--	5 - 10%	--	5 - 10%	0.99	--
Snohomish Co/Paine Field	Holly Drive from 100th St SW to 4th Ave W	>20%	--	>20%	--	10 - 20%	0.85	YES
Snohomish Co/Paine Field	Merrill Creek Parkway from Seaway Blvd to Glenwood Ave	>20%	--	>20%	0.95	>20%	0.89-1.09	--
Snohomish Co/Paine Field	Mukilteo Blvd SW from Dogwood Drive to Evergreen Way	>20%	--	>20%	--	>20%	--	--
Snohomish Co/Paine Field	Mukilteo Speedway from 84th St SW to 76th St SW	10 - 20%	--	10 - 20%	0.89	10 - 20%	0.95-1.18	--
Snohomish Co/Paine Field	Rucker Ave from 41st St SE to Pacific Ave	5 - 10%	--	5 - 10%	--	5 - 10%	0.91	--
Snohomish Co/Paine Field	Seaway Blvd/20th Ave W from 75th St SW to Merrill Creek Pkwy	>20%	--	>20%	--	>20%	0.83	--
Snohomish Co/Paine Field	Seaway Blvd/20th Ave W from S 26th St to 75th St SW	>20%	--	>20%	--	>20%	0.83	--
Snohomish Co/Paine Field	SR 525 from 132nd St SW to Beverly Park Rd	5 - 10%	1.52	5 - 10%	1.01	5 - 10%	1.26	YES
Snohomish Co/Paine Field	SR 525 from Alderwood Mall Pkwy to SR 99	10 - 20%	--	10 - 20%	2.50	10 - 20%	1.41	YES

Table 4-3 Anticipated Aviation Related Traffic on Affected Roadways (Continued)

		2001		2010		2030		
Nearest Airport	Roadway Segment	Aviation - related traffic*	v/c ratio[1]	Aviation - related traffic*	v/c ratio[1]	Aviation - related traffic*	v/c ratio[1]	MTP Project[2]
Snohomish Co/Paine Field	SR 525 from Beverly Park Rd to Harbour Pointe Blvd	10 - 20%	--	10 - 20%	0.80	10 - 20%	1.06	YES
Snohomish Co/Paine Field	SR 525 from Chennault Beach Rd to Harbour Pointe Blvd	10 - 20%	--	>20%	--	10 - 20%	0.90	YES
Snohomish Co/Paine Field	SR 525 from Harbour Pointe Blvd to Chennault Beach Rd	10 - 20%	--	10 - 20%	0.80	10 - 20%	0.82	YES
Snohomish Co/Paine Field	SR 525 from Harbour Pointe Blvd to Paine Field Blvd	10 - 20%	--	>20%	0.85	10 - 20%	1.01	YES
Snohomish Co/Paine Field	SR 525 from I-5 to Alderwood Mall Pkwy	10 - 20%	1.19-1.29	10 - 20%	1.79-2.25	10 - 20%	2.50-2.87	YES
Snohomish Co/Paine Field	SR 526 from Seaway Blvd to SR 99	>20%	--	>20%	0.86	>20%	0.99	--
Snohomish Co/Paine Field	SR 526 from SR 99 to I-5	10 - 20%	--	>20%	0.84	>20%	0.93	--
Snohomish Co/Paine Field	SR 99 from 148th St SW to SR 525	5 - 10%	1.13	5 - 10%	1.00	5 - 10%	1.28	--
Snohomish Co/Paine Field	SR 99 from 168th St SW to 148th St SW	5 - 10%	0.85	5 - 10%	0.85-0.99	--	1.18-1.45	YES
Snohomish Co/Paine Field	SR 99 from 188th St SW to 168th St SW	--	0.86-0.94	5 - 10%	0.89-0.99	--	0.91-1.33	YES
Snohomish Co/Paine Field	SR 99 from Manor Way to Airport Rd	--	0.81	--	1.00	5 - 10%	1.02-1.08	YES
Snohomish Co/Paine Field	SR 99 from SR 525 to Manor Way	--	--	--	0.89	5 - 10%	0.91-1.07	YES
Snohomish Co/Paine Field	Mukilteo Blvd SW from Glenwood Ave to Dogwood Dr	>20%	--	>20%	--	>20%	0.82	--
Spanaway	SR 7 (Mountain Hwy) from 204th St E to 260th St E	5 - 10%	--	5 - 10%	--	5 - 10%	0.83	--
Tacoma Narrows	SR 16 at Tacoma Narrows Bridge	--	--	5 - 10%	1.13	5 - 10%	1.49	YES
Tacoma Narrows	SR 16 from Tacoma Narrows Bridge to I-5	5 - 10%	0.86-1.06	--	0.83-1.02	5 - 20%	0.95-1.05	YES
Tacoma Narrows	SR 16 from Tacoma Narrows Bridge to Rosedale	0 - 10%	0.89-1.07	5 - 10%	0.82	10 - 20%	0.83-1.13	YES
Tacoma Narrows	SR 99 from Enchanted Pkwy to SW 320th St	--	--	--	--	5 - 10%	0.81-1.01	YES
Tacoma Narrows	SR 99 from SW 373rd St to SW 348th St	5 - 10%	0.84	5 - 10%	0.98	5 - 10%	0.80-0.82	--
Tacoma Narrows	Stone Drive from SR 16 to 34th Ave NE (Ft Fosdick Dr NW)	--	--	--	--	5 - 10%	0.94	YES

Source: PSRC 2004, URS 2004
Note: percentage of aviation-related traffic is a function of the amount of traffic on the roadway.
[1] v/c ratio = volume to capacity ratio based on capacity of roadway. See Table 4-2 for v/c ratio ranges in relation to Level of Service of the roadway.
[2] MTP Project = project from the Metropolitan Transportation Plan (*Destination 2030*, Appendix 9).
[3] Link Light Rail Project.

As shown in the preceding tables, the areas where the largest volumes of aviation-related traffic resulting in LOS greater than or equal to LOS D are found around the commercial (Sea-Tac) and Major GA Airports (as defined in Chapter 2).

4.2 ACCESS NEEDS AROUND AIRPORTS

The primary goal of this project was to determine which roadways were most impacted by aviation-related traffic and the extent of congestion on those roadways, in order to identify where roadway improvement projects were needed to improve airport access.

Table 4-3 shows the traffic levels as generated by the PSRC regional travel demand computer model. The table identifies the capacity of the roadway segment (LOS or volume to capacity ratio) and identifies congested areas (along with the aviation-related contribution to the traffic) around the region that are located near regional airports. The traffic model further identified the share of traffic on the roadways that was associated with airport and aviation related activity. All information was analyzed for the current conditions (2001) as well as for the years 2010 and 2030.

It should be noted that the current traffic generation model is calibrated on a regional basis and the traffic assigned to individual streets may vary greatly from that recorded by actual traffic counts. Therefore, specific roadways must be evaluated at a project level. The following provides a glance at examples from some of the regional airports:

Arlington Municipal Airport's main access road (SR 531) is anticipated to increase in congestion to the point where it is classified as LOS D by 2030. As this service deterioration occurs, airport related traffic will constitute between 5 and 20 percent of total traffic. Near the I-5 interchange on SR 531 the v/c ratio

Arlington Municipal Airport's main access road (SR 531) is anticipated to increase in congestion to the point where it is classified as LOS D by 2030. As this service deterioration occurs, airport related traffic will constitute between 5 and 20 percent of total traffic. Near the I-5 interchange on SR 531 the v/c ratio increases to 1.00 (LOS E) in 2030. Currently there is a project that has been approved for right-of-way acquisition along this corridor that will greatly affect Arlington Municipal Airport access. There are other projects in the MTP in the vicinity of Arlington Municipal Airport that will also help maintain the capacity of the access system to the airport (See Chapter 2 for list of projects at each airport).

Auburn Municipal Airport shows a great number of roadway segments in the area that are operating at levels of service D or worse in the year 2001, 2010 and 2030. Most of the roadways operating at less than LOS D are north-south streets. From the model output, it may be extrapolated that the congestion and aviation-related traffic in the area around the airport can be attributed to pass-through traffic (traffic traveling in and around Auburn Municipal Airport on its way to another destination). The east-west streets in and around the airport are carrying significant aviation-related traffic (above 5 percent) but are not currently nor are they projected to, operate at v/c ratios above 0.80. This indicates that Auburn Municipal Airport is somewhat of a destination center (resulting from travel to/from the airport) with some pass-through traffic (contributions from other regional airports). Improving the north-south street system around the Auburn Municipal Airport would not only aid in reducing the congestion in the area but would also provide additional capacity to the street system used by individuals traveling to other regional airports. There are 11 projects in the MTP located along these roadways in the vicinity of Auburn Municipal Airport planned for completion prior to 2030.

Firstair Field has three roadway segments that have been identified as operating at LOS D or worse with aviation-related traffic above 5 percent of the total roadway volume. These three roadways are found within the city limits of Monroe and all connect with U.S. 2 and SR 203 or SR 522. The v/c ratio for these roadway segments are all below 0.90 (LOS E) for the year 2030. The MTP has identified projects on U.S. 2 from 179th Ave SE to SR 522 and from SR 203 to Old Owen Road that would improve the identified deficiencies and consequently, improve airport access.

Harvey Field's access is located off Airport Way just south of the City of Snohomish. Aviation-related traffic on Airport Way continues to be calculated at 5 to 10 percent of total volume through 2030 with the v/c ratio increasing from 0.85 (LOS D) to 1.24 (LOS F) between 2001 and 2030. Second Street, Marsh Road, and SR 9 are all operating at levels of service D, E or F (v/c ratios above 0.80). Aviation-related traffic measuring more than 5 percent of the roadway's total is identified for Marsh Road and 2nd Street during both the 2001 and 2010 timeframes. In the 2030 timeframe both of these roadway segments are anticipated to have their LOS deteriorate to level F. This drop in service is not the result of airport related traffic; in fact, during this time frame the percentage of aviation-related traffic on the roadway drops to below 5 percent. Airport Way continues to show an increase in the v/c ratio and airport traffic will contribute 5 to 10 percent of the total roadway traffic from 2001 to 2030. SR 9 is located in the vicinity of the airport and can, at times, be congested. However, the airport's contribution to this roadway has been estimated to be less than 5 percent.

King County International Airport/Boeing Field's surrounding roadway system is operating at LOS C or better with the exception of the I-5, SR 509, and SR 99 corridors. In the year 2030, 16th Avenue South drops to LOS E and east Marginal Way drops to LOS E south of the 16th Avenue South Bridge. While the area surrounding Boeing Field carries a significant amount of aviation-related traffic, for the most part there is sufficient capacity to handle the anticipated load resulting in LOS C or better on the surrounding roadway system. Improvements to I-5, SR 509, and/or SR 99 are planned to address congestion along those roadways.

McChord AFB has one deficient roadway segment in its vicinity (SR 507/SR 7 from 176th to SR 512). This segment registers a LOS of E and a v/c ratio of 0.95 during the 2030 timeframe. Aviation-related traffic on this road is at 5 to 10 percent by this time. In the previous timeframes (2001 and 2010), aviation-related traffic was estimated at below 5 percent, with intermittent segments reaching a LOS of D

and having a v/c ratio of above 0.80. The Cross Base Highway Project (SR 704) will build a new 6-mile-long east-west arterial linking I-5 and SR 7.

Pierce County/Thun Field's main access is directly off of SR 161 (Meridian Avenue). A majority of roadway segments that meet both v/c ratio and aviation-related traffic criteria are north-south roadways indicating that there is significant pass-through traffic.

Ranger Creek Airport. Because of the size of the Ranger Creek Airport and the fact that operations are limited to June 1 through October 1, we believe the aviation-related traffic mix for this airport is either pass-through traffic traveling to another airport or associated with the SIC codes attributable to aviation-related traffic (mainly restaurants and hotels/motels). Therefore no analysis is conducted.

Renton Municipal Airport has a long list of roadway segments that meet both the v/c ratio and 5 percent aviation-related traffic criteria. Most of these segments are located on major access roadways, suggesting that some of this traffic may be a pass-through on its way to another regional airport. The predominance of roadways around the airport register more than 5 percent of their traffic as aviation-related but most do not meet the v/c ratio criteria until at least the 2030 timeframe. The roadways meeting both criteria include Grady Way, I-405, Martin Luther King Jr. Boulevard, SR 167, and Maple Valley.

Sea-Tac International Airport, like the Major GA airports (e.g., Boeing, Renton, Auburn, Paine, etc.), has large concentrations of aviation-related traffic on the surrounding street system but the majority of the roadway segments that meet the LOS criteria as outlined in Chapter 2 are within the state roadway system (e.g., SR 99, I-5, SR 518, SR 509). The one exception is the northern portion of Air Cargo Road that is anticipated to operate at LOS E in 2010 and F in 2030. State Routes with planned improvements in the area include: the SR 509/South Airport Access project extension that has environmental clearance and is currently in the right-of-way acquisition process; the first four improvement phases on SR 99/International Boulevard have been built with the remaining five phases in design or construction; the Port of Seattle and WSDOT are working together on potential improvements to the eastbound lanes of SR 518 between I-5 and the airport expressway; and improvements to I-5 associated with the SR 509 connection extension. In addition, the Port and WSDOT are working on improvements to the SR 509/SR 518 interchange and the SR 518/SR 99 interchange.

Snohomish County Airport/Paine Field has most of the surrounding larger street system accommodating large amounts of aviation-related traffic with very few segments operating below LOS D even in the 2030 timeframe. The majority of the roadway segments operating below LOS D are located in the I-5 and SR 99 corridors, as well as intermittent segments of the SR 525 and SR 526 corridors. Direct access points to the airport (e.g., 100th Street SE, 112th Street SE, Casino Drive and Paine Field Boulevard) continue to operate with aviation-related traffic above 20 percent but all with v/c ratios of less than 0.84, with the exception of Beverly Park Drive which carries above 20 percent aviation-related traffic in the 2001 and 2030 timeframes and 10 to 20 percent in the 2010 timeframe. Beverly Park Road operates with a v/c ratio above 1.25 (LOS F) for both the 2010 and 2030 timeframes. Recent improvements to Airport Road, SR 525 and the new Paine Field Boulevard have significantly improved access to the airport area. These improvements are not reflected in the analysis shown in Table 4-3 since that data reflected 2001 conditions before these improvements were completed. The analysis of access needs around Paine Filed will be updated by PSRC in 2005-2006 to incorporate recently completed projects.

Spanaway Airport has one roadway segment that meets both criteria as outlined in Chapter 4 of LOS equal to or worse then LOS D, and aviation-related traffic of at least 5%. This is located on SR 7. The airport has only 19,000 operations per year, so the traffic impacts shown are likely the result of an anomaly with the SIC codes that results in a calculated aviation-related traffic of above 5 percent. The Cross Base Highway Project (SR 704) would likely improve access to the airport with this east-west arterial linking I-5 and SR 7.

Tacoma Narrows Airport has one roadway segment that meets both rating criteria (LOS and aviation-related traffic) that is not on the state route system. The segment of Stone Drive from SR 16 to Ft.

Fosdick Drive NW provides direct access to the airport, has 5 to 10 percent of its total traffic generated by aviation-related sources and operates at a v/c ratio of above 0.90 for all three study years. It should be noted that the segment west of Jahn Avenue NW operates at v/c ratio less than 0.80 in 2030. The Tacoma Narrows Bridge Project that is currently under construction will improve traffic flow in the area.

Proposed Airport Related Improvement Projects

As stated above, Table 4-3 is the basis for determining where the most significant aviation-related traffic is traveling on existing streets, and whether or not the roadway segment in question is slated to be improved are congested and whether improvements are included in the MTP. It should be noted that the entire length of the roadway segment as described in Table 4-3 does not have to be slated for improvement, only a portion of that segment needs to be in *Destination 2030* to acquire a "YES" in the table. For project termini of *Destination 2030* projects, see the specific airport characteristics and planned projects list for each airport in Chapter 2.

Chapter 5: Airport Access Related Roadway Improvements

5.1 INTRODUCTION

The material presented in Chapter 4 of this report showed a full listing of roadway improvement needs to address access to the regional airports through the year 2030. This list included all roadway sections where the Puget Sound Regional Council's (PSRC) traffic model determined that airport-related traffic constituted more than 5 percent of the daily traffic on the roadway segment. It also identified segments where the traffic volume to roadway capacity ratio was least 0.80, classifying it as Level of Service D, E, or F.

In this chapter, the comprehensive list of potential roadway needs shown in Table 4-3 was further refined to reflect only those needs deemed to be essential to providing continued access to the airports. To create this list, the original criteria for identifying potential needs was revised and sorted to reflect needs related to the individual airports. To further simplify the list of needs, several adjustments to the information were made. Those adjustments are:

- The roadway segments are listed by the future timeframe (2010, 2030) in which the need for roadway improvements is identified.
- The tables display only those roadway segments where airport-related traffic is greater than 5% of total daily traffic.
- The tables display only those roadway segments forecast to operate at service levels D, E, or F. Level of Service D is recognized as the point where traffic congestion dips below average and delays begin to be classified as long. Table 4-2 shows the Level of Service definitions used in this determination and is reproduced here as Table 5-1;

Table 5-1 Level of Service Standards for Roadways

Level of Service	v/c ratio	Expected Delay
A	less than 0.60	Little or no delay
B	greater than 0.60 but less than 0.70	Short traffic delay
C	greater than 0.70 and less than 0.80	Average traffic delay
D	greater than 0.80 and less than 0.90	Long traffic delay
E	greater than 0.90 and less than 1.00	Very long traffic delay
F	greater than 1.00	Even longer traffic delays

Source: *Highway Capacity Manual, 2000*, page 10-15

5.2 SUMMARY OF REGIONAL AIRPORT GROUND ACCESS NEEDS

The detailed results of our airport access analysis is contained in the following Section 5.3 (Roadway Segments Where Improvements Are Needed). Section 5.3 lists all roadway segments meeting our analysis criteria and displays these roadways on maps. This section is a summary of the regional airport access improvement needs detailed in Section 5.3, and is focused on the Table 5-2. The Table 5-2 lists roadway improvement needs and planned projects for the region's largest eleven airports. For each airport the table displays the number of roadway segments meeting the analysis criteria. The table then shows the number of roadway segments which have improvement projects currently contained in the Metropolitan Transportation Plan (*Destination 2030*). In addition the table shows the number of projects on these roadways included in the current Regional Transportation Investment District (RTID) project list as well as the number of projects in the Washington State Legislature's 2003 Nickel Funding Package (Nickel and RTID projects are also included in the MTP, so the total numbers of projects displayed in the table may not be additive). Finally, the table lists the number of roadway segments meeting the criteria where no projects are currently planned. This number is important because it represents improvement needs identified in our analysis that are not recognized in current plans.

Table 5-2 Summary of Roadway Improvement Needs and Planned Projects

Airport	Number of Roadway Segments Meeting Criteria*	Roadway Segments Meeting Criteria with Projects in the MTP	Roadway Segments Meeting Criteria with Projects in the RTID	Roadway Segments Meeting Criteria with Projects in WSDOT Nickel Projects	Roadway Segments Meeting Criteria with No Projects
Year 2010 Analysis					
Arlington Municipal	0	0	0	0	0
Auburn Municipal	13	8	1	2	5
Firstair Field	1	1	0	0	0
Harvey Field	3	2	1	0	1
King County/Boeing Field	3	1	0	0	2
McChord AFB	0	0	0	0	0
Pierce County/Thun Field	3	2	0	0	1
Renton Municipal/Will Rogers	16	10	6	0	6
Snohomish County/Paine Field	15	10	1	0	5
Sea-Tac International	24	13	2	3	11
Tacoma Narrows	2	2	0	1	0
Year 2030 Analysis					
Arlington Municipal	2	2	0	0	0
Auburn Municipal	29	13	4	5	15
Firstair Field	3	2	0	0	1
Harvey Field	4	3	3	0	1
King County/Boeing Field	7	2	0	0	5
McChord AFB	1	0	0	0	1
Pierce County/Thun Field	9	8	2	2	1
Renton Municipal/Will Rogers	25	15	7	0	10
Snohomish County/Paine Field	31	14	1	0	17
Sea-Tac International	36	16	2	3	20
Tacoma Narrows	6	5	0	2	1

Source: *Puget Sound Regional Council, 2005*

*Criteria: Airport traffic contribution is greater than 5% of total daily traffic AND roadway is operating at Level of Service "D", "E", or "F".

This analysis of regional airport ground access needs focused on the region's largest airports and the most heavily used roadways serving those airports. As such, the improvements identified in our analysis largely fall on MTS roadways. However, there may be roadways identified here that are not on the MTS. In these cases, improvement needs will be transmitted to the appropriate local agency for further analysis and potential incorporation into their local transportation plans. Where access needs identified here are located on Metropolitan Transportation System (MTS) facilities and no projects are planned, PSRC will likely pursue addressing these needs in future updates to *Destination 2030* (see Chapter 6 for more information on implementing airport ground access projects).

In relative terms, our analysis shows the airports with the most roadways needing improvements are Auburn, Snohomish County/Paine Field, Renton, and Sea-Tac. Auburn Municipal Airport has 13 roadway segments which meet our "needs" criteria in 2010, and 29 segments by the year 2030. Of the 13 segments in 2010, eight already have MTP projects planned. Three of these are also included on either the current RTID project list or are funded by the Nickel program. This leaves five roadway segments with needs but with no currently planned projects in *Destination 2030*. In the year 2030 the number of planned improvements increases to 29, and the number of segments with needs but no planned projects increases to 15. Roadways with improvement needs and no projects planned include East Valley Highway, Auburn Way, Harvey Road, R Street SE, and B Street NW.

King County Airport/Boeing Field has three roadways in need of improvements in 2010 and seven in the year 2030. On these roadway segments, only two do not have projects planned in 2010, and in the year 2030 there are five roadways out of seven which are not planned for improvements. These include East Marginal Way, MLK Way, S. Boeing Access Road, and Cloverdale Street.

Our analysis for Renton Municipal Airport shows 16 roadway segments need improvements by the year 2010. Of these, ten have planned projects in the MTP, and six RTID projects (which are also in the MTP) would address access needs. This leaves six segments with needs not identified in current transportation plans. In the year 2030 Renton's access improvement needs increases to 25 roadway segments, with 15 having MTP projects and seven with RTID projects. In 2030 there are ten segments with unmet needs. These include sections of Grady Way, Benson Road, Rainier Avenue North, and N. 4th Street.

At Snohomish County Airport/Paine Field much work has been done to address current airport access needs, including significant roadway improvements addressing access needs to and from the airport itself as well as the adjoining Boeing Everett Plant facilities. Snohomish County, in cooperation with WSDOT, the Boeing Company, and the cities of Everett and Mukilteo, has completed numerous major roadway improvement projects in recent years including: Airport Road widening and HOV improvements, the new SR 525 freeway between Alderwood Mall Boulevard and SR 99, the new SR 525/SR 99 interchange, the new Paine Field Boulevard, 128th St SW/SR 96 widening project, improvements on 112th Street SW, the widening of SR 525 between SR 99 and Paine Field Boulevard, and improvements to Beverly Park Road. Additional projects are planned.

While there are 15 roadway segments meeting our criteria in 2010 for Snohomish County Airport/Paine Field, 10 of these already have improvements planned (and in some cases already completed). There is one RTID project that would address access needs to Paine Field identified in this report, and only five segments with needs identified but with no planned projects. These include sections of Merrill Creek Parkway, SR 526, and SR 99. In the year 2030 the analysis forecasts 31 roadway segments meeting our criteria with 14 MTP projects and one RTID projects planned. Accounting for these planned projects, there are 17 roadway segments needing improvements but with none planned. These include 19th Avenue SE, Evergreen Way, Merrill Creek Parkway, Seaway Boulevard, SR 526, and SR 99.

Sea-Tac International Airport has the largest number of roadways which meet our analysis criteria, in part because of the high level of airport traffic and partly because the existing roadways serving south King County are heavily used by both airport and regional traffic. In the year 2010 our analysis shows 24 roadway sections around Sea-Tac which meet our criteria. Of these, 13 have improvements planned in the MTP, two have RTID projects planned, and three have Nickel project funding. This leaves 11 roadways with needs which are not addressed in current plans. In the year 2030 there are 36 roadways with improvements needed. Of these, 16 have MTP projects planned, two have RTID projects listed, and three are funded by the Nickel program. In 2030 there are 20 roadways identified in our analysis where improvement are needed but not currently included in the MTP, RTID, or Nickel project list. Roadways showing possible improvement needs around Sea-Tac in either the year 2010 or 2030, include Air Cargo Road, Military Road, South 212th, SR 516, and SW 148th Street.

Additional high priority airport ground access needs around Sea-Tac International Airport are being addressed by current planning efforts. These include a third eastbound lane on SR 518 between the north airport expressway and I-5; a new flyover ramp from southbound SR 509 to eastbound SR 518; the long-planned SR 509 extension from South 188th Street to I-5; the airport south access project; and several improvement projects along SR 99 throughout south King County. Between the city of Seattle and the Pierce County line, 14 separate but related improvement projects along SR 99 are planned, in design, under construction, or complete. In addition, the Port of Seattle, Sound Transit, and the city of SeaTac in late 2004 announced an agreement to fund and complete the LINK Light Rail line to the airport by late 2009.

Elsewhere around the region, only a handful of roadways show improvements needed that are not addressed in current plans. These include:

- Harvey Field: Avenue D in Snohomish (2010 and 2030)
- Tacoma Narrows: Stone Drive (2030)
- Pierce County Airport/Thun Field: 122nd Avenue (2010 and 2030)

In addition to the roadways identified in this analysis, there are numerous projects identified through other planning processes (RTID, WTP, Nickel Funding program, state highway corridor programs, county and city plans, airport master plans, regional and state airport system plans, and transit plans) which would provide access improvements to the region's airports. While not identified in this analysis, these projects are being forwarded as part of this Regional Airport Ground Access Plan as airport ground access needs which should be address by the region (airports benefiting from these improvements are shown in parentheses):

- Improvements to the interchange at I-5 and SR 531 (Arlington Municipal Airport)
- Projects in the vicinity of SR 3 and the South Kitsap Industrial Area (SKIA) as outlined by the Port of Bremerton (see section 5.3 below) (Bremerton National Airport)
- SR 522 widening from Paradise Lake Road to U.S. 2 (Firstair Field)
- New Tacoma Narrows Bridge and other improvements along SR 16 and SR 302 (Tacoma Narrows Airport, Port Orchard Airport, Bremerton National Airport)
- SR 704/Cross Base Highway (McChord AFB, Gray Army Airfield, Spanaway Airport, Pierce County Airport/Thun Field, American Lake Seaplane Base)
- Improvements to SR 161 (Pierce County Airport/Thun Field)
- Improvements along SR 18 between Covington and Issaquah-Hobart Road, and eventually to I-90 (Crest Airpark)
- Improvements to SR 3, SR 303, Silverdale Way, and Anderson Hill Road (Apex Airpark, Bremerton National Airport)
- Projects on SR 18 and SR 167 (Auburn Municipal Airport)
- Improvements to SR 167 and I-405 (Renton Municipal Airport/Will Rogers Seaplane Base, Sea-Tac International Airport)
- S Boeing Access Road improvements (King County International Airport/Boeing Field)
- SR 522/Bothell Way improvement projects (Kenmore Air Harbor)
- Improvements along SR 9 (Arlington Municipal Airport, Harvey Field)
- Monroe Bypass and other improvements to U.S. 2 (Firstair Field, Sky Harbor Airport)
- U.S. 2 trestle widening/replacement (Harvey Field)
- Improvements to I-5 in Snohomish County (Snohomish County Airport/Paine Field, Harvey Field, Arlington Municipal Airport)
- Improvements along 51st Avenue NE (Arlington Municipal Airport)

Chapter 6 describes numerous aspects of how airport ground access improvement projects may be implemented, from clarifying needs, to completion of necessary additional planning (including placement of projects in the MTP), project design and engineering, and eventual project funding and construction. For projects which have already been identified in the MTP (*Destination 2030*), RTID, or Nickel program, future work beyond this planning effort would likely focus on validating the needs identified here and assuring they are reflected in future project planning, design, and implementation. For projects identified here as future needs, but which have not yet been included in existing plans, additional work will likely focus on more detailed analysis of project need, more detailed traffic studies and project formulation, and actions to identify the projects in appropriate plans.

5.3 ROADWAY SEGMENTS WHERE IMPROVEMENTS ARE NEEDED

The following tables, and related maps show the ground access needs of each major airport in the region for each of the future timeframes based on the criteria listed above. The tables also show whether the identified project is currently listed as a project in any of the region's transportation plans, including the Metropolitan Transportation Plan (*Destination 2030*-designated MTP in the following tables), Regional

Transportation Improvement District (RTID), and the Washington State Department of Transportation "Nickel Funding Package" project list. Several other important factors are shown in these tables including:

- Components that measure the economic impact of the individual airports. The information regarding economic impacts was taken from the publication "Economic Impacts of Washington Airports" published by the Washington State Department of Transportation, Aviation Division using 2001 aviation data to predict economic impacts of airports and include three measures:
    - **Number of Jobs** – This includes the number of people who are employed in the aviation industry as well as the aviation-oriented share of those employed in sectors that support the air passenger (hotels, restaurants, etc.), plus those employed in industries where the State has determined that the aviation employees will have a multiplying effect.
    - **Labor Earnings (Payroll)** – The sum of the wages and salaries to all employed persons included in the preceding category.
    - **Economic Activity** – The value of the aviation demand plus the multiplier effect (the sum of all of the intermediate goods and services needed to produce the final demand, plus the induced impacts of increased household consumption).
- Elements representing aviation demand at the airports. These include total operations and based aircraft. These numbers were taken from Table 2-29 of this report and represent actual based aircraft and daily operations in 2003 Washington Continuous Airport System Planning (CASP) Database. These numbers have not been projected to reflect increases in based aircraft or daily operations in the years 2010 and 2030.
- Total number of daily surface access system trips generated by the airport for each of the planning years (2010 and 2030). These are shown in Table 3-6 of this report. These daily trips take into account more than the geography of the airport boundary itself and are based on aviation-related on- and off-airport trips.

It should be noted that the numbers reported in Chapter 2, 3, and 4 represent more than the airport property itself as represented here. The number of jobs, labor earnings and economic activity shown in the following tables represent the airport property inclusive. The figures shown after the tables for each airport are a graphical representation of the tables. The extents of the maps were kept constant with those shown in Chapter 2. Therefore, some of the roadway segments contained in the tables fall outside the extents of the figures and are not shown.

For all tables presented below, roadway segments are listed where improvements are needed to improve airport access and address existing or future congestion.

Table 5-3 Arlington Municipal Airport – 2010 & 2030

Total Annual Operations	135,000[1]
Total Based Aircraft	501[1]
Economic Impact of Airport	
Number of Jobs	354
Labor Earnings (Payroll)	$ 6,372,015
Economic Activity	$ 24,711,965.00

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions - 2010 10,347 Average Daily Trips				
No roadways are shown to meet all conditions					

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions - 2030 14,739 Average Daily Trips				
SR 530 from I-5 to 211th Pl NE	5-10%	E	1800	No	No
SR 531 from Smokey Point Blvd to 51st Ave S	10-20%	F	1639	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

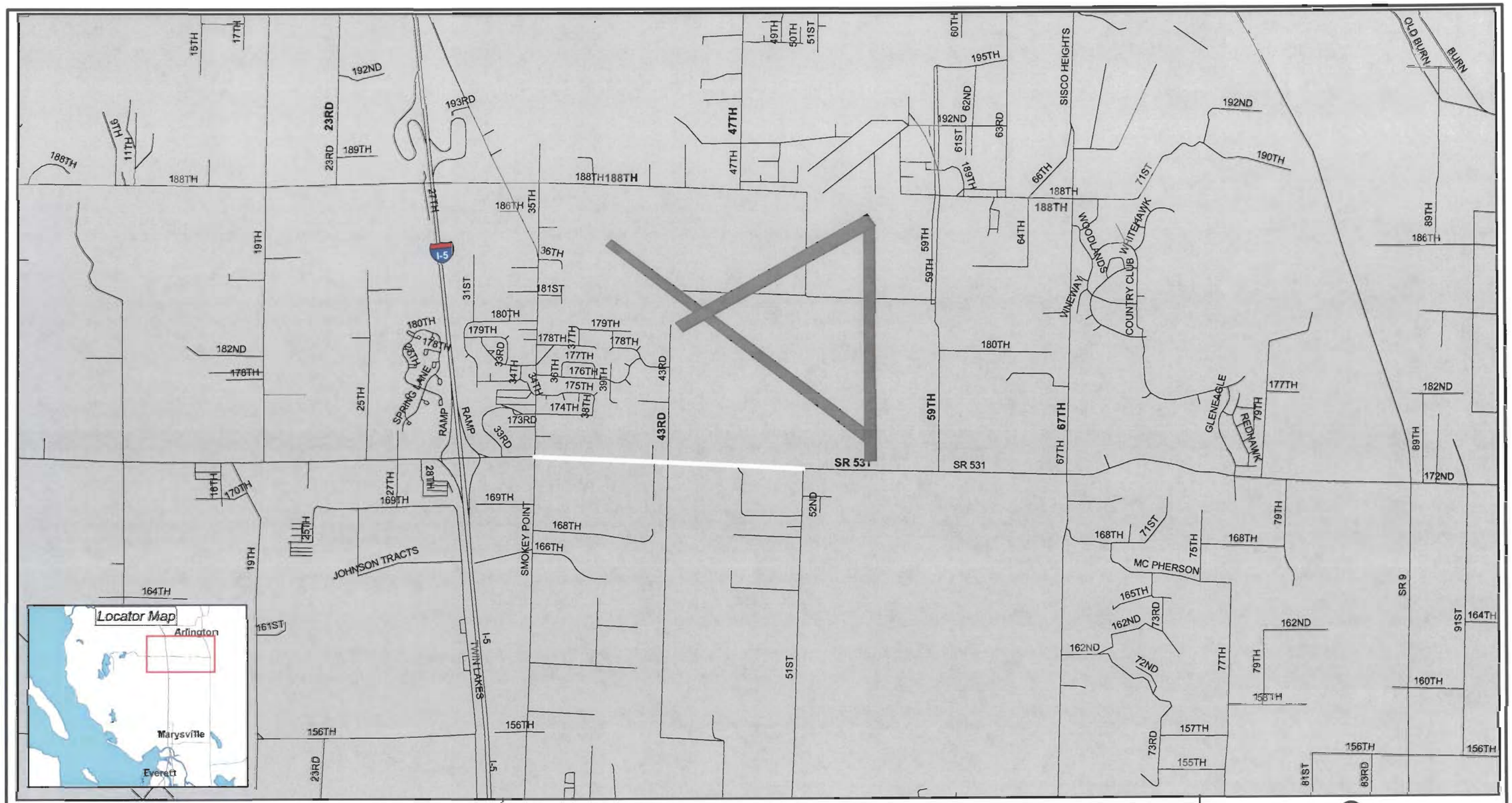

Locator Map
Arlington
Marysville
Everett
SR 531
I-5
23RD
43RD
47TH
59TH
67TH
SMOKEY POINT
JOHNSON TRACTS
SISCO HEIGHTS
WOODLANDS
WHITEHAWK
COUNTRY CLUB
GLENEAGLE
REDHAWK
SR 9
Legend
Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030
Arlington Municipal Airport
Puget Sound Regional Council
Airport Ground Access Study
0
0.25
Miles
URS
Puget Sound Regional Council
PSRC

Table 5-4 Auburn Municipal Airport – 2010 & 2030

Total Annual Operations	164,539[1]
Total Based Aircraft	277[1]
Economic Impact of Airport	
Number of Jobs	485
Labor Earnings (Payroll)	$ 9,208,818
Economic Activity	$ 32,478,540

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010 7,245 Average Daily Trips				
Auburn Way S from 32nd St SE to SR 18	0 - 10%	E	1744	No	No
Auburn Way S from SR 18 to 3rd St NE	5 - 10%	D to E	-	No	No
C St SE from Ellingson Rd to 15th St SW	5 - 10%	E	974	No	No
E Valley Hwy/A St from Ellingson Rd to SR 18	5 - 20%	D to E	-	No	No
E Valley Hwy/Auburn Way N from SR 18 to S 277th St	10 - 20%	F	-	No	No
Harvey Rd from 8th St NE to Auburn Way N	5 - 10%	D to F	1643, 1644, 1645	Yes	Yes
I-5 from SR 16 to SR 167	5 - 10%	D to F	1645	No	No
I-5 from SR 167 to SR 18	5 - 10%	--	-	No	No
Old Military Rd from S 360th St to S 340th St	--	E to F	-	No	No
R St SE/Kersey Way from 21st St SE to 53rd St SE	5 - 20%	D to F	291, 2004, 2005	No	No
S 277th St from SR 167 to G St NE	--	F	291	No	Yes
S 277th St from W Valley Hwy to SR 167	5 - 10%	F	2022	Yes	Yes
S 348th St from SR 161 to I-5	5 - 10%	F	1606, 1658	Yes	Yes
SR 161/Enchanted Parkway from I-5 to 36th St E	--	F	2447, 1592, 1747	Yes/No	Yes/No
SR 167 from Jovita Blvd E/8th St E to SR 18	--	D	1652	No	No
SR 167 from Spencer to Jovita Blvd E/8th St E	--	E to F	2026	No	No
SR 167 from SR 18 to SR 516	0 - 5%	E to F	2024, 2028	No	No
West Valley Hwy from SR 18 to 15th St NW	0 - 10%	E	1744	No	No
West Valley Hwy from 37th St NW to SR 516		D to E	-	No	No
West Valley Hwy from Jovita Blvd E to SR 18	5 - 10%	D to E	-	No	No

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030 8,532 Average Daily Trips				
28th Ave S from S 360th St to S 349th St	5 - 10%	E	-	No	No
8th St E from SR 161 to 122nd Ave E	5 - 10%	D	-	No	No
8th St E from SR 167 to 137th Ave E	5 - 10%	F	127	No	No
9th St E/12t St E/210th Ave E from 182nd Ave E to 40th St E	5 - 10%	D and F	-	No	No
Auburn Enumclaw Rd from SR 400 St to SE 368th Pl	10 - 20%	F	1745, 1746	No	No
Auburn Way S from 32nd St SE to SR 18	5 - 10%	D	1744	No	No
Auburn Way S from SR 18 to 3rd St NE	5 - 10%	E	-	No	No
B St NW from 15th St NW to 37th St NW	5 - 10%	E and F	-	No	No
C St SE from Ellingson Rd to 15th St SW	5 - 10%	F	974	No	No
E Valley Hwy/A St SE from 24th St E to Ellingson Rd	5 - 10%	F	-	No	No
E Valley Hwy/A St SE from Ellingson Rd to SR 18	5 - 10%	D to F	-	No	No
E Valley Hwy/Auburn Way N from SR 18 to S 277th St	5 - 10%	F	-	No	No
Harvey Rd from 8th St NE to Auburn Way N	10 - 20%	E and F	-	No	No
I-5 from SR 16 to SR 167	5 - 10%	F	1643, 1644, 1645	Yes	Yes
I-5 from SR 167 to SR 18	5 - 10%	F	1645	No	No
Old Military Rd from S 326th St to 304th St S	5 - 10%	F	288, 289	No	No
Old Military Rd from S 360th St to S 340th St	5 - 10%	D	-	No	No
R St SE/Kersey Way from 21st St SE to 53rd St SE	5 - 10%	f	-	No	No
S 277th St from SR 167 to G St NE	5 - 20%	E and F	291, 2004, 2005	No	No
S 277th St from W Valley Hwy to SR 167	5 - 10%	F	291	No	No
S 348th St from SR 161 to I-5	5 - 10%	F	2022	No	No
S 359th St from 28th Ave S to S Weyerhaeuser Way	5 - 10%	E	-	No	No
S Weyerhaeuser Way from S 349th St to SR 18	5 - 10%	E	-	No	No
SR 161/Enchanted Parkway from I-5 to 36th St E	5 - 10%	F	1606, 1658	No	Yes
SR 167 from Jovita Blvd E/8th St E to SR 18	5 - 10%	F	2447	Yes	Yes
SR 167 from Spencer to Jovita Blvd E/8th St E	5 - 10%	F	1652	Yes	Yes
SR 167 from SR 18 to SR 516	5 - 10%	F	1592, 1747	Yes	Yes
West Valley Hwy from SR 18 to SR 516	5 - 10%	F	2026	No	No
West Valley Hwy from Jovita Blvd E to SR 18	5 - 10%	D to F	2024, 2028	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

NOTE: certain roadway segments above do not meet both criteria (e.g., SR 167 from SR 18 to SR 516). These roadway segments were included in the table above because these segments do meet both criteria in the 2030 timeframe and because of the nature of the airport some of the surrounding street system are important regional routes and should be considered even if both criteria are not met within a certain timeframe.

Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2010

Auburn Municipal Airport

Puget Sound Regional Council
Airport Ground Access Study

0 0.25 0.5 Miles

URS

Puget Sound Regional Council
PSRC

Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030

Auburn Municipal Airport

Puget Sound Regional Council
Airport Ground Access Study

0 0.25 0.5 Miles

URS

Puget Sound Regional Council
PSRC

Bremerton National Airport

The Bremerton National Airport was not identified as requiring roadway access improvements during the traffic modeling efforts. However, they have been included as part of the planning for the South Kitsap Industrial Area. The airport has been identified as a key component of this area and the county has determined that it is vital that access to the industrial area be improved in support of long-term growth and development goals. By improving this access, access to the Bremerton National Airport will be improved as well. The projects listed in the following have been identified as required under the South Kitsap Industrial Area Plan and are directly beneficial to the airport. The attached map shows the location of all recommended projects, highlighting those associated with the airport.

Existing Route Improvements

- Widening of SR 3, Gorst Rd to SR 101
- Complete Upgrades to Lake Flora/Glenwood from SR 3 to SR 16.

Intersection Improvements

- SR 3 at Sunnyslope Rd.
- SR 3 at Lake Flora Rd.
- SR 3 at Imperial Way
- Sunnyslope and Old Clifton Intersection Upgrades
- New Port Access

New Transportation Routes

- Arterial Connector, SR 3 to Lake Flora Road

Table 5-5 Bremerton National Airport– 2010 & 2030

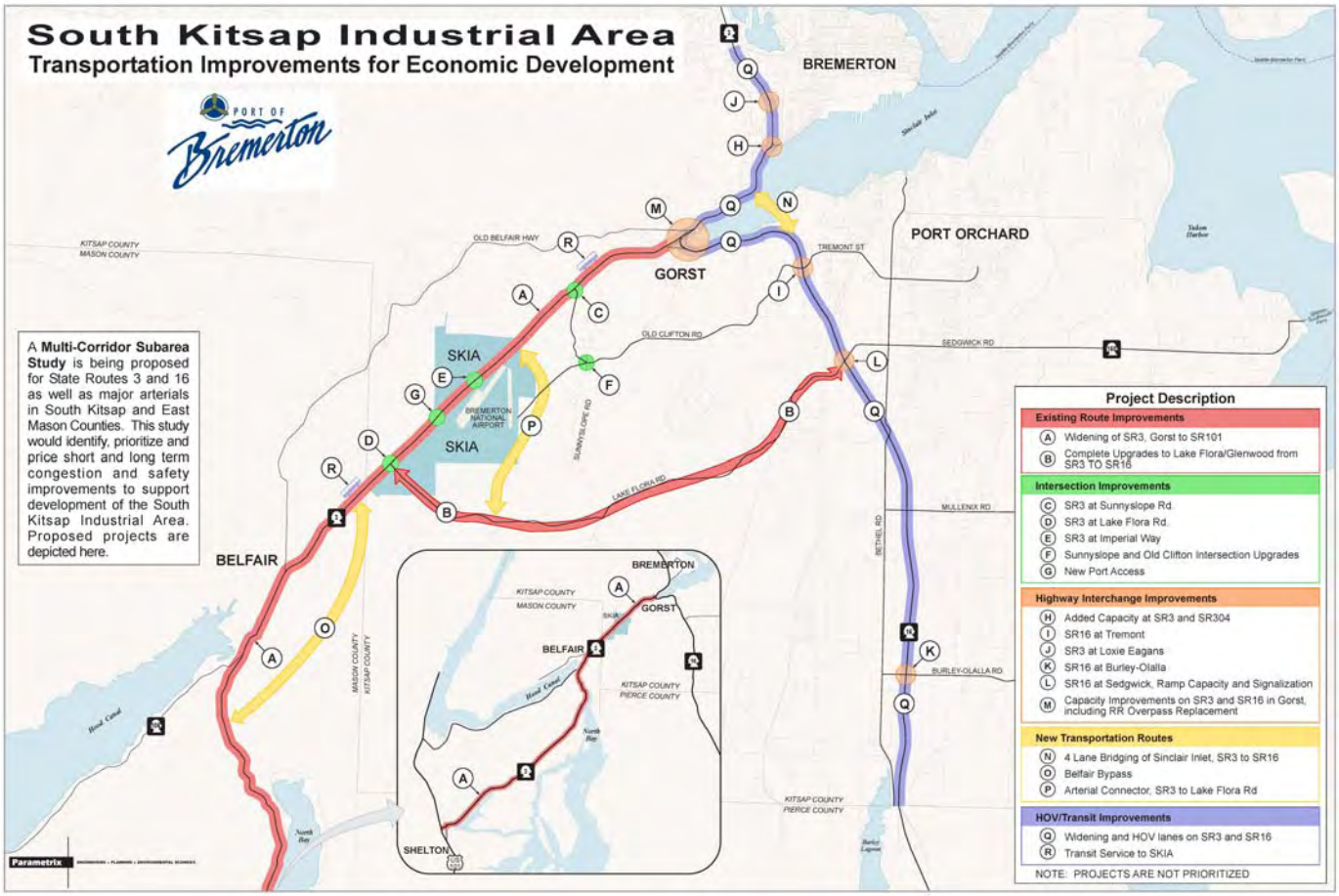
Total Annual Operations	96,000[1]
Total Based Aircraft	166[1]
Economic Impact of Airport	
Number of Jobs	234
Labor Earnings (Payroll)	$ 4,295,844
Economic Activity	$ 14,994,822

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010 1,817 Average Daily Trips				
See above for proposed roadway improvements					

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030 2,484 Average Daily Trips				
See above for proposed roadway improvements					

[1] 2003 Washington Continuing Aviation System Plan Data

Figure 5-4 Bremerton National Airport Access Improvements Proposed By The Port Of Bremerton



Source: Port of Bremerton

Table 5-6 Firstair Field – 2010 & 2030

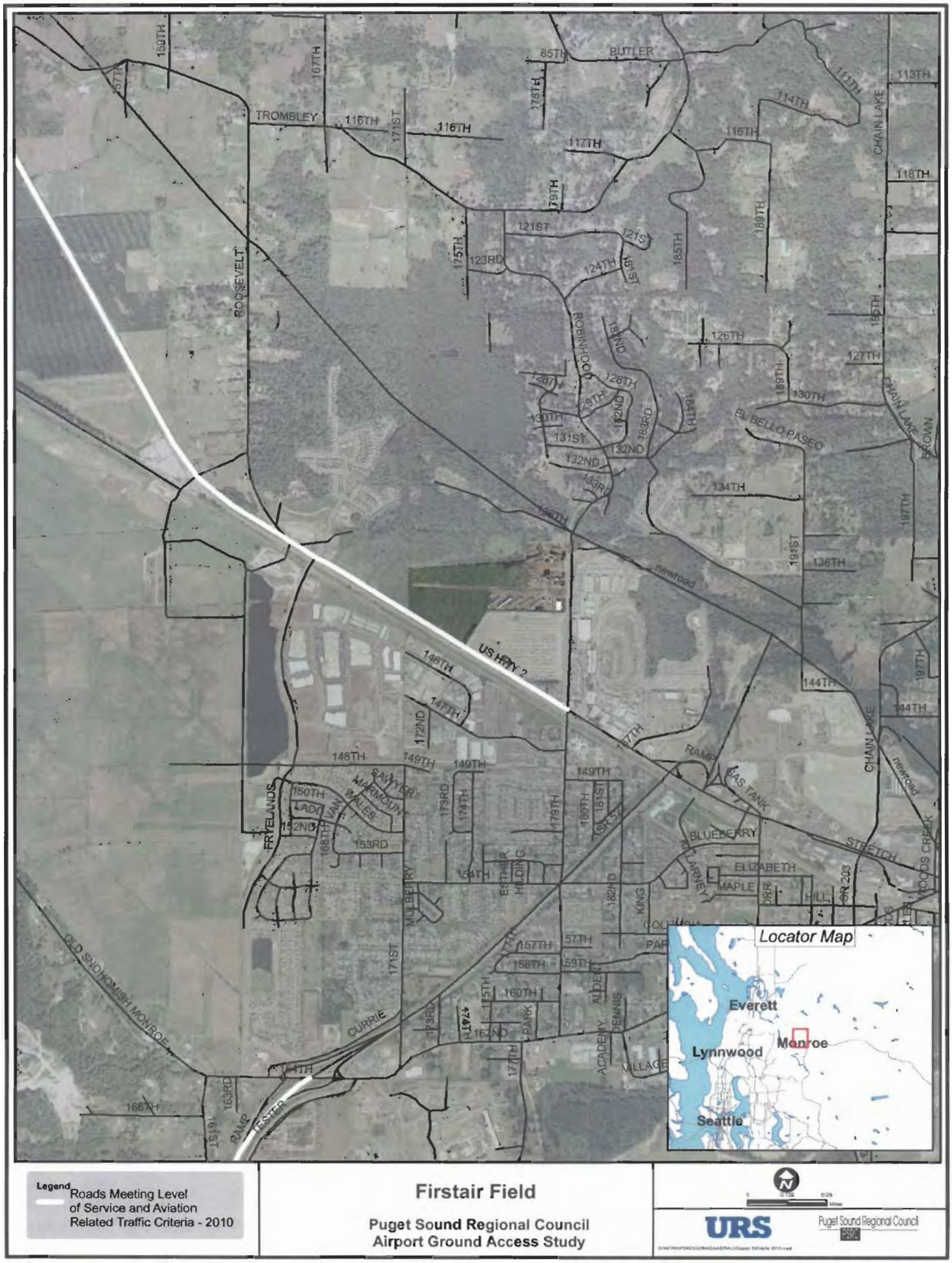
Total Annual Operations	18,169[1]
Total Based Aircraft	70[1]
Economic Impact of Airport	
Number of Jobs	50
Labor Earnings (Payroll)	$ 896,255
Economic Activity	$ 3,273,365

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010				
	8,356 Average Daily Trips				
U.S. 2 from Westwick Rd to 179th Ave	5 - 10%	E	1782	No	No
U.S. 2 from 179th Ave SE to SR 522	--	E	1782	No	No
U.S. 2 from SR 203 to Old Owen Rd	>20%	--	1620	No	No
West Main St from 179th Ave SE to Woods Creek Rd	--	D	-	No	No

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030				
	10,891 Average Daily Trips				
U.S. 2 from 179th Ave SE to SR 522	5 - 10%	D	1782	No	No
U.S. 2 from SR 203 to Old Owen Rd	>20%	D	1620	No	No
West Main St from 179th Ave SE to Woods Creek Rd	5 - 10%	D	-	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

NOTE: U.S. 2 from SR 203 to Old Owen Road is included in the table above because it is a major corridor in the region and meets at least one criterion in 2010 and both in 2030.


Locator Map
Everett
Monroe
Lynnwood
Seattle
Legend
Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2010
Firstair Field
Puget Sound Regional Council
Airport Ground Access Study
URS
Puget Sound Regional Council

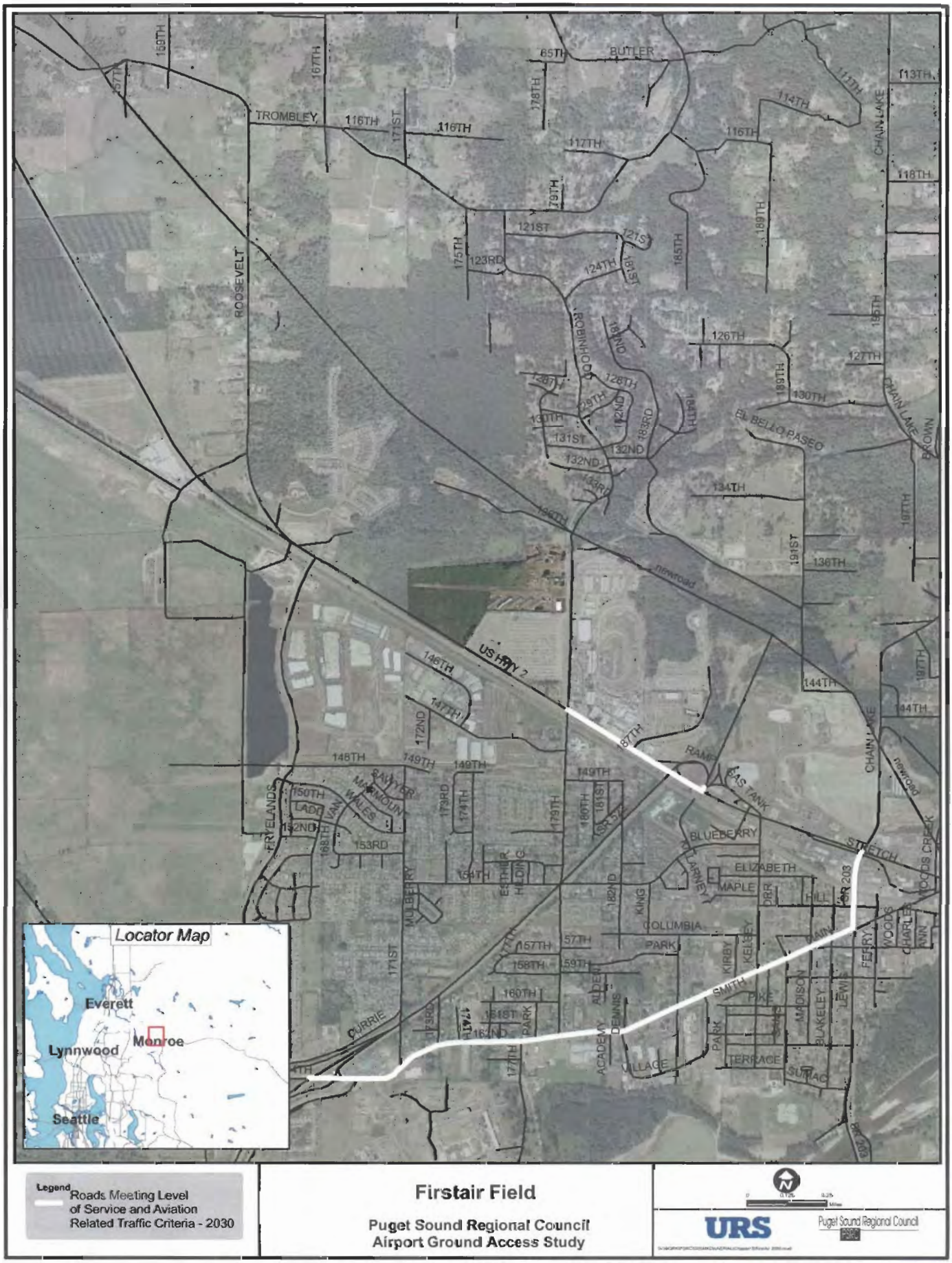

Locator Map
Everett
Monroe
Lynnwood
Seattle
Legend
Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030
Firstair Field
Puget Sound Regional Council
Airport Ground Access Study
URS
Puget Sound Regional Council

Table 5-7 Harvey Field – 2010 & 2030

Total Annual Operations	140,677[1]
Total Based Aircraft	348[1]
Economic Impact of Airport	
Number of Jobs	447
Labor Earnings (Payroll)	$ 7,520,655
Economic Activity	$ 22,274,447

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010				
	789 Average Daily Trips				
20th St SE from 79th Ave SE to 91st Ave SE	--	E	777 or 783	Yes	No
Airport Way from SR 9 to 2nd St	5 - 10%	F	584	No	No
Ave D from 2nd St to 5th St	10 - 20%	F	-	No	No
Marsh Rd from Lowell-Larimer Rd to SR 9	5 - 10%	E	1954	Yes	No
U.S. 2 from I-5 to SR 204	--	F	1703	Yes	No

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030				
	940 Average Daily Trips				
20th St SE from 79th Ave SE to 91st Ave SE	5 - 10%	F	777 or 783	Yes	No
Airport Way from SR 9 to 2nd St	5 - 10%	F	584	Yes	No
Ave D from 2nd St to 5th St	10 - 20%	F	-	No	No
Marsh Rd from Lowell-Larimer Rd to SR 9	--	F	1954	No	No
U.S. 2 from I-5 to SR 204	5 - 10%	D	1703	Yes	No

[1] 2003 Washington Continuing Aviation System Plan Data

Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2010

Harvey Field

Puget Sound Regional Council
Airport Ground Access Study

0 0.1 0.2 Miles

URS

Puget Sound Regional Council
PSRC

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Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030

Harvey Field

Puget Sound Regional Council
Airport Ground Access Study

0 0.11 0.22 Miles

URS

Puget Sound Regional Council
PSRC

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Table 5-8 King County International Airport/Boeing Field – 2010 & 2030

Total Annual Operations	304,099[1]
Total Based Aircraft	540[1]
Economic Impact of Airport	
Number of Jobs	1,438
Labor Earnings (Payroll)	$ 33,274,317
Economic Activity	$ 108,284,742

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010				
	10,872 Average Daily Trips				
16th Ave S from S Cloverdale St to Marginal Way S	10 - 20%	D	242	No	No
Marginal Way S from 16th Ave S south 7 blocks	10 - 20%	--	1299	No	No
Marginal Way S from 16th Ave S to Carleton Ave S	10 - 20%	--	-	No	No
MLK Jr Way S from Boeing Access Rd to S Henderson St	5 - 10%	--	-	No	No
S Boeing Access Rd from I-5 to 47th Ave S	5 - 20%	F	-	No	No
S Boeing Access Rd/Tukwila International Blvd from SR 599/Marginal Way to I-5	10 - 20%		-	No	No
S Cloverdale St from SR 509 to SR 99	5 - 10%	E	-	No	No
SR 599 from Tukwila International Blvd to I-5	5-10%	D-F	-	No	No

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030				
	10,484 Average Daily Trips				
16th Ave S from S Cloverdale St to Marginal Way S	10 - 20%	D	242	No	No
Marginal Way S from 16th Ave S south 7 blocks	>20%	D	1299	No	No
Marginal Way S from 16th Ave S to Carleton Ave S	10 - 20%	D	-	No	No
Marginal Way S from S Boeing Access Rd to S 116th St	5-10%	E	-	No	No
MLK Jr Way S from Boeing Access Rd to S Henderson St	5 - 10%	D and E	-	No	No
S Boeing Access Rd from I-5 to 47th Ave S	10 - 20%	D	-	No	No
S Boeing Access Rd/Tukwila International Blvd from SR 599/Marginal Way to I-5	10 - 20%	D	-	No	No
S Cloverdale St from SR 509 to SR 99	5 - 10%	E	-	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

NOTE: certain roadway segments above do not meet both criteria (e.g., 16th Avenue S from S Cloverdale St to Marginal Way S). These roadway segments were included in the table above because these segments do meet both criteria in the 2030 timeframe and because of the nature of the airport some of the surrounding street system are important regional routes and should be considered even if both criteria are not met within a certain timeframe.

Legend

Roads Meeting Level of Service
and Aviation Related Traffic Criteria - 2010

King County International Airport/ Boeing Field

Puget Sound Regional Council Airport Ground Access Study

0 0.5 Miles

URS

Puget Sound Regional Council
PSRC

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Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030

King County International Airport/ Boeing Field

Puget Sound Regional Council Airport Ground Access Study

0 0.5 Miles

URS

Puget Sound Regional Council PSRC

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Table 5-9 McChord Air Force Base – 2010 & 2030

Total Annual Operations	N/A
Total Based Aircraft	N/A
Economic Impact of Airport	
Number of Jobs	N/A[2]
Labor Earnings (Payroll)	$ N/A[2]
Economic Activity	$ N/A[2]

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010				
	10,872 Average Daily Trips				
No Roadways meet both criteria					

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030				
	10,484 Average Daily Trips				
SR 507 from 176th to SR 512	5 - 10%	E	-	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

[2] Military airfields were not included in the Economic Impacts of Washington Airports (WSDOT, 2002)

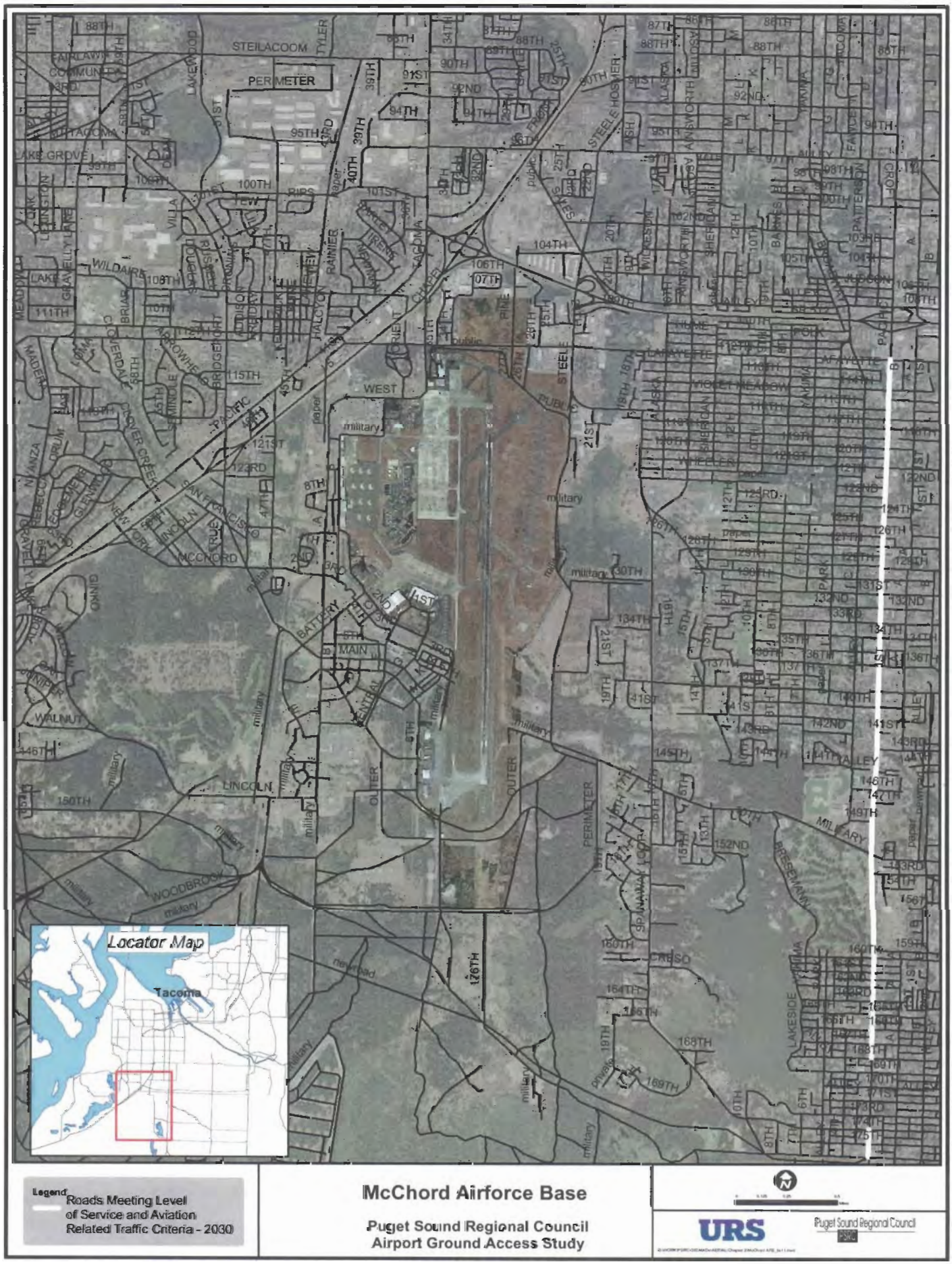
Locator Map
Tacoma
Legend
Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030
McChord Airforce Base
Puget Sound Regional Council
Airport Ground Access Study
URS
Puget Sound Regional Council

Table 5-10 Pierce County Airport / Thun Field Airport – 2010 & 2030

Total Annual Operations	90,000[1]
Total Based Aircraft	231[1]
Economic Impact of Airport (WSDOT Numbers)	
Number of Jobs	334
Labor Earnings (Payroll)	$ 6,034,254
Economic Activity	$ 21,137,493

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010 5,602 Average Daily Trips				
122nd Ave E from 152nd St E to 136th St E	10 - 20%	D	-	No	No
94th Ave E from 152nd St E to SR 512	5 - 20%	E	524	Yes	No
Shaw Rd from Old Military Rd to Pioneer Way	0 - 10%	D	494	No	No
SR 161 (Meridian Ave) from 160th St E to SR 512	0 - 10%	D	1815	No	No
SR 162 (Old Pioneer) from Calistoga Ave to Bowman/Hilton	--	F	497	Yes	No
SR 410 from Main St to SR 162	--	F	498, 1661, 1662, 1663	No	Yes
SR 410 from Old Sumner-Buckley Hwy to 214th Ave E	--	E	498	No	No
SR 512 from 94th Ave E to SR 167	--	F	1822-1823	No	No

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030 11,420 Average Daily Trips				
122nd Ave E from 152nd St E to 136th St E	10 - 20%	F	-	No	No
94th Ave E from 152nd St E to SR 512	5 - 20%	D to F	524	Yes	No
Canyon Rd from 192nd to SR 512	5 - 10%	F	113	No	No
Shaw Rd from Old Military Rd to Pioneer Way	5 - 20%	F	494	No	No
176th St E from Heights Drive E to SR-161 (Meridian Ave)	5-10%	D	-	No	No
SR 161 (Meridian Ave) from 160th St E to SR 512	5 - 20%	D to F	1815	No	No
SR 162 (Old Pioneer) from Calistoga Ave to Bowman/Hilton	5 - 10%	F	497	Yes	No
SR 410 from Main St to SR 162	5 - 10%	F	498, 1661, 1662, 1663	No	Yes
SR 410 from Old Sumner-Buckley Hwy to 214th Ave E	5 - 10%	F	498	No	No
SR 512 from 94th Ave E to SR 167	5 - 10%	F	1822, 1823	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

NOTE: certain roadway segments above do not meet both criteria (e.g., Des SR 162 (Old Pioneer) from Calistoga Ave to Bowman/Hilton). These roadway segments were included in the table above because these segments do meet both criteria in the 2030 timeframe and because of the nature of the airport some of the surrounding street system are important regional routes and should be considered even if both criteria are not met within a certain timeframe..

Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2010

Pierce County Airport/ Thun Field

Puget Sound Regional Council Airport Ground Access Study

0 0.25 Miles

URS

Puget Sound Regional Council PSRC

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Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030

Pierce County Airport/ Thun Field

Puget Sound Regional Council
Airport Ground Access Study

0 0.25 Miles

URS

Puget Sound Regional Council
PSRC

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Table 5-11 Renton Municipal Airport/Will Rogers-Wiley Post Seaplane Base – 2010 & 2030

Total Annual Operations	113,104[1]
Total Based Aircraft	263[1]
Economic Impact of Airport	
Number of Jobs	271
Labor Earnings (Payroll)	$ 4,846,149
Economic Activity	$ 17,415,794

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010 25,565 Average Daily Trips				
108th Ave SE from SE 222 St to SE 176th St	0 - 10%	E	-	No	No
179th St SE/Carr Rd from Talbot Rd S to 108th Ave SE	5 - 10%	D-E	910	No	No
Benson Rd S from S Puget Dr to Grady Way/Main Ave S	5 - 10%	E	-	No	No
Benson Rd S from SE 168th St to S Puget Dr	5 - 10%	E	-	No	No
Grady Way from 68th Ave S to Interurban Ave S/SR 181	5 - 10%	E	-	No	No
Grady Way from Interurban Ave S/SR 181 to Oaksdale Rd	5 - 10%	F	-	No	No
I-405 from I-5 south interchange to SR 181	5 - 20%	E	3510	Yes	No
I-405 from I-90 to NE 8th St	5 - 10%	F	3503	Yes	No
I-405 from NE 44th St to I-90	5 - 10%	F	3503, 3504	Yes	No
I-405 from NE 8th St to SR 520	--	F	3504	Yes	No
I-405 from SR 167 to SR 169	5 - 10%	F	3511	Yes	No
I-405 from SR 169 to SR 900 (NE Park Dr)	5 - 10%	E, F	3511	Yes	No
I-405 from SR 900 (NE Park Dr) to NE 44th St	5 - 10%	E, F	3512	Yes	No
NE 4th St from Edmonds Ave NE to Union Ave NE	10 - 20%	E	2344	No	No
S 43rd St from SR 167 to Talbot Rd S	5 - 10%	F	2346	No	No
SE 176th St/Petrovitsky Rd from 108th Ave SE to 196th Ave SE	0 - 10%	E, F	456, 911	No	No
SE 208th St from 108th Ave SE to 114th Ave SE	--	F	-	No	No
SE 208th St from 96th Ave SE to 108th Ave SE	--	F	2282	No	No
SR 167 from S 43rd St to I-405	--	F	1683	No	No
SR 169 (Maple Valley Hwy) from I-405 to 149th Ave SE	0 - 10%	D, E, F	1607	No	No
SR 181 from Strander Blvd to Grady Way	--	D	1297	No	No
Bronson Way N from Factory Ave N to I-405	5-20%	E	-	No	No
Park Ave N from Lake Washington Blvd to I-405	>20%	D-E	-	No	No
Lind Ave SW from SW 16th St to Grady Way	5-10%	D	-	No	No
	Forecast Conditions 2030 26,557Average Daily Trips				
108th Ave SE from SE 222nd St to SE 176th St	5 - 20%	F	-	No	No
179th St SE/Carr Rd from Talbot Rd S to 108th Ave SE	10 - 20%	F	910	No	No
Benson Rd S from S Puget Dr to Grady Way/Main Ave S	10 - 20%	E	-	No	No
Benson Rd S from SE 168th St to S Puget Dr	5 - 10%	D	-	No	No
Bronson Way N from Factory Ave N to I-405	10 - 20%	D	2327	No	No
Grady Way from 68th Ave S to Interurban Ave S/SR 181	5 - 10%	E	-	No	No
Grady Way from Interurban Ave S/SR 181 to Oaksdale Rd	5 - 10%	E	-	No	No
Grady Way from SR 167 to Talbot Rd S	5 - 10%	E	869	No	No
Park Ave N from Lake Washington Blvd to I-405	?20%	D-F	-	No	No
Lind Ave SW from SW 16th St to Grady Way	5-10%	D	-	No	No
I-405 from I-5 south interchange to SR 181	10 - 20%	E	3510	Yes	No
I-405 from I-90 to NE 8th St	10 - 20%	F	3503	Yes	No
I-405 from NE 44th St to I-90	10 - 20%	F	3503, 3504	Yes	No
I-405 from NE 8th St to SR 520	5 - 10%	F	3504	Yes	No
I-405 from SR 167 to SR 169	10 - 20%	F	3511	Yes	No
I-405 from SR 169 to SR 900 (NE Park Dr)	10 - 20%	F	3511	Yes	No
I-405 from SR 900 (NE Park Dr) to NE 44th St	10 - 20%	F	3512	Yes	No
NE 4th St from Edmonds Ave NE to Union Ave NE	10 - 20%	E	2344	No	No
NE 4th St from Pell Ave N to Factory Pl N	10 - 20%	E	-	No	No
Rainier Ave N from Airport Way to 68th Ave S	5 - 10%	D and E	-	No	No
S 43rd St from SR 167 to Talbot Rd S	5 - 10%	F	2346	No	No
SE 176th St/Petrovitsky Rd from 108th Ave SE to 196th Ave SE	5 - 10%	D to F	456, 911	No	No
SE 208th St from 108th Ave SE to 114th Ave SE	5 - 10%	F	-	No	No
SE 208th St from 96th Ave SE to 108th Ave SE	5 - 10%	F	2282	No	No
SR 167 from S 43rd St to I-405	5 - 10%	F	1683	No	No
SR 169 (Maple Valley Hwy) from I-405 to 149th Ave SE	5 - 10%	D to F	1607	No	No
SR 181 from Strander Blvd to Grady Way	5 - 10%	D to F	1297	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

NOTE: certain roadway segments above do not meet both criteria (e.g., I-405 from NE 8th Street to SR 520). These roadway segments were included in the table above because these segments do meet both criteria in the 2030 timeframe and because of the nature of the airport ,some of the surrounding street system are important regional routes and should be considered even if both criteria are not met within a certain timeframe.

Will Rogers-
Wiley Post
Seaplane Base

Locator Map

Seattle
Bellevue
Renton

Legend

Roads Meeting Level of Service
and Aviation Related Traffic Criteria - 2010

**Renton Municipal Airport/
Will Rogers-
Wiley Post Seaplane Base**

**Puget Sound Regional Council
Airport Ground Access Study**

0 0.2 Miles

URS

Puget Sound Regional Council
PSRC

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Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030

Renton Municipal Airport/ Will Rogers- Wiley Post Seaplane Base

Puget Sound Regional Council
Airport Ground Access Study

0 0.2 Miles

Puget Sound Regional Council
PSRC

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Table 5-12 Seattle - Tacoma International Airport – 2010

Total Annual Operations	400,635[1]
Total Based Aircraft	6[1]
Economic Impact of Airport	
Number of Jobs	146,245
Labor Earnings (Payroll)	$ 3,605,250,734
Economic Activity	$ 16,926,634,605

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010				
	122,955[2] Average Daily Trips*				
Air Cargo Rd from S 170th St to SR 518	>20%	E	-	No	No
Des Moines Mem Dr S from S 200th St to S 216th St	--	D, E, F	-	No	No
Des Moines Mem Dr S from SR 509/S 188th St to S 200th St	--	D	1250	No	No
I-405 from SR 181 to SR 167	5 - 10%	F	3510	Yes	No
I-5 from SR 18 to S 216th St	5 - 10%	E, F	1585	Yes	Yes
Military Rd S from S 204th St to S 272nd St	--	D, E, F	-	No	No
Military Rd S from S 188th St to S 176th St	10 - 20%	--	-	No	No
Military Rd S from S 272nd St to SR 516	0 - 20%	D	-	No	No
Military Rd S from SR 516 to S 216th St	--	D, E	-	No	No
S 170th St from Air Cargo Rd N to SR 99	5 - 10%	--	-	No	No
S 178th St from Military Rd S to Southcenter Pkwy	10 - 20%	D	-	No	No
S 212th St from Russell Rd to SR 181	10 - 20%	E	2143	No	No
S 212th St from SR 181 to SR 167	0 - 10%	D, E	-	No	No
Southcenter Blvd SW from I-5 to SR 181	5 - 10%	F	3527	No	No
SR 516 from I-5 to Military Rd	10 - 20%	D	1773	No	No
SR 516 from Military Rd to SR 167	5 - 20%	F	1773	No	No
SR 516 from SR 99 to I-5	5 - 10%	D	1690	No	No
SR 518 from I-5 to SR 99	>20%	D, E, F	1692	No	No
SR 518 from SR 99 to S 154th St	>20%	E, F	1692	No	No
SR 99 from Dash Point Rd to SR 516	0 - 10%	D, E, F	1194, 2070, 2071, 3574	No	Yes
SR 99 from S 160th St to SR 518	5 - 10%	D	190	No	No
SR 99 from S 188th St to S 170th St	10 - >20%	E	391	No	No
SR 99 from S 216th St to S 188th St	10 - 20%	D, E	392, 1249	No	No
SR 99 from SR 516 to S 216th St	10 - 20%	E, F	2059	No	No
SR 99 from SR 518 to SR 599	10 - 20%	D, E, F	1293	No	Yes
SW 148th St/SR 518 from SR 509 to Des Moines Mem Pkwy	>20%	E	-	No	No
SW 320th St from SR 99 to I-5	5 - 10%	D	462	No	No
SW 328th St from 21st Ave SW to SR 99	--	D, E, F	-	No	No
Tukwila International Blvd from SR 599 to S Boeing Access Rd	5 - 10%	D, E, F	1300	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

[2] Average Daily Trips for Sea-Tac International Airport reported above do not include the special generator or truck trips that are assigned post processing.

NOTE: certain roadway segments above do not meet both criteria (e.g., Des Moines Memorial Drive S from S 200th Street to S 216th Street). These roadway segments were included in the table above because these segments do meet both criteria in the 2030 timeframe and because of the nature of the airport some of the surrounding street system are important regional routes and should be considered even if both criteria are not met within a certain timeframe.

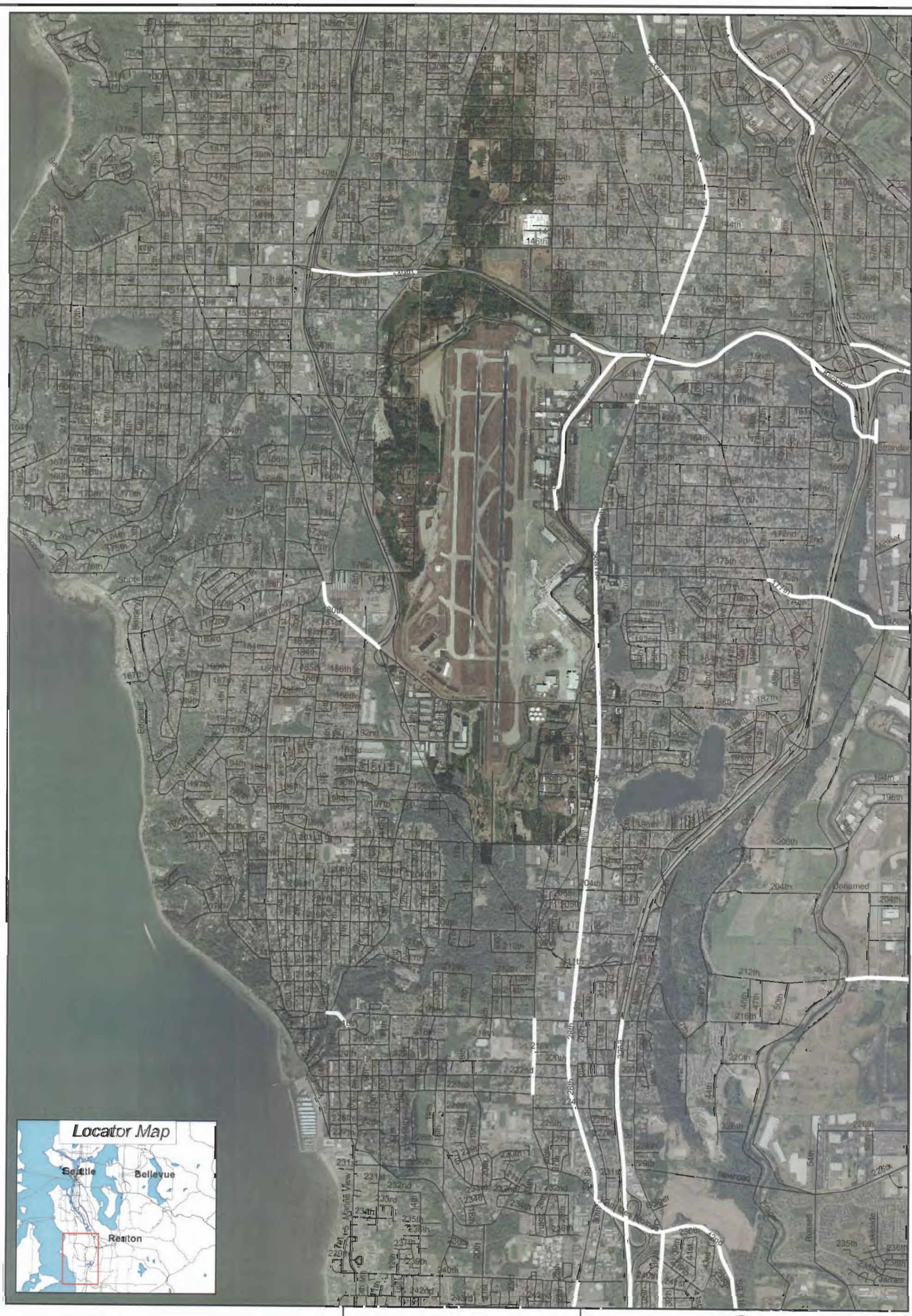
Table 5-13 Seattle - Tacoma International Airport – 2030

Total Annual Operations	400,635[1]
Total Based Aircraft	6[1]
Economic Impact of Airport	
Number of Jobs	146,245
Labor Earnings (Payroll)	$ 3,605,250,734
Economic Activity	$ 16,926,634,605

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030				
	165,691 Average Daily Trips*				
1st Ave S from SW 152nd St to S 160th St	5 - 10%	D	-	No	No
Air Cargo Rd from S 170th St to SR 518	>20%	F	-	No	No
Ambaum Blvd SW from SW 128th St to 16th St SW	10 - 20%	D	2114	No	No
Des Moines Mem Dr S from S 200th St to S 216th St	5 - 10%	D, E	-	No	No
Des Moines Mem Dr S from SR 509/S 188th St to S 200th St	5 - 20%	D, E	1250	No	No
I-405 from SR 181 to SR 167	10 - 20%	E	3510	Yes	No
I-5 from SR 18 to 216th	5 - 10%	F	1585	Yes	Yes
Military Rd S from S 176th St to S 164th St	10 - 20%	D	-	No	No
Military Rd S from S 188th St to S 176th St	>20%	F	-	No	No
Military Rd S from S 272nd St to SR 516	5 - 10%	E, F	-	No	No
Military Rd S from SR 516 to S 216th St	10 - 20%	F	-	No	No
S 154th St from SR 99 to I-5	>20%	D	2641	No	No
S 170th St from Air Cargo Rd N to SR 99	5 - 10%	D	-	No	No
S 178th St from Military Rd S to Southcenter Pkwy	10 - 20%	D	-	No	No
S 188th St from Southcenter Pkwy to Andover Park W	5 - 10%	D	-	No	No
S 212th St from Russell Rd to SR 181	10 - >20%	D, E, F	2143	No	No
S 212th St from SR 181 to SR 167	5 - 20%	D, E, F	-	No	No
Southcenter Blvd SW from I-5 to SR 181	5 - 10%	F	3527	No	No
SR 516 from I-5 to Military Rd	10 - 20%	F	1773	No	No
SR 516 from Military Rd to SR 167	10 - 20%	F	1773	No	No
SR 516 from SR 99 to I-5	10 - 20%	D	1690	No	No
SR 518 from I-5 to SR 99	>20%	D, E, F	1692	No	No
SR 518 from SR 99 to S 154th St	>20%	E, F	1692	No	No
SR 99 from Dash Point Rd to SR 516	5 - 20%	D, E, F	1194, 2070, 2071, 3574	No	Yes
SR 99 from S 160th St to SR 518	>20%	F	190	No	No
SR 99 from S 188th St to S 170th St	5 - >20%	F	391	No	No
SR 99 from S 216th St to S 188th St	>20%	F	392, 1249	No	No
SR 99 from SR 516 to S 216th St	10 - 20%	D	2059	No	No
SR 99 from SR 518 to SR 599	10 - >20%	E, F	1293	No	Yes
SW 116th St from 28th Ave SW to 16th Ave SW	10 - 20%	D	-	No	No
SW 148th St/SR 518 from 1st Ave S to SR 509	10 - 20%	D	-	No	No
SW 148th St/SR 518 from SR 509 to Des Moines Mem Pkwy	>20%	F	-	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

[2] Average Daily Trips for Sea-Tac International Airport reported above do not include the special generator or truck trips that are assigned post processing.



Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2010

Seattle-Tacoma International Airport (Sea-Tac)

Puget Sound Regional Council
Airport Ground Access Study

0 0.5 1 Miles

URS

Puget Sound Regional Council
PSRC

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Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030

Seattle-Tacoma International Airport (Sea-Tac)

Puget Sound Regional Council Airport Ground Access Study

0 0.5 Miles

URS

Puget Sound Regional Council PSRC

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Table 5-14 Snohomish County Airport/Paine Field – 2010

Total Annual Operations	172,514[1]
Total Based Aircraft	565[1]
Economic Impact of Airport	
Number of Jobs	905
Labor Earnings (Payroll)	$ 19,776,914
Economic Activity	$ 68,723,965

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010 26,610 Average Daily Trips				
100th St SE from 19th Ave SE to 27th Ave SE	5 - 10%	D	1893	No	No
41st St SE from Colby Ave to I-5	--	F	798	No	No
Beverly Park Rd from 112th St SW to Airport Rd	10 - 20%	E	1635	No	No
Beverly Park Rd from SR 525 to 112th St SW	>20%	E and F	1635	No	No
Merrill Creek Parkway from Seaway Blvd to Glenwood Ave	>20%	E	-	No	No
Mukilteo Speedway from 84th St SW to 76th St SW	10 - 20%	D	565	No	No
SR 525 from 132nd St SW to Beverly Park Rd	5 - 10%	F	-	No	No
SR 525 from Beverly Park Rd to Harbour Pointe Blvd	10 - 20%	D	792	No	No
SR 525 from Harbour Pointe Blvd to Chennault Beach Rd	10 - 20%	D	-	No	No
SR 525 from Harbour Pointe Blvd to Paine Field Blvd	>20%	D	-	No	No
SR 525 from I-5 to Alderwood Mall Pkwy	5 - 20%	F	1635	No	No
SR 526 from Seaway Blvd to SR 99	>20%	D	1635	No	No
SR 526 from SR 99 to I-5	>20%	D	1635	No	No
SR 99 from 148th St SW to SR 525	5 - 10%	F	1635	No	No
SR 99 from 168th St SW to 148th St SW	5 - 10%	D to F	1619	No	No
SR 99 from 188th St SW to 168th St SW	5 - 10%	D to F	-	No	No
SR 99 from Manor Way to Airport Rd	--	F	-	No	No
SR 99 from SR 525 to Manor Way	--	D	-	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

NOTE: certain roadway segments above do not meet both criteria (e.g., 112th Street SW from Beverly Park Rd to Airport Rd). These roadway segments were included in the table above because these segments do meet both criteria in the 2030 timeframe and because of the nature of the airport some of the surrounding street system are important regional routes and should be considered even if both criteria are not met within a certain timeframe.

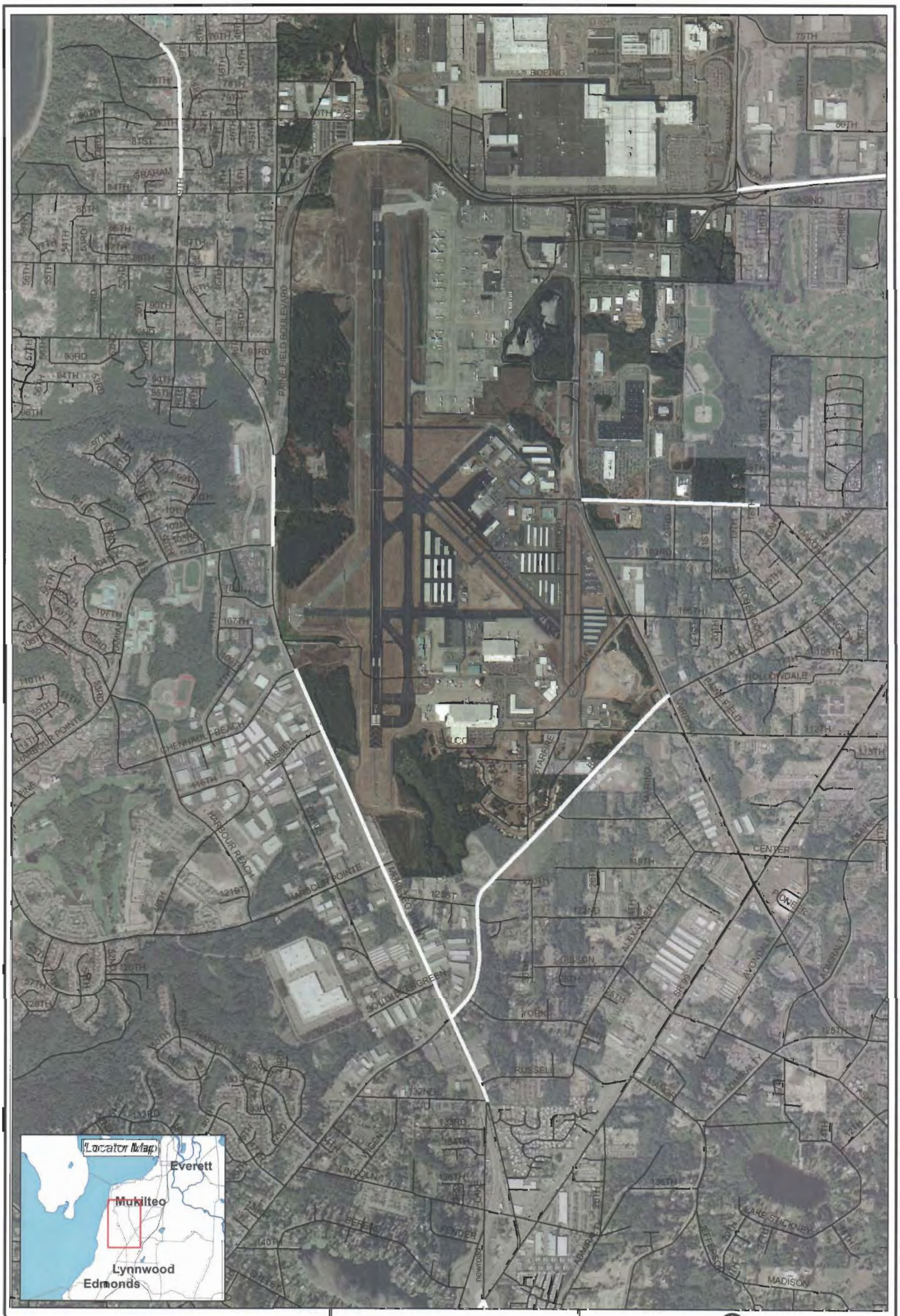
Table 5-15 Snohomish County Airport/Paine Field – 2030

Total Annual Operations	172,514[1]
Total Based Aircraft	565[1]
Economic Impact of Airport	
Number of Jobs	905
Labor Earnings (Payroll)	$ 19,776,914
Economic Activity	$ 68,723,965

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030 35,853 Average Daily Trips				
100th St SE from 19th Ave SE to 27th Ave SE	5 - 10%	D	-	No	No
112th St SW from Beverly Park Rd to Airport Rd	>20%	F	-	No	No
19th Ave SE from 100th St SE to I-5	10 - 20%	D	-	No	No
41st St SE from Colby Ave to I-5	5 - 10%	F	-	No	No
52nd Ave SE from Evergreen Way to I-5	5 - 10%	E	773	Yes	No
52nd Ave W from 148th St SW to Beverly Park Rd	5 - 10%	D to F	792	No	No
Beverly Park Rd from 112th St SW to Airport Rd	5 - 10%	E	781	No	No
Beverly Park Rd from 52nd Ave W to SR 525	10 - 20%	E	792	No	No
Beverly Park Rd from SR 525 to 112th St SW	10 - 20%	F	-	No	No
Evergreen Way from Madison St to 52nd St SE	5 - 10%	E	-	No	No
Evergreen Way from SR 526 to 75th St SE	5 - 10%	E	1890	No	No
Holly Drive from 100th St SW to 4th Ave W	10 - 20%	D	-	No	No
Merrill Creek Parkway from Seaway Blvd to Glenwood Ave	>20%	E and F	-	No	No
Mukilteo Blvd SW from Dogwood Drive to Evergreen Way	>20%	D	-	No	No
Mukilteo Speedway from 84th St SW to 76th St SW	10 - 20%	E and F	-	No	No
Rucker Ave from 41st St SE to Pacific Ave	5 - 10%	E	-	No	No
Seaway Blvd/20th Ave W from 75th St SW to Merrill Creek Pkwy	>20%	D	1635	No	No
Seaway Blvd/20th Ave W from S 26th St to 75th St SW	>20%	D	1619	No	No
SR 525 from 132nd St SW to Beverly Park Rd	5 - 10%	F	1635	No	No
SR 525 from Alderwood Mall Pkwy to SR 99	10 - 20%	F	1635	No	No
SR 525 from Beverly Park Rd to Harbour Pointe Blvd	10 - 20%	F	1635	No	No
SR 525 from Chennault Beach Rd to Harbour Pointe Blvd	10 - 20%	E	1635	No	No
SR 525 from Harbour Pointe Blvd to Chennault Beach Rd	10 - 20%	D	1619	No	No
SR 525 from Harbour Pointe Blvd to Paine Field Blvd	10 - 20%	F	-	No	No
SR 525 from I-5 to Alderwood Mall Pkwy	10 - 20%	F	-	No	No
SR 526 from Seaway Blvd to SR 99	>20%	E	-	No	No
SR 526 from SR 99 to I-5	>20%	E	565	No	No
SR 99 from 148th St SW to SR 525	5 - 10%	F	565	No	No
SR 99 from 168th St SW to 148th St SW	--	F	1710	No	No
SR 99 from 188th St SW to 168th St SW	--	E and F	1710	No	No
SR 99 from Manor Way to Airport Rd	5 - 10%	F	-	No	No
SR 99 from SR 525 to Manor Way	5 - 10%	E and F	-	No	No
Mukilteo Blvd SW from Glenwood Ave to Dogwood Dr	>20%	D	-	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

NOTE: certain roadway segments above do not meet both criteria (e.g., SR 99 from 168th St SW to 148th St SW). These roadway segments were included in the table above because these segments do meet both criteria in the 2030 timeframe and because of the nature of the airport some of the surrounding street system are important regional routes and should be considered even if both criteria are not met within a certain timeframe.



Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2010

Snohomish County Airport/ Paine Field

Puget Sound Regional Council Airport Ground Access Study

0 0.25 0.5 Miles

URS

Puget Sound Regional Council PSRC

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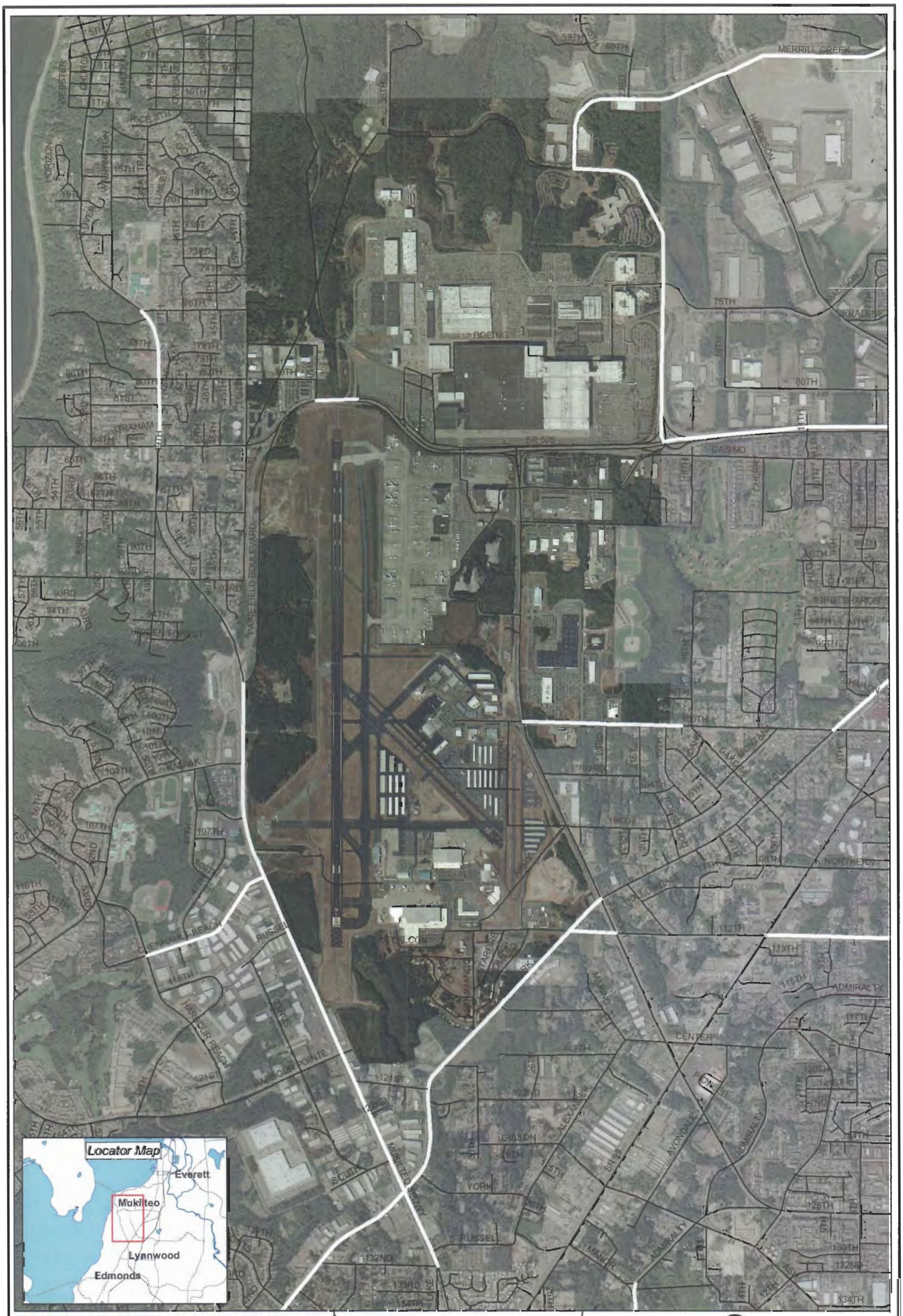

Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030

Snohomish County Airport/ Paine Field

Puget Sound Regional Council Airport Ground Access Study

0 0.25 0.5 Miles

Puget Sound Regional Council
PSRC

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Table 5-16 Tacoma Narrows Airport

Total Annual Operations	162,898[1]
Total Based Aircraft	200[1]
Economic Impact of Airport	
Number of Jobs	328
Labor Earnings (Payroll)	$ 7,630,905
Economic Activity	$ 20,291,027

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2010 6,808 Average Daily Trips				
SR 16 at Tacoma Narrows Bridge	5 - 10%	F	1649	No	No
SR 16 from Tacoma Narrows Bridge to I-5	--	D to F	1646, 1647, 1648	No	Yes
SR 16 from Tacoma Narrows Bridge to Rosedale	5 - 10%	D	1650	No	Yes
SR 99 from SW 373rd St to SW 348th St	--	E	2061	No	No

Roadway Segment	Aviation Related Traffic	Level of Service	MTP Project Number	RTID Project	Nickel Project
	Forecast Conditions 2030 7,351 Average Daily Trips				
SR 16 at Tacoma Narrows Bridge	5 - 10%	F	1649	No	No
SR 16 from Tacoma Narrows Bridge to I-5	5 - 20%	E and F	1646, 1647, 1648	No	Yes
SR 16 from Tacoma Narrows Bridge to Rosedale	10 - 20%	D to F	1650	No	Yes
SR 99 from Enchanted Pkwy to SW 320th St	5 - 10%	D to F	1903	No	No
SR 99 from SW 373rd St to SW 348th St	5 - 10%	D	2061	No	No
Stone Way from SR 16 to 34th Ave NE (Ft Fosdick Dr NW)	5 - 10%	E	-	No	No

[1] 2003 Washington Continuing Aviation System Plan Data

NOTE: certain roadway segments above do not meet both criteria (e.g., SR 16 from Tacoma Narrows Bridge to I-5). These roadway segments were included in the table above because these segments do meet both criteria in the 2030 timeframe and because of the nature of the airport some of the surrounding street system are important regional routes and should be considered even if both criteria are not met within a certain timeframe.

Legend

Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2010

Tacoma Narrows Airport

Puget Sound Regional Council
Airport Ground Access Study

0 0.25 Miles

URS

Puget Sound Regional Council PSRC

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Locator Map
Tacoma
Puyallup
Lakewood
Spanaway
Legend
Roads Meeting Level of Service and Aviation Related Traffic Criteria - 2030
Tacoma Narrows Airport
Puget Sound Regional Council
Airport Ground Access Study
URS
Puget Sound Regional Council
PSRC
0
0.25
Miles

Chapter 6: Regional Context for Implementing Regional Airport Ground Access Related Roadway Improvements

6.1 INTRODUCTION

Destination 2030 is the Metropolitan Transportation Plan (*Destination 2030*) for the central Puget Sound region and the transportation element of VISION 2020, the region's growth management, economic, and transportation strategy. *Destination 2030* provides a comprehensive statement of the region's future transportation needs as identified by cities, counties, the state, and other agencies. It contains policies aimed at improving mobility and access, and defines both short-and long-term transportation strategies and investments to improve the region's transportation system. The plan also includes a comprehensive list of over 2,000 projects which together represent the region's transportation improvement needs for the next 30 years.

Destination 2030 contains a Regional Aviation component which outlines the region's investment needs for our 28-airport regional airport system. In 2001 the *Regional Airport System* update included a brief review of ground access to the region's largest airports, but the project scope did not allow for a comprehensive planning process to adequately address the region's airport ground access needs. Adopted in 2001, *Destination 2030* included the following policy related to airport access: *Support multi-modal ground access improvement projects which enhance access to major airports throughout the region.* The region's 2002 *Strategic Plan for Aviation* identified airport ground access as a critical issue facing the region, and recommended the region prepare a comprehensive long-range plan to address these needs. This *Regional Airport Ground Access Plan* is the region's first step to identify the region's airport ground access needs and begin a planning process to address those needs.

6.2 NEXT STEPS IN PROJECT PLANNING

Completion of this planning effort is just the first step in helping the region to collectively improve airport access. Long-range success in improving access will require a continued effort by the Regional Council and project sponsors throughout the region. PSRC will make the *Regional Airport Ground Access Plan* available to all cities, towns, counties, transit agencies, and WSDOT. Thereafter we will cooperate with appropriate agencies and project sponsors to identify specific projects starting from the needs and projects identified in this airport ground access plan. These efforts will take two major tracks. For projects already contained in *Destination 2030* staff will work with the primary implementing agencies to identify funding sources and determine relative priorities amongst all agency projects. Where specific airport access needs are considered of regional importance, staff may recommend increased priority for these projects.

For airport ground access needs/projects which are not currently contained in *Destination 2030* staff will coordinate with project sponsors to complete the following:

1. More detailed traffic analysis and project planning
2. Formalize the statement of project need
3. Define project parameters and develop project description
4. Identify potential funding sources and evaluate project eligibility
5. Environmental review, analysis of alternatives, and selection of preferred option
6. Preliminary design and cost estimates
7. Incorporation of project into agency comprehensive plan, capital facility plan (CFP), and 6-year transportation improvement plan (TIP)
8. Request for project to be amended into *Destination 2030*. These projects would likely be added as candidate projects (see "Adding Projects to *Destination 2030*" below). For information on PSRC's

candidate to approved process, see "Guidance for Major Capacity Investments" on PSRC's web site at: http://www.psrc.org/projects/mtp/candidateapproved.pdf.

9. Application for inclusion in the Regional TIP if appropriate (see "Adding Projects to the Regional Transportation Improvement Program" below). For information on the Regional TIP visit PSRC's web site at: http://www.psrc.org/projects/tip/index.htm.
10. For state and interstate highways, PSRC could coordinate with local agencies and airport sponsors to request WSDOT include projects in its ongoing WTP process and Washington Statewide Transportation Improvement Program (STIP).

Adding Projects to Destination 2030

Destination 2030 identifies a range of major highway/road, transit, ferry and freight system capacity investments that are planned for implementation over the next three decades to improve the regional transportation system. A great number of the major regional projects in *Destination 2030* are now in active planning or study stages for implementation before 2010. Most projects in active planning stages are not defined well enough to be ready to be approved for implementation. Such projects were given Candidate status in *Destination 2030* while sponsors are determining the project's precise nature, alignment, environmental impact, modal mix, and specific financing sources that are essential to advance to Approved status for implementation.

The following three criteria must be met by project sponsors in order for projects to be included in *Destination 2030*. These criteria were met by all projects or programs included in *Appendix* 9 (regional plan project lists) of *Destination 2030* when the plan was adopted in May 2001:

1. The proposed project/program is/will be part of the Metropolitan Transportation System and falls under the definition of a regionally significant project/program as noted in state law under RCW 47.80.030.
2. The proposed project/program has been endorsed by its sponsor and forwarded to the Regional Council for inclusion in *Destination 2030*.
3. The proposed project/program has been derived from one of the following types of comprehensive planning processes:
   - An approved local comprehensive plan developed under the state Growth Management Act (where a city or county is the project/program sponsor).
   - An approved public transit short- or long-range capital improvement program (where a transit agency/operator is the project/program sponsor).
   - WSDOT's approved State Transportation System Plan (where the state is the project/program sponsor).
   - An approved capital improvement plan or program of another agency not noted above (e.g., where a port or special purpose transportation agency is the project/program sponsor).
   - A regional planning process conducted as part of the region's unified planning work program that supports implementation of the region's policies for transportation, development and/or economic strategies where the Regional Council is the sponsor, or one or more local, regional or state agencies have conducted such public planning process and recommended consideration and inclusion of project results in the regional transportation plan.

Moving MTP projects from Candidate to Approved

For projects to be designated as Approved, documentation shall be submitted with the request to change project status, showing how the following applicable six criteria have been met for a given project:

1. Consistency with *Destination 2030* policies
2. Benefit-cost analysis (only for projects greater than $100 million)
3. Environmental documentation
4. Planning requirements
5. Financial feasibility review
6. Air quality

More detailed information on the Regional Council's candidate-to-approved process can be found on our web site at: http://www.psrc.org/projects/mtp/candidateapproved.pdf.

Destination 2030 Update Process

During the coming 2 years the Regional Council will be preparing a major update of *Destination 2030*. The *Destination 2030* update process will begin in early 2005, and the amended plan will likely be adopted by the PSRC General Assembly in March 2008. This is an opportunity for local agencies throughout the region to submit new projects for inclusion in the plan. Projects and needs identified in this Regional Airport Ground Access Plan which are not currently included in *Destination 2030* will be eligible to be added to the plan during the plan update process. New airport ground access projects could emerge from more detailed planning work by the Regional Council in coordination with project sponsors or they could be proposed directly from project sponsors. These projects would need to meet the three criteria listed above for inclusion in the plan.

As part of the Regional Council's ongoing plan monitoring program, we will monitor how the region is implementing the projects and needs identified in this Regional Airport Ground Access Plan. At that time we would determine the need for additional cooperation and advocacy for airport ground access improvement projects.

City and County Comprehensive Plans

Before projects can be included in *Destination 2030*, projects should be identified in local agency comprehensive plans, capital facility plans (CFP), or transportation improvement plans (TIP). Local agencies could take the results contained in this airport ground access plan and provide additional detail on project needs and demand forecasts, more specific traffic studies, travel demand modeling, physical facility design, project timing, and other aspects of projects. This could be done as part of local agencies' regular plan amendment process under the state's Growth Management Act. After completion, the Regional Council would review and certify the plan amendment(s) and consider specific new projects in our *Destination 2030* update process.

Adding Projects to the Regional Transportation Improvement Program (Regional TIP)

The Regional Transportation Improvement Program (TIP) provides a list of current transportation projects within King, Kitsap, Pierce, and Snohomish counties. These projects are funded with federal, state, or local funds, including federal grants distributed and managed through the Regional Council's biennial project selection process. Required under federal and state legislation, the TIP spans a three-year period and must be updated at least every two years. After public review and comment, the TIP is approved by the Regional Council's Transportation Policy and Executive Boards before being submitted for further approvals to the Governor and ultimately the United States Department of Transportation.

In the central Puget Sound region, a new TIP is created every two years, following the project selection process for the federal funds distributed through the Regional Council. Each TIP then goes through a major update once a year, as well as accepting minor amendments on a monthly basis. These amendments

are described in greater detail on the Regional Council's website at the following address: http://www.psrc.org/projects/tip/currenttip/amendments/amendments.htm.

Not every transportation project in the region appears in the TIP. In order to qualify, projects must meet the following basic criteria:

- A project is using federal and/or state funds, or
- The project is funded locally AND is considered regionally significant, and
- The project's funds are scheduled for use within the three-year time span of the current TIP.

Each project undergoes a comprehensive review by Regional Council staff to ensure it meets certain requirements:

- Projects must be in, or consistent with, the region's long-range Metropolitan Transportation Plan, *Destination 2030*.
- Projects must demonstrate that the funds being programmed are secured or there are reasonable expectations to acquire those funds.
- If an existing or proposed roadway project is using federal funds, the roadway must be part of the federally classified roadway system.
- If a project includes Intelligent Transportation System (ITS) elements, it must be found consistent with the adopted Regional ITS Architecture (http://www.psrc.org/projects/its/index.htm).
- Projects are also evaluated to determine if they are incorporated in the current air quality conformity finding; projects cannot be included in the TIP until this step has been completed. The modeling for air quality conformity of the TIP occurs once a year, during the building of a new TIP or the annual update to the TIP. Conformity is described further on the Regional Council's website at the following address: http://www.psrc.org/projects/tip/applications/tipinfo1.pdf.

The TIP contains detailed information on each project, including the project title and description, the sponsoring agency, and the amount and source of funds currently programmed for each phase of the project. In addition to the list of projects, the TIP also contains the following information:

- The policy framework containing the adopted policy guidance for the distribution of regionally managed federal funds.
- A description of the project selection process for these funds.
- A discussion of the interagency coordination and the public review process.
- The findings of the air quality conformity analysis.

6.3 BACKGROUND ON THE DISTRIBUTION OF FEDERAL FUNDS

The Regional Council is responsible for distributing federal highway and transit funds under the following programs: Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), and Federal Transit Administration (FTA) Section 5309 Fixed Guideway and Section 5307 Urbanized Area formula funds. These funding programs became available with the passage of ISTEA, which authorized the federal surface transportation programs for highways and transit for the 6-year period from 1992-1997. The programs were continued with the reauthorization of the act in 1998 as TEA-21, covering the 6-year period from 1998-2003.

STP funds are the most flexible of the federal transportation funding sources, with a primary requirement being that the project is on a facility identified on the federal functional classification system. Functional classification is the process by which public streets and highways are grouped into classes according to

the character of service they are intended to provide. CMAQ funds are eligible only to projects that result in a benefit to air quality, with a specific list of eligible activities.

STP and CMAQ funds are distributed approximately every two years through a competitive process. The overall guidance for programming these funds is provided by the following documents:

- VISION 2020, the region's long-range growth, transportation, and economic strategy, adopted in May 1995.
- *Destination 2030*, the region's long-range Metropolitan Transportation Plan, adopted in May 2001.
- Local comprehensive plans, as required by the state Growth Management Act.
- A policy framework revised and adopted prior to the development of each new TIP to guide the project recommendation processes and document how these funds will be distributed.

Since 1992, the Regional Council has distributed a total of $652 million in federal STP and CMAQ funds. Since 1992 there have been six project selection processes. The STP and CMAQ funds distributed through these processes are those that were allocated to the central Puget Sound region under ISTEA (1992-1997) and TEA-21 (1998-2003); also distributed are the 2004 and 2005 funds expected with the reauthorized surface transportation act, which is currently being considered by Congress. As was stated earlier, a new TIP is created every two years, following the project selection process for the federal funds distributed through the Regional Council. The funds distributed are estimates of upcoming funds, generally two and three years into the future. The 2004 project selection process distributed estimated 2006 and 2007 funds, and in October 2004 the 2005-2007 TIP was adopted by the Regional Council's Executive Board. Federal and state approvals are anticipated by January 2005.

There are two components of the project selection process for STP and CMAQ funds — a regional competition and the countywide processes. The first two project selection processes conducted by the Regional Council distributed 100% of the funds to each of the four countywide forums based on population share. Starting in 1995, however, with the advent of the first long-range Metropolitan Transportation Plan (*Destination 2030*), a shared regional-countywide process was adopted. A portion of the funds was distributed through a regional competitive process, with the remainder distributed to the countywide forums for distribution through their own processes.

The regional process is conducted through the Regional Council's Regional Project Evaluation Committee (RPEC). RPEC, with support from the PSRC, is responsible for identifying and recommending projects to the Transportation Policy Board (TPB) to receive the regional portion of the STP and CMAQ funds. The adopted Policy Framework guides the project selection process and identifies the funding split between the regional and countywide processes. For the past two funding cycles, a Task Force on PSRC Funding Priorities was convened to update the Policy Framework. The Task Force consists of voting members of the Transportation and Growth Management Policy Boards, as well as members of the Regional Staff Committee and RPEC, who provide professional and technical expertise. Prior to each funding cycle, the Regional Council reviews the Policy Framework and recommends changes as appropriate. The policy framework is available at PSRC's web site at: http://www.psrc.org/projects/tip/currenttip/0507appc1.pdf.

The countywide processes provide a role for each of the four countywide policy and technical forums to develop and recommend projects. The Policy Framework provides policies and guidance to the forums for their project recommendations. Each county has established its own process based on these policies and local comprehensive plans. The processes were reviewed for regional consistency and for compliance with federal requirements, and were approved by the Regional Council's Transportation Policy Board.

PSRC issues a "call for projects" prior to each project selection process. Project sponsors can call 1-206-464-7090 to be added to the list. Only public agencies are eligible to receive Federal transportation funds.

Other agencies distributing transportation funds include WSDOT, Washington State Transportation Improvement Board (TIB), County Road Administration Board (CRAB), Freight Mobility Strategic Investment Board (FMSIB), and others.

6.4 ADDITIONAL PROJECT IMPLEMENTATION METHODS

In addition to the Regional and Countywide processes described above, airport sponsors may also coordinate directly with local cities, counties, transit agencies, WSDOT, the Washington State Transportation Improvement Board (TIB), the County Road Administration Board (CRAB), Freight Mobility Strategic Investment Board (FMSIB), Regional Transportation Investment District (RTID), or other agencies to implement airport access improvement projects. Projects would first be incorporated into local comprehensive plans (20-year plans) and transit development plans (6-year plans), and then incorporated into local agency (city or county) 6-year capital facility plans and/or 6-year transportation improvements plans, and transit agency budgets. Projects following these implementation routes would need to meet all required planning and environmental processes and permits prior to construction.

One example of using additional project implementation methods is the recent agreement between Sound Transit, the City of Sea-Tac, and the Port of Seattle to fund light rail service between Seattle and Sea-Tac (Phase I) by the end of 2009. While this study focused on roadway travel needs the Link light rail transit connection is supported by PSRC's plans and policies contained in *Destination 2030*. The section from S. 154th Street to the airport is a critical link for the region's airport passengers and airport employees and this study reiterates other existing PSRC policies supporting transit access improvements to major regional airports including transit facilities and services to support the regional mobility of air passengers, airport employees, and other employment located at or near airports (e.g., LINK light rail and Sound Commuter Rail connections in the vicinity of Boeing Field, improved regional bus service to Renton Airport, Paine Field, Boeing Field, and Sea-Tac Airport, etc.).

6.5 CONCLUSIONS

Chapter 1 established certain needs for this project, including increasing the data available relating to aviation related traffic in and around regional airports, as well as identifying the status of ground access needs for the regional airports. Goals and objectives for the study were also outlined

The results of this study is a list of proposed projects, by airport area (Chapter 5) that will be beneficial to the movement of people in and around the airports. While improving airport access may not be enough of a reason to make improvements to certain roadways, the improved benefit to the users of the airport should be considered in the decision making process. This study provides the framework to determine which of the surrounding roadways are impacted by aviation related traffic and, therefore, which roadway improvements will benefit the roadway users of not only the airport itself but the area surrounding the airport.

One additional item that should be considered when updating this report is the need for traffic counts at airport locations. At the current time there are no traffic counts on these roadways. Actual counts would show the demand of airports at different times of the day and week in relation to existing and projected traffic on the surrounding street system.

APPENDIX A: Explanation of PSRC Travel Demand Model Derivation of Trips to/from Sea-Tac Airport

The Regional Council operates a traditional four-step travel demand forecasting model, preceded by regional econometric forecasts of population, households, and employment (STEP) and allocation of these forecasts to analysis zones (DRAM/EMPAL). The entire modeling process is described in *Current Model Documentation* (2001), *New Model Documentation* (2001), and *PSRC Travel Model Improvements* (2003), which are available on the PSRC web site (www.psrc.org/datapubs/pubs/models.htm) and from the PSRC Information Center.

STEP forecasts regional jobs in 30 industry sectors. These are aggregated to manufacturing, retail, FIRES (financial, real estate, and services), WTCU (wholesale, transportation, communications, and utilities), and government/education, and allocated by EMPAL to Forecast Analysis Zones (FAZs), each containing about three census tracts. The forecasts at the FAZ level are reviewed by PSRC member agencies before being used for travel demand modeling. The jobs are further disaggregated to Transportation Analysis Zones (TAZs), each being part or all of a single census tract, before being used as inputs to the travel demand model.

In Trip Generation (first of the four steps in travel demand modeling), the jobs are used to generate trip productions and attractions by TAZ for Home-Based Work (HBW), Home-Based Shopping (HBS), Home-Based Other (HBO), and Non-Home-Based (NHB) regional trips. This accounts for all the trips made by residents of the region which would normally be expected to be attracted to sites with the forecast numbers of jobs. There is also a separate generation of truck trips, based on various job categories. Sea-Tac airport attracts more than the "normally" generated number of person trips due to the special nature of its function in the region. These are primarily trips made by airline passengers and their ground transportation, both regional residents and visitors. "Special Generator" trips are added to the normally generated HBO and NHB trips so that the total non-work trips account for all passengers. The following table shows the regular and "specially" generated trips for Sea-Tac airport (TAZ369). Observed and forecast enplanements are included to show the consistency in growth rates.

Table A-1 Observed and Forecast Passenger Trips at Sea-Tac Airport

Observed	1990	1995	2000		
Enplanements	8,225,920	11,390,521	14,173,752		
Annual % growth		6.73%	4.47%		
					2000-2020 Annual
Sea-Tac Master Plan Update Final EIS (1996)			2000	2020	Growth Rate
		Enplanements			2.4%
					2000-2020 Annual
Sea-Tac Supplemental Environmental Impact Statement (1997)			2000	2020	Growth Rate
		Enplanements	13,700,000	22,300,000	2.5%
					2000-2030 Annual
Modeled Person Trips to Sea-Tac Airport (TAZ 369)(2003)			2000	2030	Growth Rate
		HBS, HBO and NHB	48,502	70,642	
		Special Generator	79,730	198,823	
		Total non-work	128,232	269,465	2.5%
		HBW	29,100	41,315	1.2%
		Total person trips	157,322	310,780	2.3%
		Vehicle trips (including trucks)	118,084	191,949	1.6%

Source: PSRC, 2005

The trip forecasts were calibrated using Base Year 2000 passenger and traffic counts, and forecasted to grow in proportion to the Port of Seattle forecasts for passenger traffic. The special generator trips are added in at the end of the Trip Generation process. Because of the regional nature of the travel demand model, intra-TAZ trips, such as those made by parking lot vans, do not appear in the model.

In Trip Distribution, the trip attractions are matched with trip productions to create trip tables by trip purpose. The regional residents' special generator trips are distributed evenly by household income throughout the region, while all other trips associated with the airport are distributed based on travel times to the airport.

In Mode Choice, the inter-zonal trips are allocated to several modes of travel (SOV, two-person carpool, three-or-more-person carpool, walk-access transit, auto-access transit, walk, and bike) based on the relative utilities (a combination of time and cost) of the various modes. Therefore mode shares vary from zone pair to zone pair. The average vehicle occupancy used for the airport was derived from the regional mode shares and checked against a survey of airport users.

In Vehicle Assignment, vehicle trip tables by time of day are derived from the mode choice output. The trip tables are assigned to a regional road network which contains all freeways and arterials but few local roads, due to the relatively large size of the TAZs. The resulting traffic volumes are used to calculate congested speeds, which are fed back into trip distribution and mode choice for more consistent results

Results of Travel Demand Model Analysis for Sea-Tac Airport

Total average daily airport trips derived from the regional travel demand model for the traffic analysis zone containing Sea-Tac Airport (TAZ 369) for the year 2003 was 121,000. These model results were validated using actual airport traffic count information collected by the Port of Seattle for the period August 11, 2003 through September 1, 2003. These actual counts showed total average daily traffic to be 123,858. Actual traffic counts (see table below) were taken at 11 locations throughout the airport, and included directional counts where applicable.

Table A-2 Traffic Counts in the Area

Traffic Count Location	Average Daily Trips (for period Aug. 11, 2003 – Sept. 1, 2003)
North airport expressway - southbound from SR-518	23,725
North airport expressway - northbound to SR-518	29,279
North airport expressway - southbound on ramp from Air Cargo Road	5,401
North airport expressway – northbound off ramp to S. 170th Street	7,697
Air Cargo Road south of S. 160th Street	10,530
S. 160th Street east of Air Cargo Road	8,016
S. 170th Street east of North Airport Expressway northbound ramps	18,763
South terminal exit to SR-99	7,192
Air Cargo Road south of terminal	1,155
Starling Road north of S. 188th Street	781
SR-99 entrance at south terminal	11,319
Total Count for all locations:	123,858

Source: PSRC, 2005