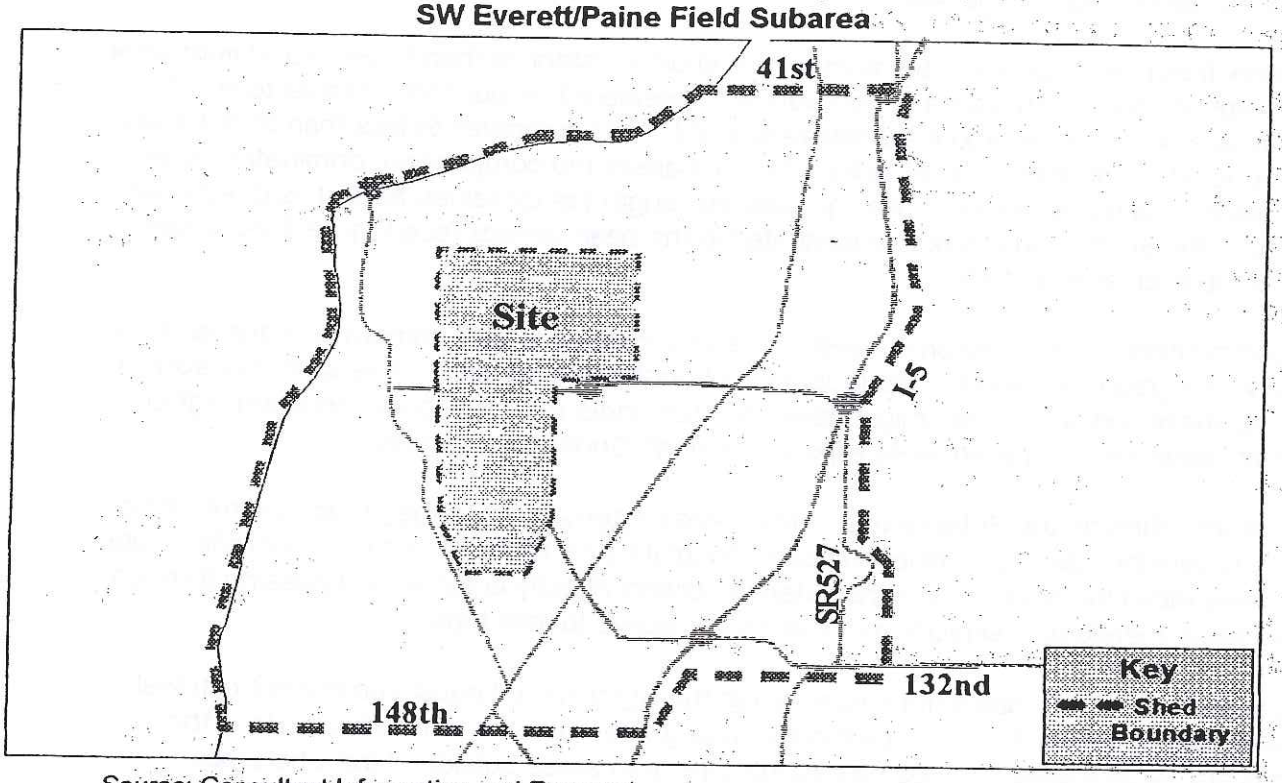
IMPACT SHED FOR TRANSPORTATION

Current and forecast travel demand for the SW Everett Subarea, under the DEIS alternatives, defines and limits the area of significant transportation impacts and potential mitigation. This geographic area, or "shed", will be the focus of the DEIS transportation discussions. The transportation impact/mitigation shed is defined as the area within which significant off-site environmental impacts in the Subarea will be measured and for which off-site mitigation responsibility is established and secured.* This area/shed:

1. follows established planning area boundaries to the extent feasible,
2. is functionally related to the regional transportation system, and
3. contains approximately (one half*) off work trips and (two thirds*) of all trips traveling to and from the Subarea on the transportation system, by any mode of travel, within approximately (a 15 minute*) distance.

Figure 3.2-1 defines the Impact Shed and primary area of environmental analysis for transportation.

Figure 3.2-1
Impact/Mitigation Shed For Transportation
SW Everett/Paine Field Subarea



Source: Consultant Information and Proposal

All jurisdictions with transportation facility planning or programming responsibility in this Impact Shed should be party to interlocal agreements to assure: common long-range planning visions and estimates of growth; a common investment program; common financial policy assumptions; common methods for assigning impact responsibility; and consistent overall transportation planning analysis methods and standards.

* More detailed information about the Impact Shed and the factors used to define it are included in Technical Memorandum #1.

3.2.2.1 Travel Demand

General Travel Patterns:

The Subarea currently contains about 32,000 jobs, held by persons who live in various parts of the region. Approximately 50% of persons with jobs in the Subarea live within about 6 miles. Because of the predominance of employment-related land uses in the Subarea, about 50% of its trips are either for work or work-related purposes, such as commercial trips and trips to and from area businesses. For the region as a whole, work trips represent only about 20% of total trips.

Work trips are concentrated during commute periods and make up well over one-half of total travel to and from the Subarea during the 6AM-9AM and 3PM-6PM periods. Because of the travel characteristics of employees at the Boeing Facility, travel during peak periods in the vicinity has a double-peak in the afternoon, occurring at about 3PM and again at about 5PM. This double-peak is due to Boeing shift changes which occur at 6-7AM and 2:30-3:30PM. Because of the general characteristics of the morning peak in this part of the region, a double-peak is not pronounced in the AM.

Non-work travel, as an average, tends to involve shorter distances than travel to and from work. When trips involving both work and non-work are considered, about 75% of travel to and from the Subarea occurs within about a 6 mile radius of it. This compares to less than 50% for work trips alone within this same 6 mile radius. The Subarea's trip composition, dominated by work trips, results in a relativley longer average daily trip length (as explained above), is directionally skewed to the South, and is more concentrated in the peak periods (see Figure 3.2-2 shows general trip orientation in 1990).

The composition and distribution of travel demand is forecast to shift somewhat in the next 20 years, with a gradual increase in the proportion of north-oriented travel. This shift, however, is relatively minor and is less than might have occurred under pre-GMA planning when higher levels of suburban/rural growth were expected in north Snohomish County.

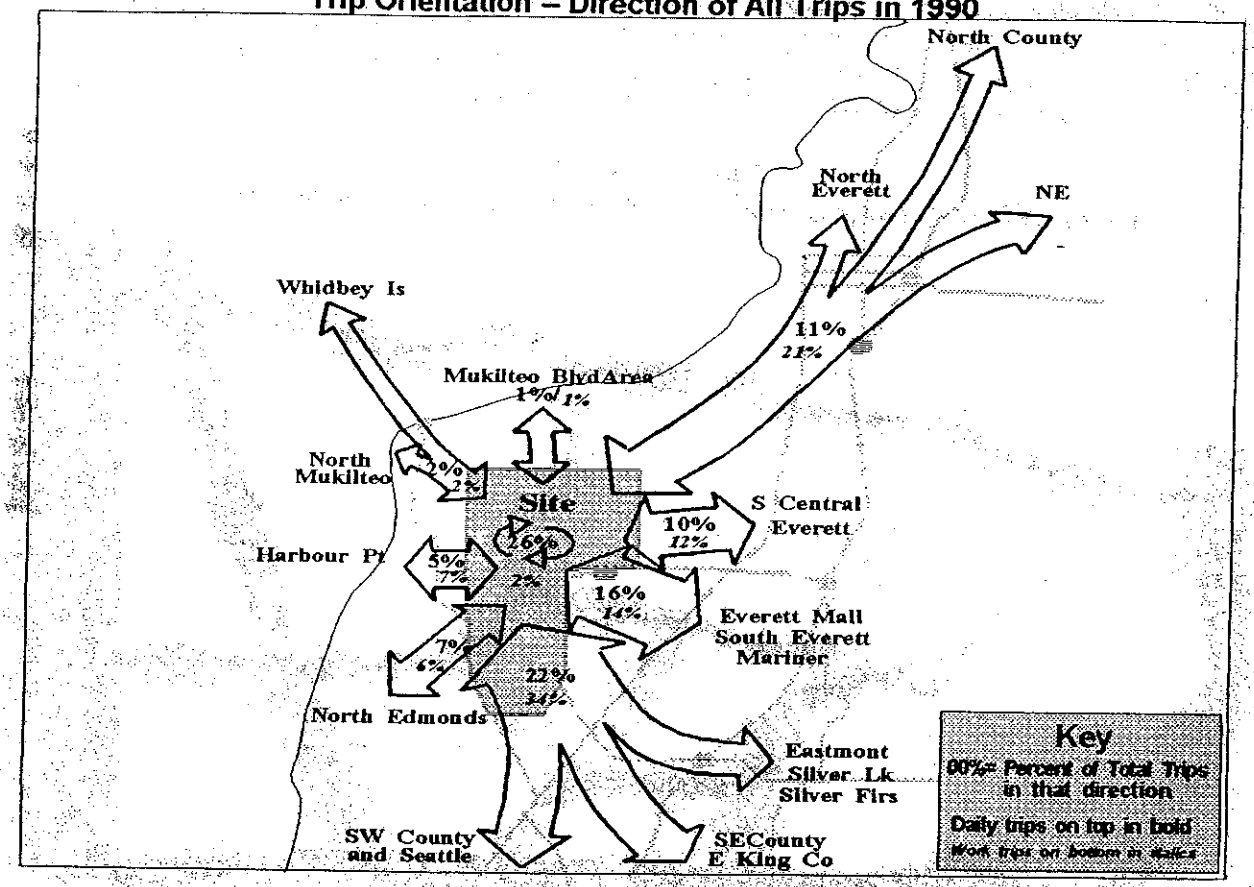
Trips moving through the Subarea to and from areas external to the Shed (such as from King County to Whidbey Island) is minor compared to total travel, representing less than 5% of total daily travel within the Shed. The transportation network directly entering and passing through the Subarea, therefore, is similarly minor when compared to total trips.

Trips to and from the Subarea from areas within the Shed is the largest component of travel demand (see Appendix 3.2g). Trips moving through the Subarea from other parts of the Shed is also large relative to Subarea through-trips from areas outside of the Shed (see previous paragraph). This localized through-trip component is especially important for travel from Mukilteo zones on the west side of the Subarea (but within the Shed) to Everett Planning Area zones on the east side of the Subarea (also within the Shed).

Mode of Travel:

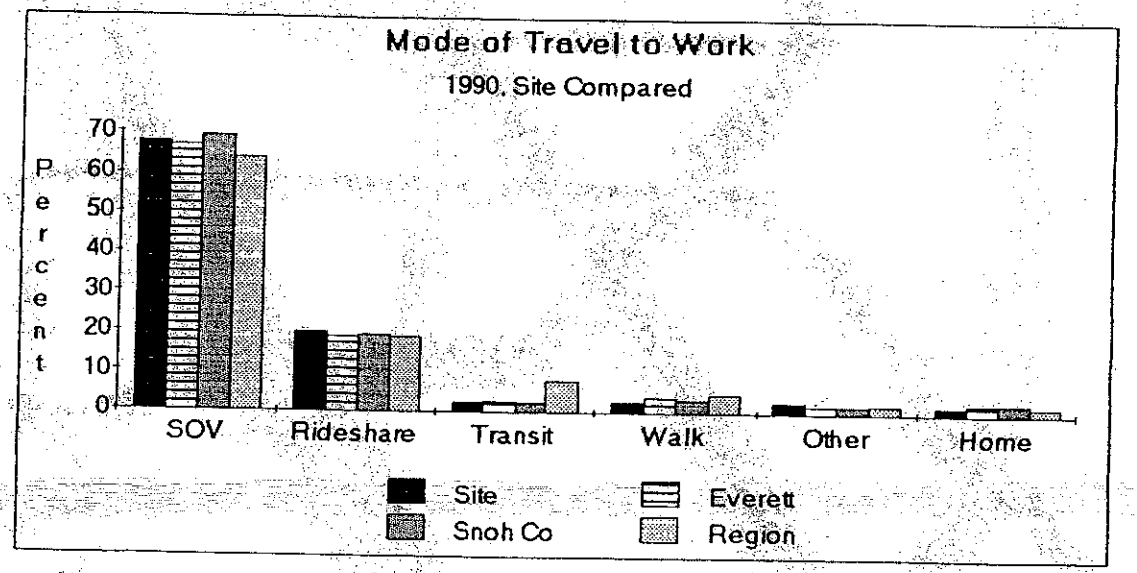
Travel to and from work is dominated by persons driving alone. About 70% of the persons arriving at work in the Shed now drive alone. Of those who do not drive alone, 2/3 carpool or vanpool and the other 1/3 use transit or use other means (see Figure 3.2-3).

Figure 3.2-2
Trip Orientation – Direction of All Trips in 1990



Source: Everett Comprehensive Plan DEIS, 1994

Figure 3.2-3

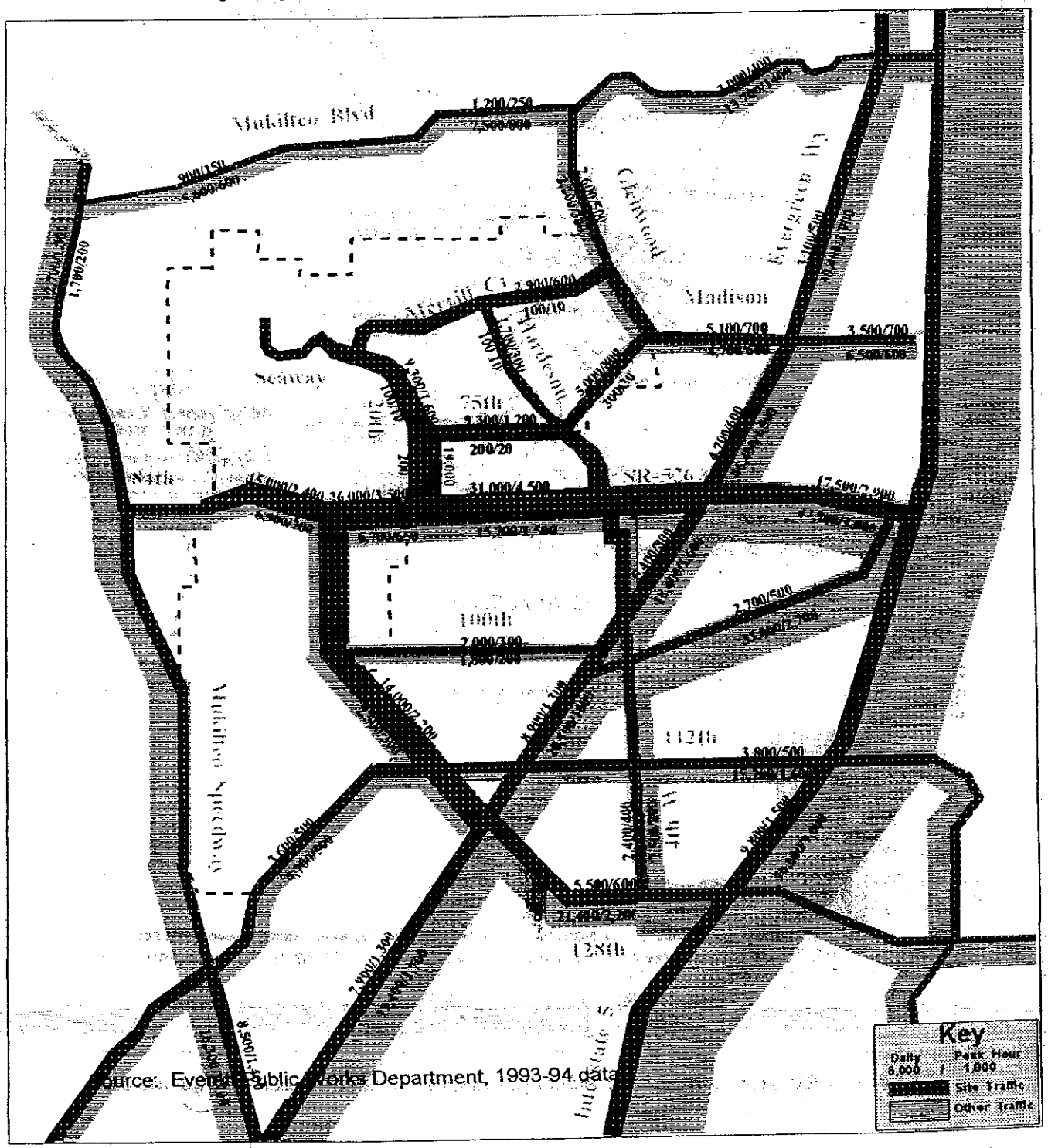


Source: 1990 Census Journey to Work (Not specific to Subarea -- Subarea Estimated)

Vehicle Traffic Volumes on Area Roads:

Figure 3.2-4 indicates current (1991-1994) daily vehicle counts on the arterial and freeway system in the Shed. These estimates include the amount of traffic traveling to and from the Impact Shed for any purpose. As expected, the amount of subarea traffic as a share of total traffic declines sharply as the distance from the subarea increases.

Figure 3.2-4
Existing Daily Vehicle Volumes on Shed Arterials and Freeways



Source: Everett Public Works Department, 1993-94 data

In addition to traffic on major routes, other traffic circulates on local streets. This local system represents over two-thirds of the total roadway miles in the Shed. In general, traffic on these streets is (individually by route) significantly less than on any of the arterials shown. Most of this local traffic finds its way onto the larger system as trips are completed. The effect of this traffic is discussed later in this document but will not be shown in a graphic form. Current traffic volumes for many of these local routes can be obtained from the Everett or County Public Works Departments.

Transit Patronage:
Everett and Community Transit provide regularly scheduled bus service to the Subarea. Eleven of Everett Transit's sixteen routes operate within the broader Shed, providing service within the City limits and to some immediately adjacent areas. The Everett system carries about 4,300 average weekday passengers to and from the greater impact area, with about 1,000 of these daily passengers on routes that directly serve the Subarea. Service is provided throughout the day at half hour to one hour intervals on most routes, with more frequent times during peak periods on two of the routes serving the Subarea. Community Transit operates nineteen routes within the impact area, with thirteen of these routes within the Subarea. The Community Transit system carries about 5,000 daily passengers to and from the Shed, with about 2,500 of these daily passengers (one half) directly to or from the Subarea. Other Community Transit routes traverse the Shed. The Community Transit service is focused primarily on peak commuter periods of the weekday. Together, Everett and Community Transit carry about 3,500 daily passengers to and from the Subarea and provide service for a total of nearly 10,000 passengers within the Shed. Figure 3.2-5 shows existing transit routes within the impact area. Additional detailed existing transit system information is contained in the Transit System Plans and operating data for Everett and Community Transit.

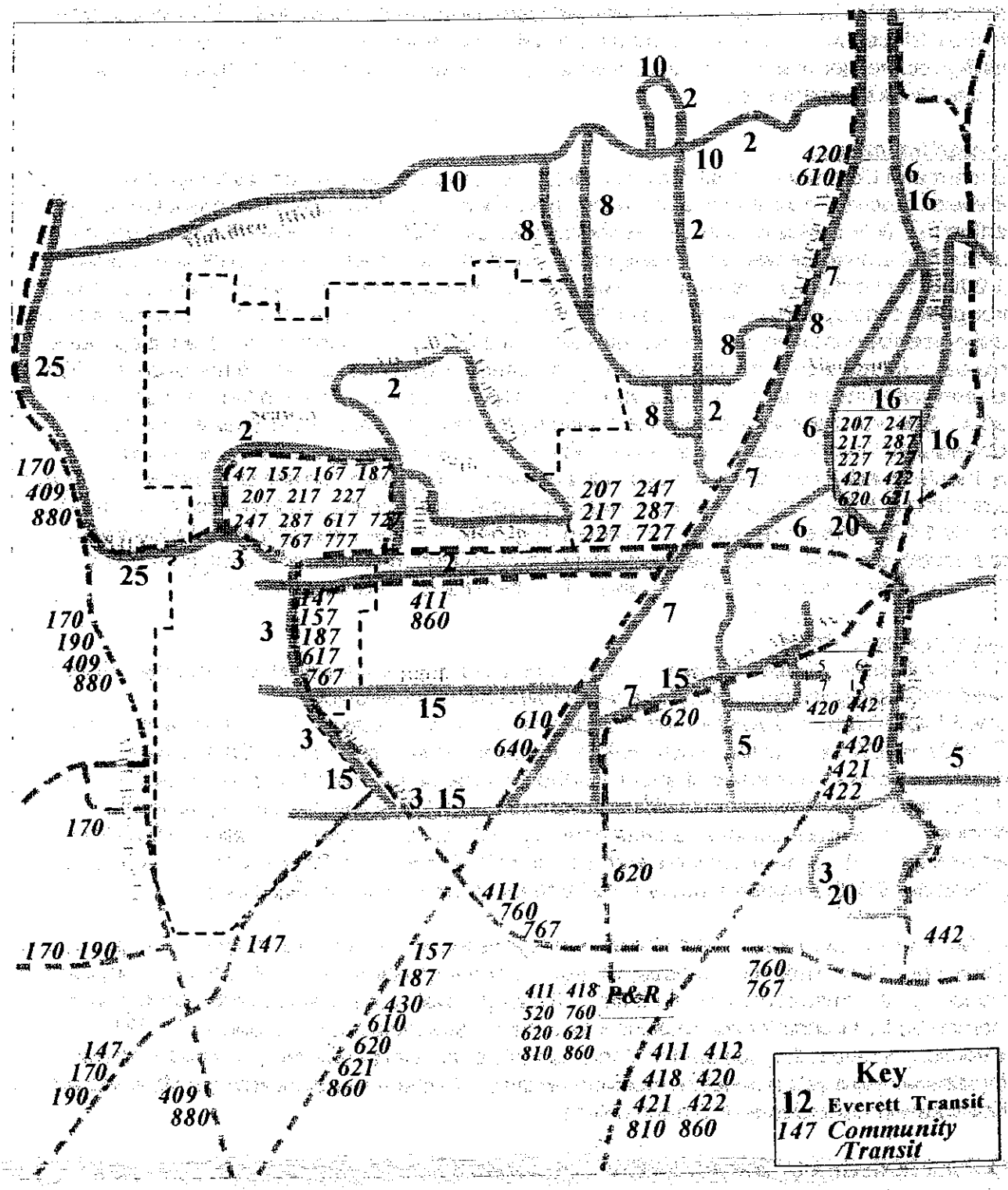
Other Modes of Travel:
(1) Ferry System Usage. Travel to and from the Subarea as well as the larger Impact Shed is linked to Whidbey Island via ferry service provided by the Washington State Ferry System, a division of the Department of Transportation. The "marine extension" of SR-525 onto Whidbey Island, which is located along the western edge of the Subarea, presently carries an average of about 12,000 daily passengers including about 6,000 vehicles, 10,000 drivers and passengers riding in vehicles, and 1,900 walk-on passengers without vehicles. The route reaches its peak ridership in August when it carries about 15,000 daily passengers. The route has increased by some 50% in the last 10 years, from an average of just under 8,000 daily passengers in 1984 to the current total of about 12,000.

(2) Nonmotorized Usage. The Subarea is relatively low in employment density. The potential for the use of nonmotorized modes by large numbers or percentages of Subarea employees is consequently limited at the present time. Existing travel survey data suggests that this share, combined for all nonmotorized uses, is less than 5% (see figure 3.2-3, above). A 1991 inventory of sidewalks indicated that this subarea's roadways have fewer than 50% of their lengths with protected pedestrian/bicycle facilities. This share is consistent with other planning subareas within the Everett Planning Area.

3.2.2.2 Existing Capacity, Safety and Condition

Capacity of Arterials and Freeways:
The City of Everett uses generalized measures of vehicular capacity that reflect peak traffic conditions, number, spacing and entering volumes at intersections, number of traffic lanes,

Figure 3.2-5
Existing Transit Routes in the Impact Shed
Everett and Community Transit

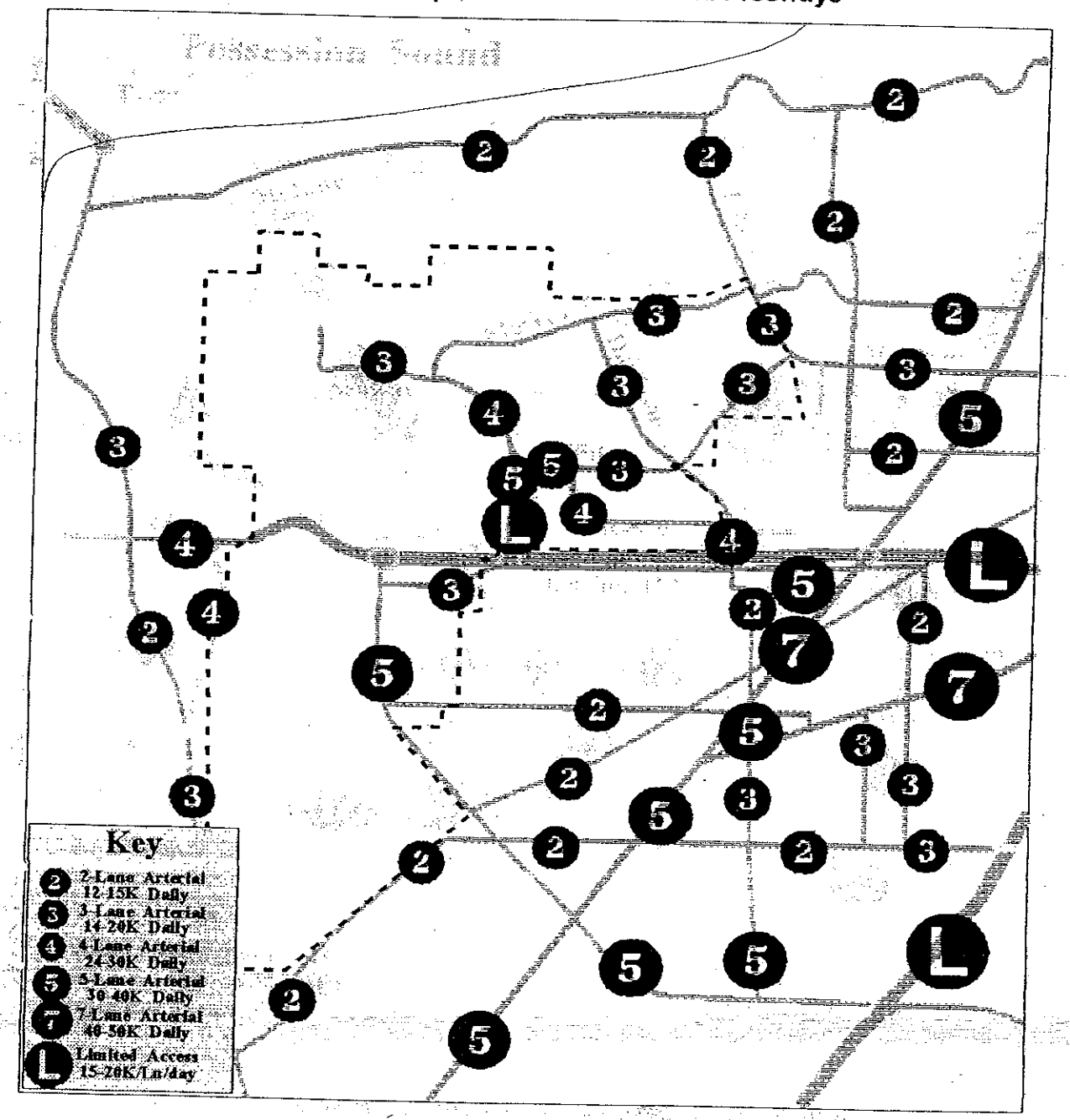


CT #1

Source: Everett Transit Comprehensive Plan; Community Transit

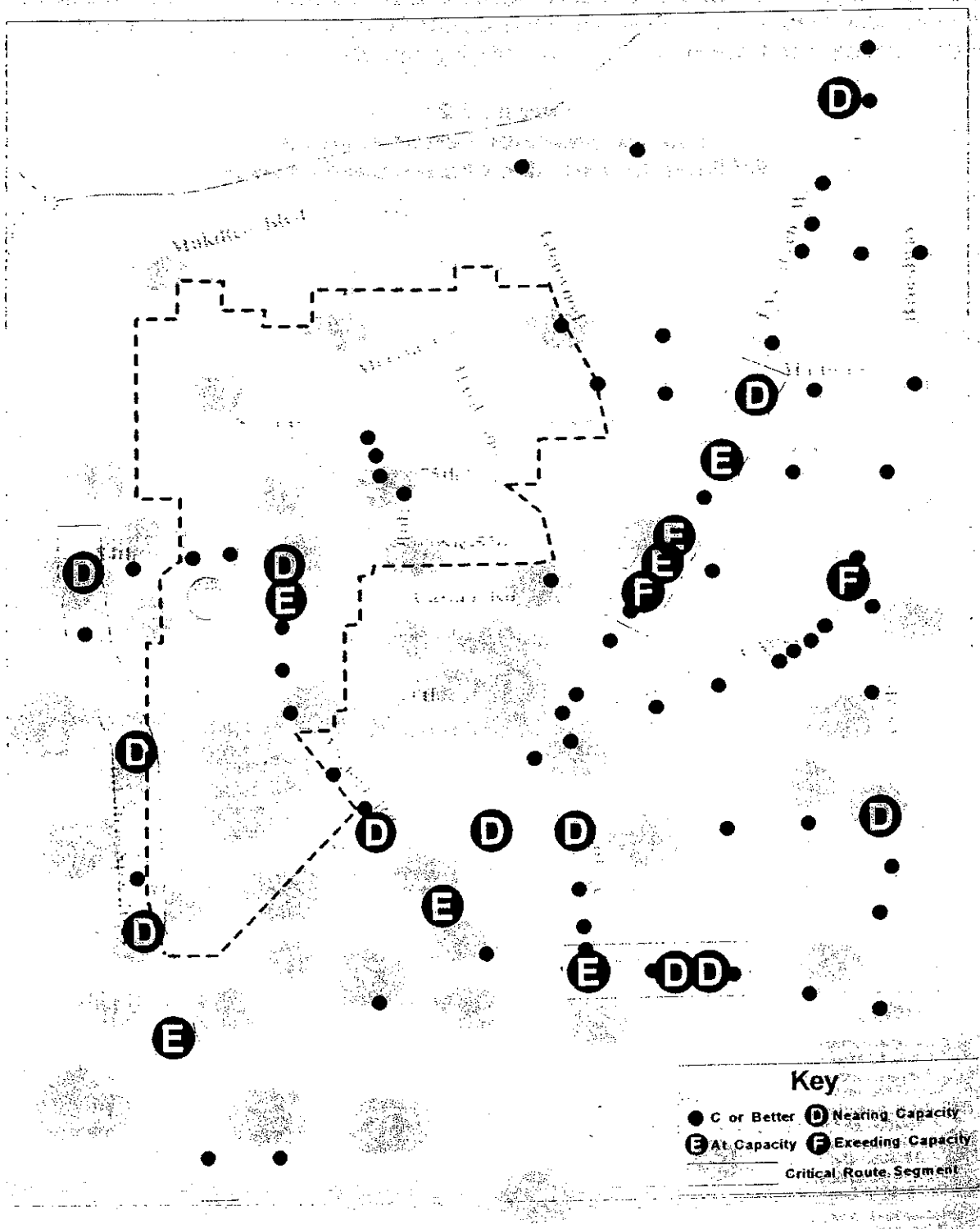
and several other facility or traffic characteristics. Figure 3.2-6 shows generalized vehicle capacity on major routes within the Shed. Figure 3.2-7 identifies existing signalized intersections, including level of service deficiencies. It is used in conjunction with generalized vehicle capacity to better isolate potential corridor or system deficiencies. These intersection and route performance measures provide a broad indication of vehicular capacity for the circulation system and a rational basis for identifying mitigation measures.

Figure 3.2-6
Existing Generalized Vehicle Capacity
SW Everett Impact Shed Arterials and Freeways



Source: Consultant capacity estimates

Figure 3.2-7
Existing Signalized Intersections and Intersection Level of Service
SW Everett Impact Shed



SC #17

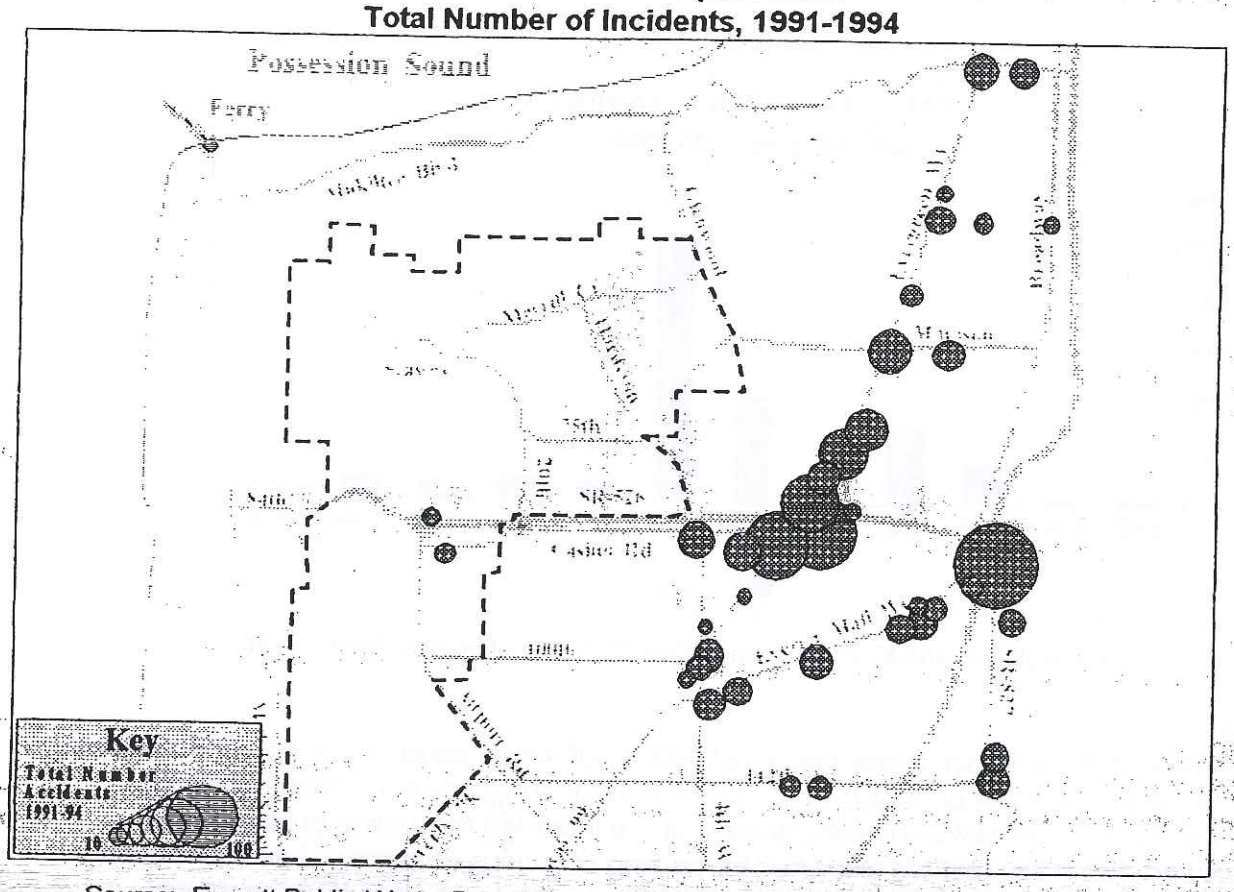
Source: Everett Public Works Department and Consultant estimates

Additional, localized, more detailed, capacity calculations at individual intersections and on route segments must be performed prior to designing and constructing projects on the system. These additional calculations will produce more specific information about deficiencies than the generalized methods used in this DEIS.

Accidents and Safety:

Figure 3.2-8 depicts absolute numbers of accidents for the past four years within the Shed. These numbers have not been adjusted for traffic volumes (eg. incidents per million vehicle miles per year). As "raw" numbers they clearly show a pattern of potential safety problems centered primarily along the Evergreen Way corridor which is characterized by a wide range of trip types, lengths and purposes involving multiple turning movements into and out of the many activities that line the corridor -- and by very high traffic volumes. The major concentration of accidents approaching the Evergreen / SR-526 interchange attests to both the high volumes of traffic in this location as well as to some inadequacies in the design of ramps, intersections and local access points for the volumes of traffic in these locations. When adjusted for traffic volumes, these locations still display higher than average rates for the incidence of accidents than other locations in the Planning Area.*

Figure 3.2-8
Accidents in the Impact Shed
Total Number of Incidents, 1991-1994



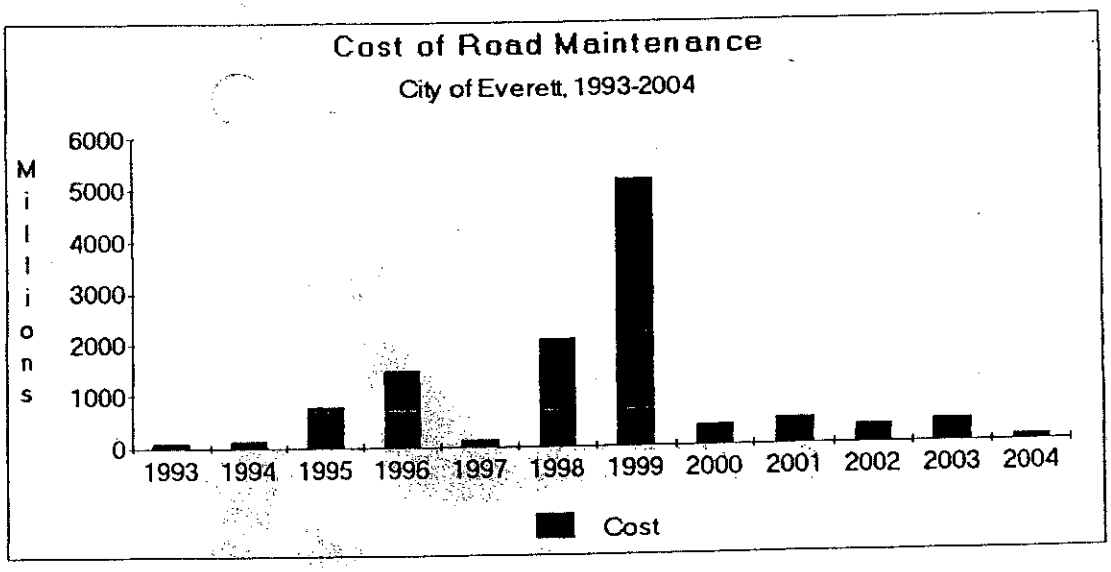
Source: Everett Public Works Department, 1991-94 data

*Because of an inadequate sample of incidents for all areas within the Shed -- including inconsistencies in data collection -- calculated rates may indicate misleading or random conditions that may or may not be safety-related. A more objective evaluation using safety 'warrants' is preferred but has not been performed for this area.

Maintenance, Operations and Administration:
The City's road system has been maintained in a safe and serviceable condition and maintenance is monitored by a Pavement Management System. The annual maintenance program commits a significant amount of available transportation funding to keeping the existing system in good condition. The administration of this program as well as other related administrative and operational requirements, involving primarily personnel costs, occupies a small but significant share of the annual budget. Combined with maintenance, these costs represent well over two-thirds of all available local transportation revenues. The Pavement Management System indicates that the City will experience a peak in maintenance requirements around the turn of the century (see Figure 3.2-9). Because of the newer roadway inventory within the SW Everett Subarea, the maintenance schedule for the Subarea is less costly than the City average. In general, maintenance of City, County and State facilities has not kept pace with need.

Condition of existing facilities does not ensure proper roadway design and is only an indication of how well the original design is maintained. The original design may not be appropriate for existing conditions where higher volumes or other circulation demands are placed on the facility. For example, design features such as protected turning movements, sidewalks, curbs, gutters, lighting or other safety and operational features may not be incorporated into an existing street. These other issues are treated elsewhere in this DEIS.

Figure 3.2-9



Source: Everett Public Works/Comprehensive Plan DEIS Supplemental Appendices

Parking:
It is estimated that the Subarea now has about 34,000 off-street parking spaces. This number represents spaces that are or appear to be designated for employee or customer parking. It does not include industrial/warehousing areas that are intended for staging or storage of materials and machinery that are also used for parking of various purposes. The figure also does not include the potential for on-street parking, estimated to be up to 5,000 potential spaces along the approximately 15 miles of roadways that are within or directly adjacent to the Subarea. Many of these streets currently do not have parking and in some cases, restrict

parking. The extent of informal or non-designated parking potential is unknown. Considering all potential types of parking, up to 40,000 spaces may be available to serve the present Subarea population of about 33,000; about 1.2 spaces per employee. Some of the employers, most notably the Boeing Company, now utilize considerably less than 1 space per employee.

Some employees park off-site of their place of work in order to take advantage of favorable rideshare parking (such as utilizing park-and-ride lots). It is not known how extensive this is or whether it may pose a future problem if demand management parking incentives are applied on a wider scale than at present. This demand should be carefully monitored in the future, particularly if these incentive programs are implemented on a significantly larger scale.

Off-site parking for transit and vanpool/carpool at designated park and ride lots is currently about 500 parking spaces throughout the region, most of them within about 10 miles of the site, including parking on Whidbey Island for ferry/bus trips to the Subarea as well as subscription bus service from sites in King County. The parking base for this demand is being expanded by several hundred spaces.

Transit Capacity:
Both Community Transit and Everett Transit provide service in response to estimated transit demand. Typically, for most routes serving the Subarea, mid-day service is significantly below both seated and maximum capacity and peak service is typically approaching or at seated capacity; in some cases seated capacity is exceeded. In order to increase capacity, additional service hours are added, including more frequent headways on existing routes, new routes and new coaches. The addition of service hours requires additional operations costs. These costs make up more than three-fourths of transit service costs. While important, capital costs are relatively minor (capital costs are the only costs currentlly subject to impact mitigation). The present overall seated capacity of peak service for routes serving the Subarea is adequate.

Demand Management Programs and Services:
The City of Everett and Snohomish County administer demand management programs under the State Commute Trip Reduction Act. These programs affect employers with more than 100 employees with the intent to achieve a 1997 goal of 25% reduction in vehicle miles traveled, and the 2000 goal of 35% reduction. A number of employers within the Subarea are currently implementing these programs, the largest by the Boeing Company. It is estimated that about 11% of all Boeing-Everett employees ride transit, 7% vanpool, and 11% arrive at work in three-person (or more) carpools. For first-shift employees (arriving at the Subarea between 6 and 9 AM) rates are somewhat higher: 13%, 8%, and 16% respectively. The totals for transit and ridesharing of 29% (for all employees) and 37% (for first-shift employees) is significantly higher than at other employer sites. This high rate of participation at Boeing is attributed to an aggressive and effective demand management program actively promoted by the employer, including employee incentives and disincentives. The yearly impact of the Boeing-Everett vanpool program is a reduction of over 3,000,000 vehicle miles traveled and 1,000 fewer tons of air pollutants.

3.2.2.3 Financial Resources

Local, state and federal transportation funds (from all sources for all purposes) are estimated to represent about $300 per capita per year within the Everett Planning Area in constant present-

causing revenues to climb from $22 million to between $28 and $35 million per year, or a cumulative total for the 20-year period of from $500 to $580 million in existing-source revenue. This includes funds that have been earmarked for capital as well as for maintenance, administration and operations of roads and transit.

Revenue sources vary somewhat between incorportated and unincorporated areas. The County's dedicated transportation property tax provides about 34% of its revenues compared to the City's 16% from its general fund – which included the property tax. State and federal grants provided about 32% in the County compared to about 35% in Everett. Transportation user taxes accounted for about 20% in the county compared to about 30% in Everett. Mitigation fees, including LIDs, are estimated at between 7% and 8% of total transportation revenues in the County and about 10% in Everett. Local option fuel taxes could be imposed (if enacted by local jurisdictions (City and/or County) increasing overall local transportation revenues by less than10%.

State facilities within the Impact Area are financed primarily by State sources but include local participation, in most cases. These facilities compete for scarce funds with projects throughout the region and state. The Everett Comprehensive Plan estimated that state-owned facilities represent about two-thirds of the improvement value within the Everett Planning Area during the next 20-years. About one-half of the state project value was assumed to be regional/statewide in nature, funded entirely by the state. The other half of state improvement value is financed jointly with local jurisdictions, with a local share of 10 to 25% of capital costs.

3.2.2.4 Other Elements of the Affected Environment

Populations Affected by Noise, Light & Glare, Conflicts:

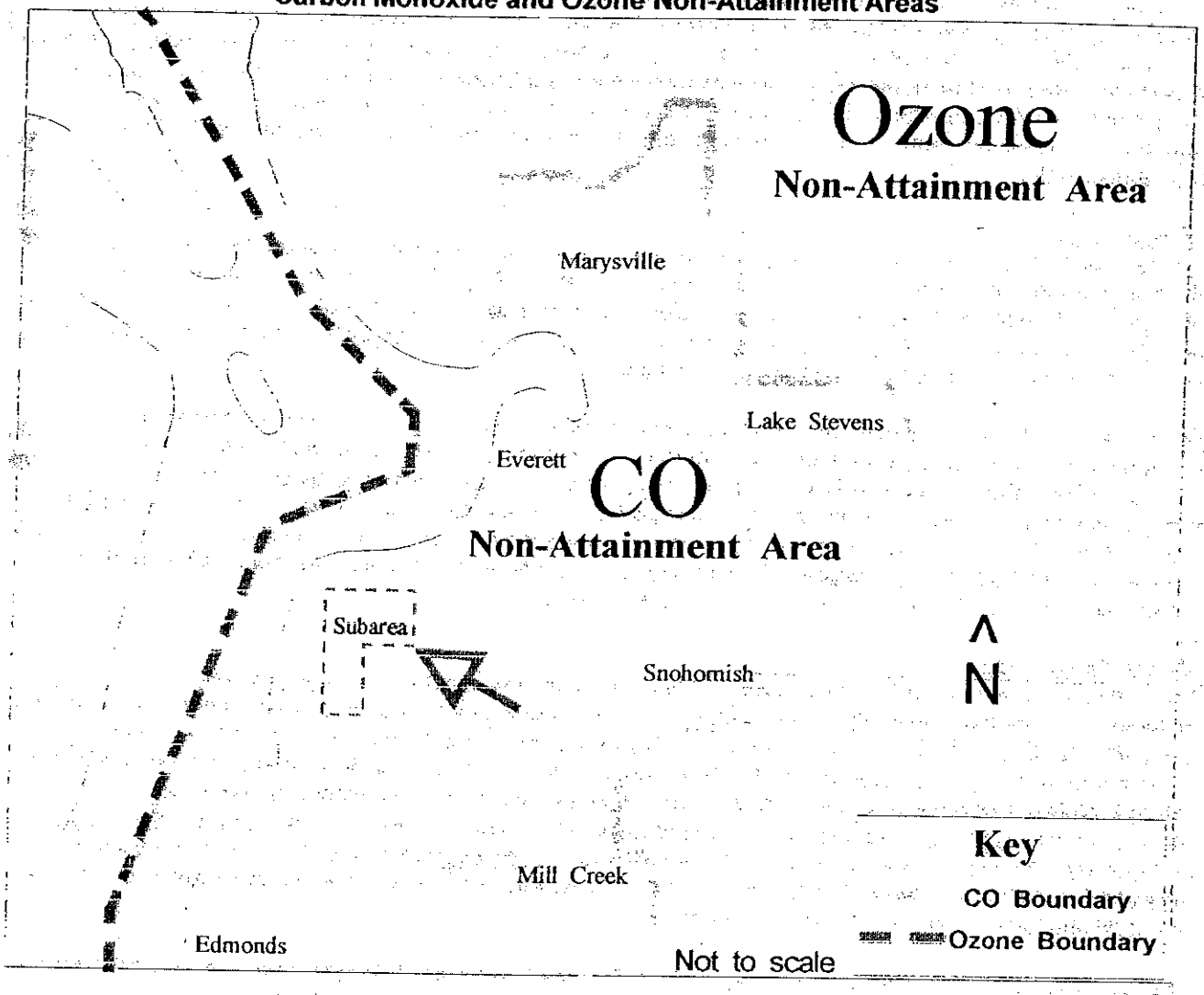
The transportation system circulates throughout the community creating a variety of impacts upon the resident population and businesses, including noise, light, glare and conflicts between vehicular and pedestrian traffic. While these impacts occur with even small volumes of traffic, they are related to the magnitude of traffic on the system. In general, residential neighborhoods are most sensitive to these types of impacts; however, other uses such as hospitals and offices are adversely affected. Since these impacts exist as a feature of the current system, they should not be viewed as new or uniquely due to the effects of new development. Typical mitigation involves local land use regulation and facility design and is applied as improvements are made to the transportation system.

Air Quality, Mobile Source Emissions:

Federal ambient air quality standards have been established for carbon monoxide, ozone, inhalable particulate matter, sulfur dioxide, nitrogen dioxide and lead. These standards are supplemented by state and regional standards that have added total suspended particulate matter and established somewhat higher standards for sulfur dioxide. For transportation, ~~mobile source~~ standards for particulate matter, ozone and carbon monoxide are relevant in this DEIS. Based upon monitoring information collected by state and federal agencies, areas are designated as either attaining or not attaining air quality standards for specific pollutants. Those areas that do not attain the standard are classified as "non-attainment" areas. The Everett Planning Area and the Subarea presently fall within the "non-attainment" areas for carbon monoxide and ozone (Figure 3.2-10).

PSAPCA #1

Figure 3.2-10
Carbon Monoxide and Ozone Non-Attainment Areas



PSAPCA #2

Source: Puget Sound Air Pollution Control Agency information

Ozone ~~occurs outside the region as~~ is a secondary product of cumulative effects of urbanization within the region -- especially emissions from mobile sources. High levels measured in rural areas result primarily from pollutants emitted in urban areas that get "cooked", then transported sizeable distances. Thus, ozone is classified as a regional problem. Even though the region did not exceed federal standards for this pollutant from 1991 to 1994, it remains in non-attainment status for ozone. While also considered a regional air quality concern, the highest carbon monoxide ~~occurs in localized~~ concentrations are localized, particularly in areas subject to stopped delays of vehicles: congested intersections, large parking areas, standing traffic near urban activities and other concentrations of running vehicles that are moving slow or stopped. The standard for this pollutant is monitored for both the peak hour and for an eight-hour running daily average. Ambient levels have decreased significantly since 1979 and no violations of the standard have occurred

PSAPCA #3

anywhere in the region in since 1992. The region's status as a non-attainment area for ozone and carbon monoxide is currently under review. ~~Please refer to Report No. SR95-05-04, Puget Sound Air Pollution Control Agency regarding recent analyses of probabilities for carbon m oxide attainment in the region.~~ Since no violations of National Ambient Air Quality Standards have occurred in recent years ~~PSAPCA and the state have petitioned the federal EPA to redesignate the Puget Sound Region as an Attainment Area~~ , the Washington State Department of Ecology has petitioned the federal EPA to redesignate the Puget Sound region as an attainment area. Formal redesignation for carbon monoxide and ozone is expected from EPA in November, 1996.

PS #3

Energy Resources:
Consumption of petroleum-based energy resources is the primary impact for transportation. Three-fourths of petroleum-based energy consumed in this region is for vehicle travel. Consumption of petroleum-based energy varies significantly by type of vehicle. Based upon the person-carrying potential of the vehicle and its use, the single occupant vehicle consumes approximately 10 times the energy as a typical vanpool and 25 times more energy than an electric train (such as light rail).

Strategies that decrease vehicle miles traveled and/or increase non-SOV trips will tend to reduce the consumption of petroleum-based energy resources. The magnitude of vehicle miles travelled and the total number of non-SOV trips represent key determining factors in the amount of energy consumed for transportation purposes. Currently within the Impact Shed, the single occupant vehicle (SOV) dominates travel, carrying nearly 70% of all persons to and from work and representing well over 90% of all vehicle trips made during the day for any purpose. Shifting these proportions to more energy-efficent transportation modes will reduce total energy consumption in the long-term.

Natural Environment:
For transportation, the primary environmental issue involves the construction of new roadway facilities, including both the establishment of new routes and the widening of existing routes. A number of key facilities, including SR-525, SR-527 and 112th St now traverse corridors with environmentally sensitive resources that ~~lie in the path of~~ will by affected by roadway expansion. ~~These resources will be affected if these (and certain other) facilities are expanded~~. Subsequent environmental review of improvements, ~~once they are designed and engineered~~ during design and engineering phases must address sensitive areas, protect those areas and/or properly mitigate specific impacts of the project on a case-by-case basis. The nature of subsequent mitigation measures cannot be identified in this DEIS. However, potentially contentious environmental areas are identified later in the next section: "Impacts".

PS #5

The protection of some environmentally sensitive resources ~~can be protected simultaneously with proposed road improvements~~ may be reflected in the proposed mitigation, thus incorporating previously identified environmental concerns. ~~However, some improvements identified in this DEIS have been defined to recognize limitations in sensitive corridors,~~ Combined with other factors, such as current local neighborhood positions and/or limited financial resources, ~~they~~ the environmental review for specific projects may produce scaled-back or alternative improvements that anticipate the outcome of subsequent environmental review. For example, despite heavy demand, the expansion of roadway capacity in the Mukilteo Blvd corridor is not considered feasible in light of known environmental constraints and community opposition. Similarly, the extension of Paine Field Blvd through Japanese Gulch to the waterfront must be contingent upon successful environmental review. Other proposed mitigation improvements that are likely to adversely impact sensitive areas ~~are~~ should assumed to mitigated these impacts and project cost estimates and timing should reflect roadway impact mitigation, to the extent feasible. ~~The specific environmental outcome, however, cannot be precisely predicted at this juncture.~~

PSAPCA #6

3.2.2.4 City Regulations and Requirements for Transportation

New development must now comply with certain requirements. Current regulations and requirements relating to transportation are summarized below.

Interim Traffic Mitigation Ordinance (ITMO). This ordinance was enacted in 1989 under SEPA and has been used by the City on an interim basis since that time. It is expected to be replaced by a permanent ordinance in 1996 upon completion of the SW Everett Subarea Plan. The ordinance now requires traffic analyses for development proposals which exceed specific thresholds. It also requires mitigation of impacts by constructing improvements and/or contributing a fair share of improvement costs. The areawide traffic analysis provided in the SW Everett EIS will replace individual ITMO traffic studies for most off-site traffic impacts related to this Subarea. However, studies relating to site access, specific level of trip making, and establishing the development's specific share of improvements may continue to be required under the revised ordinance. Other Subareas may continue to require areawide analyses until specific subarea plans are completed.

Commute Trip Reduction Ordinance (EMC 46.68). The Commute Trip Reduction (CTR) Ordinance requires most employers with more than 100 employees to develop and implement programs encouraging employees to reduce vehicle miles travelled per commuter and, consequently, minimize their use of single occupant vehicles. Each program includes mandatory elements that are necessary to achieve CTR goals. Employers submit their programs to the city and then provide annual progress reports.

Driveways (EMC 13.16). This ordinance provides the City Engineer with authority to review and approve driveway access to properties. Access standards are specified in the ordinance.

Street Construction and Private Construction (EMC 13.68). This ordiance requires developers to improve street frontage to city standards (this includes curbs, gutters and sidewalks). It is applied in conjunction with the issuance of building permits for new construction as well as additions, alterations or repairs which exceed half the value of the existing improvement.

Public Right-of-Way Design and Construction Standards (EMC 13.76). This authorizes the Mayor or Public Works Director to develop and issue a manual of standards and specifications on this subject. The manual establishes requirements for submittals, permits, guarantees and warranties. It covers roadway types, easements, fire access, parking, traffic control, traffic studies, utilities and other design details. Project approval by Public Works is required in addition to other approvals by the Planning Department.

Parking Standards in the Zoning Code (EMC 19.34). Parking requirements are based on type and size of the use, with the Planning Director authorized to reduce them, following public notice, if certain criteria are met or the employer has an approved Commute Trip Reduction Program. The code includes standards for location, paving, layout and drainage following stadards of the City Engineer. Access, driveways, internal vehicle and pedestrian circulation must also be approved by both the Planning Director and Traffic Engineer. In addition, the Traffic Engineer may require joint use of driveways.

Off-Street Loading Standards in the Zoning Code (EMC 19.34). The Code requires off-street loading areas separate from parking areas for most non-residential uses. The Traffic Engineer may modify requirements for size and number of berths.

Transportation Compatibility Section of the Zoning Code (Section 39.165). This requires that uses be designated so as to encourage the use of public transportation, pedestrian access and most efficient use of the existing transportation system. It references "A Guide to Land Use and Public Transportation" as a guide in planning and locating buildings, parking, landscaping, pedestrian circulation and other site improvements. Projects must provide pedestrian connections and protection from the weather.

3.2.3.1 Introduction

This section discusses the transportation impacts of the DEIS Alternatives within the Impact Shed. It will document impacts for eight transportation-related categories. Impacts will be measured using relevant indicators. The following categories are used.

Environmental Impact Issues For Transportation:

- o Safety for both the traveling public and affected populations
- o Ability to sustain long-term operation of the system
- o Maintaining mobility and travel convenience/opportunity for individuals
- o Maintaining air quality standards for mobile source emissions
- o Use of energy resources
- o Sensitivity to economic issues
- o Effects of noise, light and glare
- o Destruction/degradation of environmentally sensitive areas

3.2.3.2 Future Travel Demand Under DEIS Alternatives

Growth in Regional, County, City and Subarea Travel Demand:

By 2015, the Subarea is forecast to grow from 32,000 to about 50,000 jobs under the Existing Comprehensive Plan (a 56% increase) and to between 42,500 and 55,000 under the buildout growth alternatives (31% to 72% increase). Total travel in vicinity of the Subarea is expected to increase proportionately with alternatives, but within a narrower range (45% to 60%) because Planning Area growth is assumed to be constant and, therefore, travel in the broader area is the same under all alternatives. Differences occur primarily in and adjacent to the Subarea.

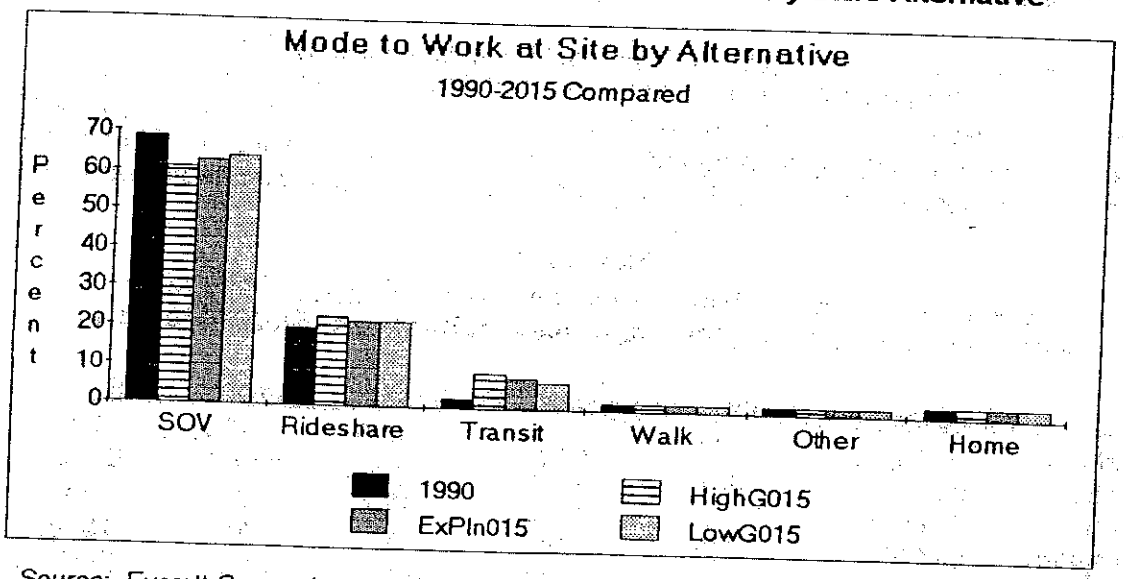
Mode Split Planning Assumptions:

The adopted Everett Comprehensive Plan seeks to increase the number and share of trips made by transit, carpool, vanpool and non-motorized modes as compared to travel by single occupant vehicles. The percent of single occupant vehicles using the system in the Everett Planning Area as a whole is expected to drop from its current rate of about 68% during peak periods to as low as 60% in the next twenty years as shown in Figure 3.2-11. This decrease reflects an increase in transit from about 3% today to 10% in twenty years. Carpool/vanpool (ridesharing) is expected to increase from about 15% to 20%. Walking, bicycling, telecommuting and other modes will more than double but remain less than 10% of travel. Under the Fast Growth and Existing Plans alternative, more aggressive transportation demand management programs translate into higher participation rates for transit and ridesharing. These more aggressive programs are made feasible by the higher levels of employment that are assumed within the Planning Area and the increased pressure on the transportation system during peak commuting periods.

Overall Trip Distribution:

Growth in travel for the Subarea is evaluated as a subset of regional travel. The more diverse regional land use mix produces more trips and represents a worse case condition (when compared to the more homogeneous manufacturing mix designated for the Subarea). However, the general distribution of travel is not assumed to be different. Differences are

Figure 3.2-11
Mode Split Planning Assumptions for Subarea by DEIS Alternative



Source: Everett Comprehensive Plan; consultant estimates for SW Everett Plan.

primarily in magnitude for certain types of trips, particularly for the Fast Growth Alternative which calls for comparatively higher levels of employment in the Subarea by 2015. Table 3.2-1 and the accompanying Figure 3.2-12 summarize total vehicle volumes entering and leaving the Subarea both today (1995) and in the future (2015 and 2030) under each of the three DEIS alternatives. Volumes are measured along 5 "screenlines" (see Definitions for screenline) to indicate direction/magnitude of demand. The table also estimates general lane-capacity of roadways within each of the 5 screenlines, shown as V/C, or Volume divided by Capacity (where greater than 1.00 indicates that total lane-capacity of arterials is exceeded in that screenline). These capacity measurements are referenced later under "impacts".

Vehicle Volumes on the Network:
Figures 3.2-13 and 3.2-14 indicate forecast volumes of vehicle traffic, by DEIS Alternative, in 2015 and 2030, on major routes within the Impact Shed. These volumes assume the mode split discussed earlier. 2030 mode split reflect a continuing trend toward higher rates of transit and ridesharing. High occupancy vehicle volumes (buses, vans and carpools) are included in the total vehicle volumes for each route. Truck traffic is included as a regional average and does not show local variations. Truck traffic may be somewhat higher than the average on certain routes.

Critical Volumes on the System in the Future Under DEIS Alternatives:
Figure 3.2-15 illustrates the effect of increased travel demand on selected intersections in 2015 under the worst case alternative (the Fast Growth Alternative) and the worst case market forecast (the regional forecast, which has more high-trip-generating uses than the preferred SW Everett Plan). The figure shows total numbers of daily vehicles crossing at the intersection (eg. an arterial with 10,000 daily vehicles crossing an arterial with 20,000 vehicles produces an "entering volume" of 30,000 vehicles). The other two alternatives display similar patterns, with the greatest differences appearing adjacent to the Subarea, with only minor variations near the

edge of the Impact Shed. The intersections shown in the figure are considered in the impact evaluations discussed in the next section of this DEIS.

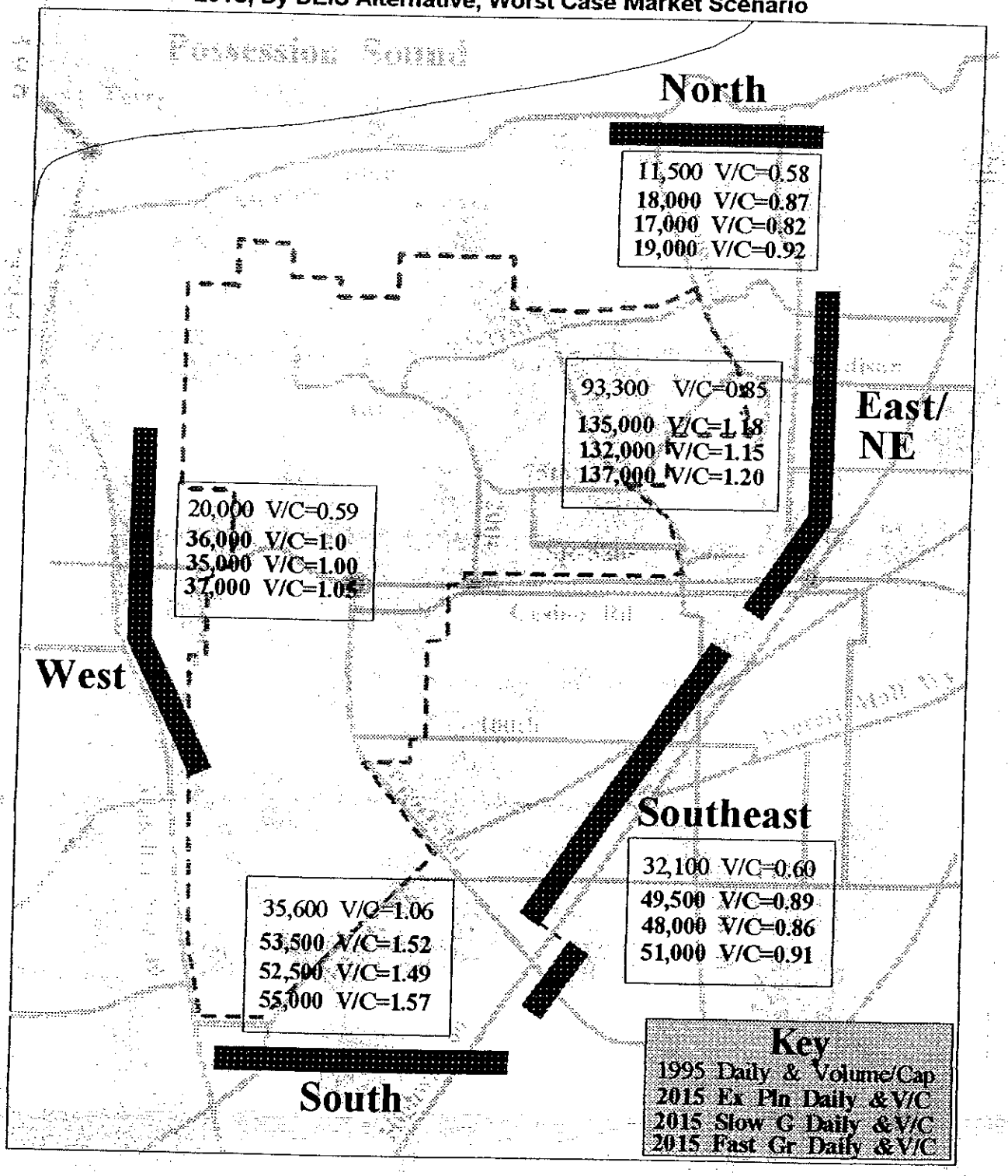
System-Level Analysis Appropriate to System-Level Impacts and Mitigation:
For this DEIS, impacts and mitigation remedies are identified at a system level and do not assume unique design solutions for individual projects. Each potential impact and mitigation measure will require additional planning and design prior to actual construction. The broader system-level conclusions of this DEIS permit greater latitude in packaging and implementing

Table 3.2-1
Screenline Vehicle Volumes and Capacities, WITHOUT Mitigation
1995, 2015 and 2030 By DEIS Alternative, Worst Case Market Scenario

	All Screens	North	Northeast	Southeast	South	West
1991phpd	12125	855	5375	1605	2140	1295
1995daily	192500	11500	93300	32100	35600	20000
1995ph115	22137	1322	10729	3692	4094	2300
ph115pd66	14610	872	7081	2437	2702	1518
Capacity*	18950	1500	8300	4050	2550	2550
1995 V/C	**0.77**	**0.58**	**0.85**	**0.6**	**1.06**	**0.59**
2015LGd	284500	17000	132000	48000	52500	35000
ph11pd66	20654	1234	9583	3484	3812	2541
LG015VC	**1.09**	**0.82**	**1.15**	**0.86**	**1.49**	**1.00**
2015EPd	292000	18000	135000	49500	53500	36000
ph11pd66	21199	1307	9801	3594	3884	2613
EP015 V/C	**1.13**	**0.87**	**1.18**	**0.89**	**1.52**	**1.02**
2015HGd	299000	19000	137000	51000	55000	37000
ph11pd66	21707	1379	9946	3703	3993	2686
HG015 V/C	**1.16**	**0.92**	**1.20**	**0.91**	**1.57**	**1.05**
2030LG	370000	22000	170000	63000	70000	45000
ph10pd66	24420	1452	11220	4158	4620	2970
LG030V/C	**1.29**	**0.97**	**1.35**	**1.03**	**1.81**	**1.16**
2030EP	384000	25000	175000	65000	73000	46000
ph10pd66	25344	1650	11550	4290	4818	3036
EP030V/C	**1.36**	**1.1**	**1.39**	**1.06**	**1.89**	**1.19**
2030HG	399000	27000	180000	67000	77000	48000
ph10pd66	26334	1782	11880	4422	5082	3168
HG030V/C	**1.42**	**1.19**	**1.43**	**1.09**	**1.99**	**1.24**

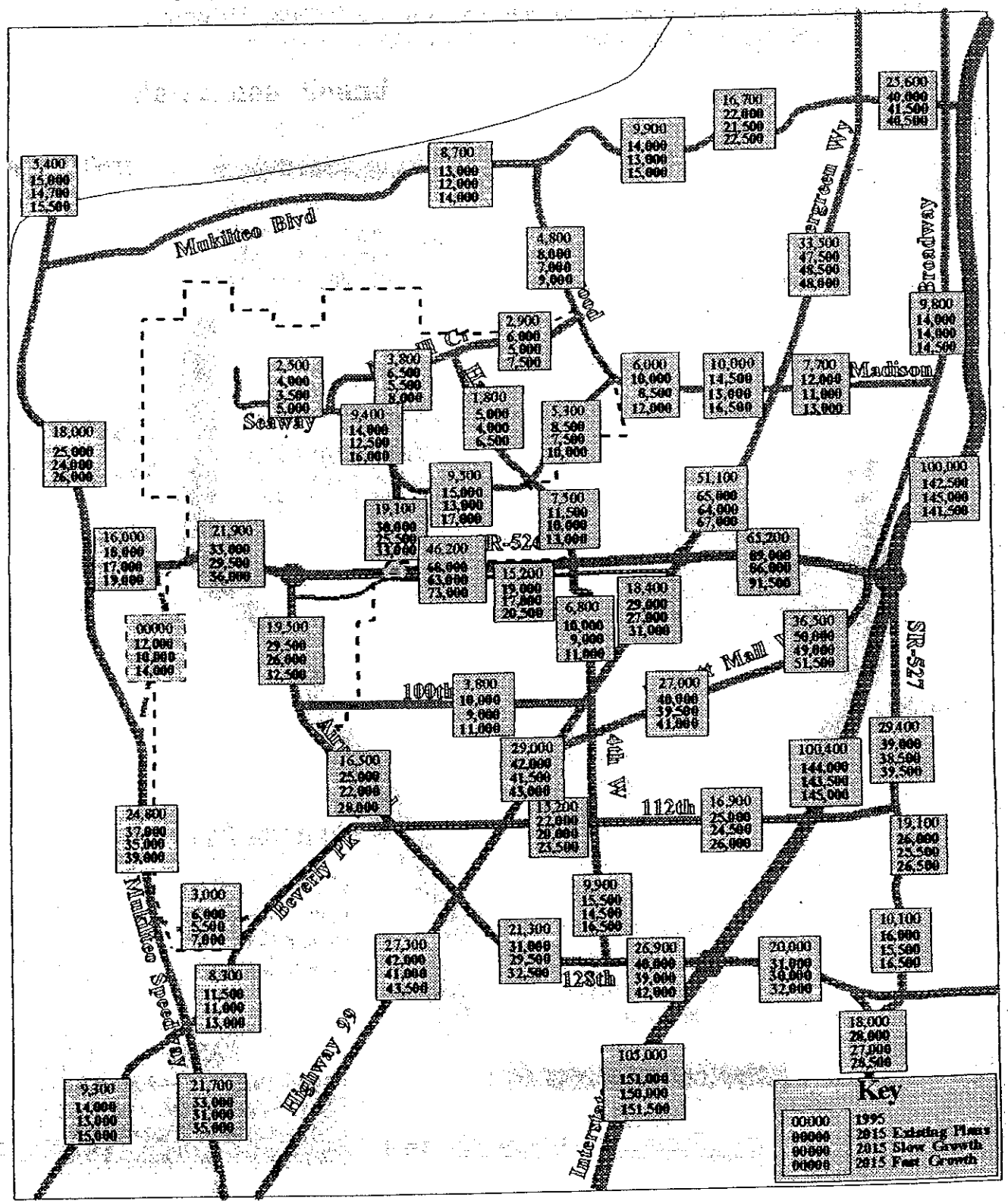
phpd=vehicles per hour, in the peak hour, in the peak direction of travel
ph115=peak hour is 11.5% of daily vehicle volume
ph11pd66=peak hour is 11% of daily, peak direction 66% of peak hour
ph115pd66=peak hour is 11.5% of daily, peak direction 66% of peak hour
ph10pd66=peak hour is 10% of daily, peak direction 66% of peak hour (spreading of peak demand)
*Peak hour, peak direction lane capacity, 1995 facilities, no mitigation assumptions.
2 lane arterial = 550 to 750 vehicles per hour per lane (vphpl); max assumed
5 lane arterial (2 travel lanes each direction = 1600 to 2400 vphpl ; 1800 assumed
Freeway = 1800 vehicles phpd per lane
VC=Volume to Capacity ratio where 1.00 is general capacity of the lanes in that screenline
EP=Existing Plan Alternative; LG=Slow Growth Alternative; HG=Fast Growth Alternative

Figure 3.2-12
Screenline Vehicle Volumes and Volume/Capacity WITHOUT Mitigation
2015, By DEIS Alternative, Worst Case Market Scenario



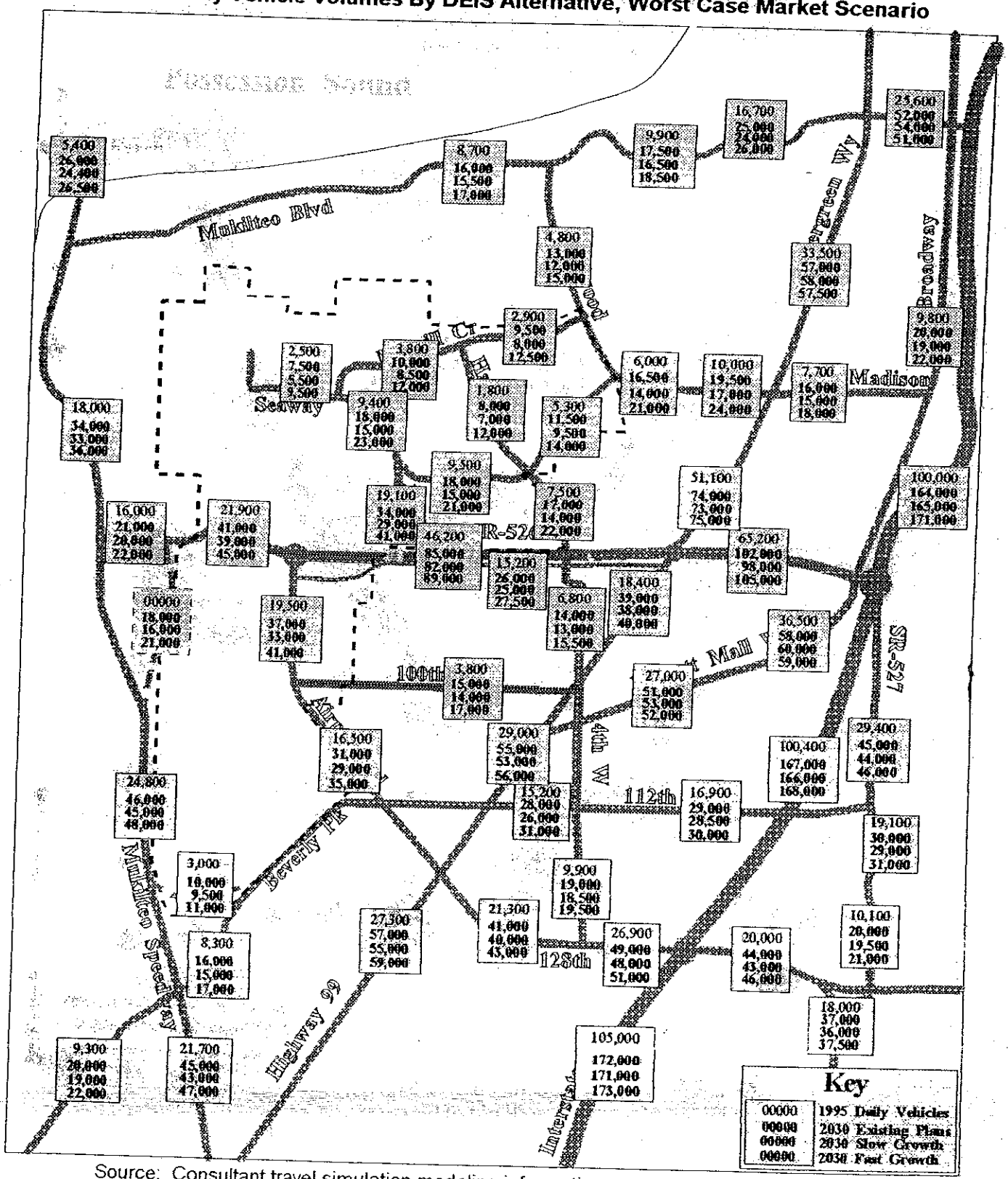
Source: Consultant travel simulation model information

Figure 3.2-13
2015 Daily Vehicle Volumes by DEIS Alternative, Worst Case Market Scenario



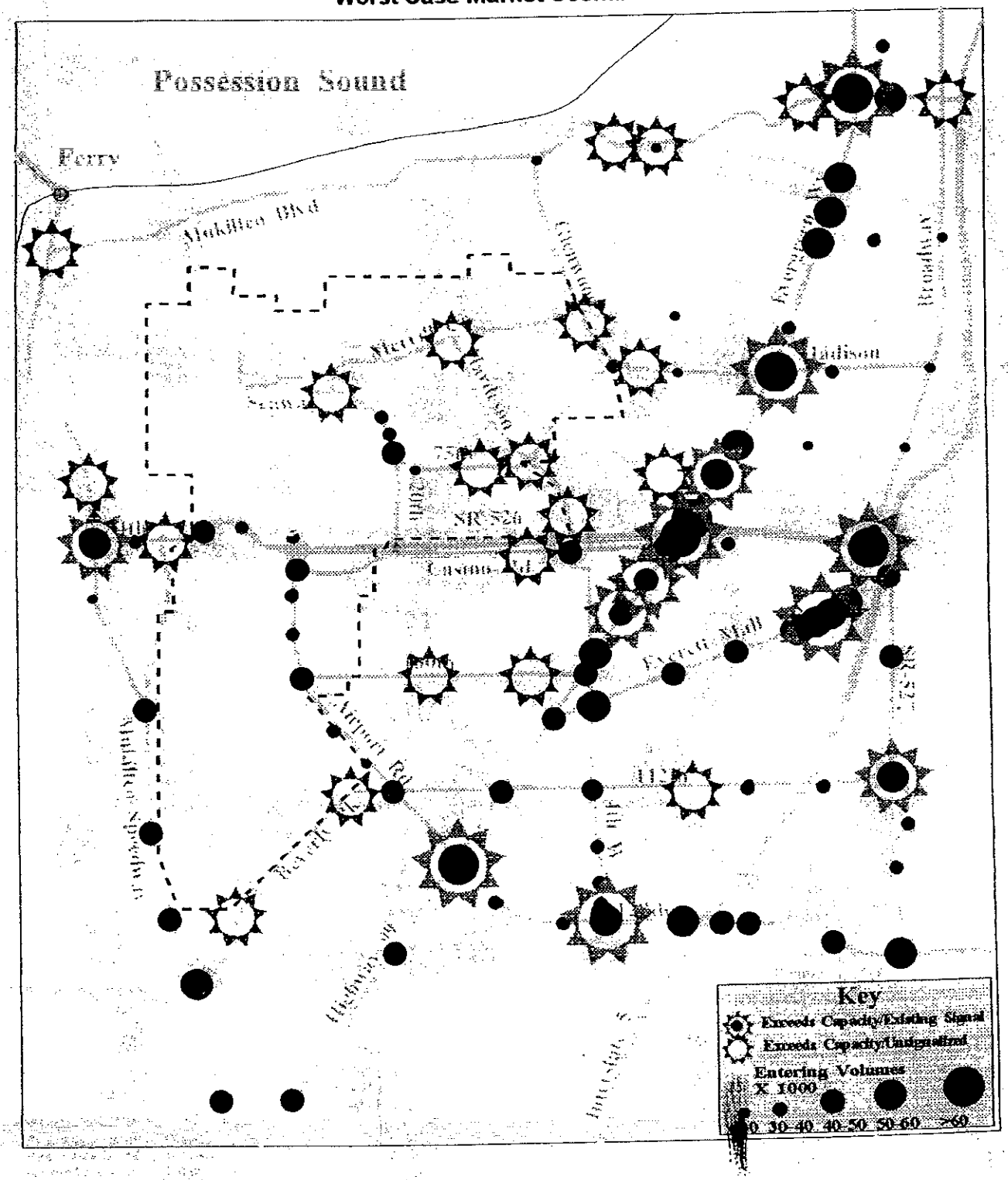
Source: Consultant travel simulation modeling information

Figure 3.2-14
2030 Daily Vehicle Volumes By DEIS Alternative, Worst Case Market Scenario



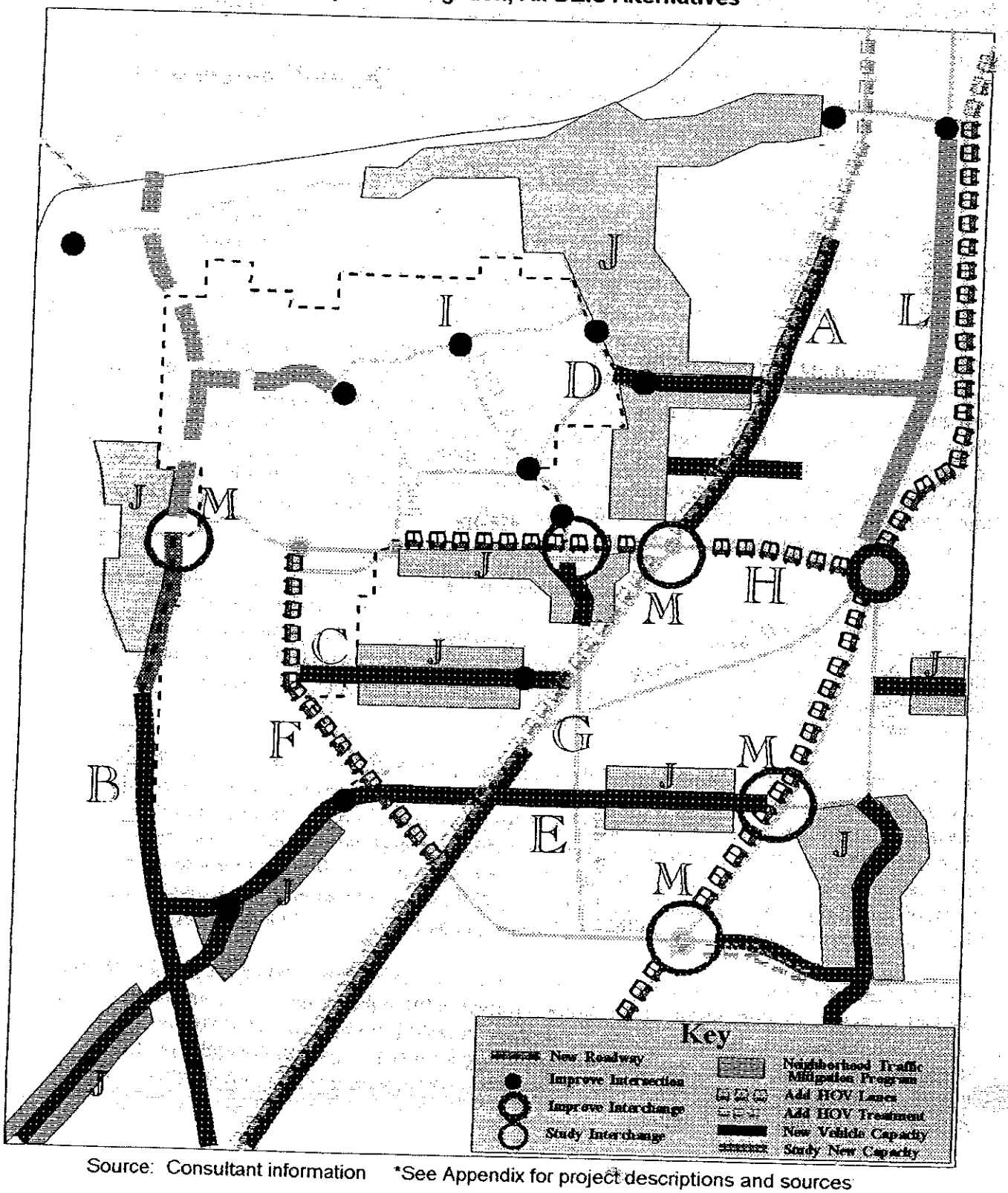
Source: Consultant travel simulation modeling information

Figure 3.2-15
2015 Entering Volumes at Signalized Intersections
Potential Capacity Deficiencies WITHOUT Mitigation, Fast Growth Alternative
Worst Case Market Scenario



Source: Consultant travel simulation model information

Figure 3.2-21
Proposed Mitigation, All DEIS Alternatives



Source: Consultant information *See Appendix for project descriptions and sources

3.2.4.3 Discussion of Mitigation by Issue and Alternative

Safety for Both the Traveling Public and Affected Populations.

As population and employment densities increase in the Impact Shed in the future, the potential for traffic conflicts and safety impacts will increase. Key mitigation tactics include:

1) maintaining the existing system in a safe and serviceable condition;
2) providing operational and design standard improvements;
3) designing or redesigning transportation facilities to more safely accommodate different modes of travel;
4) establishing special routes for freight and goods movement to reduce truck traffic in areas with potential conflicts;
5) diverting trips to routes that are better designed to handle higher volumes safely;
6) applying systems management to more efficiently and safely accommodate increased volumes within the existing physical capacity; and
7) expanding capacity to more effectively handle higher volumes of traffic.

The first two tactics (systems management and maintenance) provide a baseline for mitigation actions upon which other tactics are added. The middle three tactics (modifying facility design, designating truck routes and diverting trips) provide standards to new or improved facilities and divert certain types of traffic away from areas where local safety may be unnecessarily compromised. The last tactic (adding physical vehicle capacity to the system) is proposed when other tactics are unable to safely accommodate travel demand. Efficiency measures (tactic 6) may be traded-off for more lane capacity (tactic 7) if it results in comparable overall system condition with respect to safety.

The mitigation strategy for DEIS alternatives assumes a maintenance program financed at present levels under all alternatives. This level is considered a baseline, or a minimum acceptable level that is scaled to prevent rapid deterioration of existing facilities. This is not necessarily an optimum level. Any decrease in this level may adversely affect the ability of the City to keep up with continually decaying road surfaces and facilities. This decay in condition has a high probability of adversely affecting safety.

Design of new or improved facilities carries a dollar value even though that value is difficult to determine without knowing what features are to be added and under what circumstances. However, improvements in facility design to better accommodate all modes of travel and provide safe separation and/or protection is considered a baseline condition in all alternatives. It is considered imperative for safety features to be incorporated into new or improved facilities. in high-accident-potential areas (see Figure 3.2-7, Existing Conditions). The specific features will be determined for the location, conditions and facility at the time of facility design.

As indicated in Table 3.2-8 above, safety is a feature in most of the mitigation projects, either as a key design consideration or as a direct purpose of the action itself. In terms of safety, the DEIS alternatives are generally neutral. However, despite the absence of significant differences in safety issues among alternatives, safety remains a central mitigation concern that must be clearly and effectively dealt with in this DEIS and carried forward as clear policy direction in its mitigation program.

Ability to Sustain Long-Term Operation of the System:
Maintenance at current levels, adjusted for growth in population and employment, is assumed as mitigation under all DEIS alternatives. Current levels are considered minimum acceptable to sustain function while not falling seriously behind in maintenance needs. The peaking of maintenance requirements, because of the convergence of maintenance cycles on many facilities, occurs at uneven intervals and is expected to be adequately managed under existing funding commitments through adjustments in schedules. The diversion of financial resources from maintenance to other transportation system investments is not considered an effective strategy because of the overall significance of an adequately maintained system to the objective of meeting area circulation needs. Mitigation for wear-and-tear on the system due to growth in the Impact Shed, and specifically from growth within the Subarea, is addressed through a commitment to the ongoing maintenance program. This commitment assumes unincorporated areas will either be maintained at current levels by the County or, if annexed, by the City. State facilities will similarly be assumed to be maintained in accordance with current programs. It is assumed that both Everett and Community Transit will adequately maintain their facilities and rolling stock.

A first-order strategy for maximizing the capacity of the existing system is to effectively apply systems management improvements. These include maximizing the timing and phasing of signals at intersections and protecting through-traffic from critical turning movements and entering traffic. It may also involve the designation of special routes to facilitate the movement of certain types of traffic (eg. multimodal corridors that more efficiently and safely accommodate transit and pedestrian traffic), or establishing more restrictive access rules in some corridors (eg. consolidating curb-cuts and/or limiting/managing left turns). The primary mitigation category for System Management is the ongoing signalization program. All DEIS alternatives use systems management improvements to maximize existing capacity and to manage increases in traffic due to growth in jobs and population.

Among DEIS alternatives, the maintenance issue may be most crucial for the Subarea under Fast Growth but most crucial for the City as a whole under Slow Growth. Since Fast Growth re-distributes employment growth away from North Everett (the CBD in particular) it may reduce future maintenance requirements there and result in a slight maintenance advantage for the City as a whole, at least in the 20-year planning period. Conversely, the Slow Growth alternative assumes higher than planned rates of growth for North Everett and lower than planned rates for SW Everett. This may reduce the maintenance impact on SW Everett but substantially increase that impact on North Everett, especially since that area's system is much older and more extensive.

Sustaining Mobility, Travel Convenience and Opportunity:
The adopted plans of Everett, the central Puget Sound region, the State and draft plans of the County and neighboring jurisdictions promote multimodal balance in transportation system solutions. These plans seek additional options/opportunities for travel by transit, ridesharing and non-motorized modes as a strategy for increasing the use of these other travel alternatives. Mitigation for the Subarea reflects these adopted plans. The mitigation program is summarized in the Transportation Appendix.

The overall mitigation strategy for all DEIS alternatives assumes that the existing road network will serve the area 20 years from now and beyond. Improvements to this network are primarily aimed at increased efficiency of existing lane capacity and the management of travel demand.

Certain network improvements are proposed to complete the circulation system and to enhance it in certain areas with critical demand/capacity deficiencies. Many of these enhancements provide advantages for transit, ridesharing and nonmotorized modes of travel, thereby complimenting the overall strategy for maximizing efficient use of the existing system. Table 3.2-8, above, indicates proposed mitigation projects and programs that address impacts identified in the previous section of this document. A description of each project, its relationship to the DEIS alternatives, its estimated cost, timing and why it is needed is provided in the Transportation Appendix of this document.

As illustrated in Table 3.2-8, above, mobility is a primary purpose for most of the mitigation measures. Among alternatives, Fast Growth is somewhat more aggressive with regard to mobility investments in and near the Subarea. Overall, for the Impact Shed and Planning Area, the magnitude of necessary mobility-related investments is somewhat greater for Fast Growth even though total Citywide growth is essentially constant among alternatives. This is the case because of a currently less-complete transportation system in the vicinity of SW Everett (as compared, for example, to North Everett where most of the system is complete).

Figures 3.2-15 and 16, in the previous section, show capacity deficiencies in 2015 and 2030 without these projects in place. These figures illustrate potential impacts on the system without mitigation projects. Table 3.2-9 and Figures 3.2-22 and 3.2-23, below, estimate deficiecies on the system and on Subarea screenlines in 2015 with mitigation in place. As noted elsewhere in this section, remaining congestion is a partially unmitigated outcome of the adopted Everett Comprehensive Plan (and a major conclusion of Vision 2020, the regional transportation strategy). This is discussed more in section 3.2.5.

Variations in growth among the DEIS alternatives will not produce significant overall differences in system performance in the Shed due largely to the relatively minor differences among alternatives in the level of growth for the Planning Area. Travel near the Subarea will be higher, and performance thereby affected more under the Fast Growth alternative, particularly for peak period travel because of the predominance of employment (and work trips) as a major source of trip generation for the Subarea.

Each DEIS alternative has mitigation comprised of systems management, maintenance, capacity expansion, capacity enhancement, demand management and associated transportation investment proposals. This mitigation is scaled to fall within the financial assumptions discussed in this document. They are comprised primarily of projects and programs approved in previous programmatic environmental reviews. Any new projects or programs introduced in this DEIS may be proposed for amendment into existing plans if they become part of the preferred mitigation of this DEIS, selected by the City Council following draft environmental review. The Transportation Appendix contains a more complete description of projects and programs in the investment packages for each DEIS alternative including assumptions and technical justification for each.

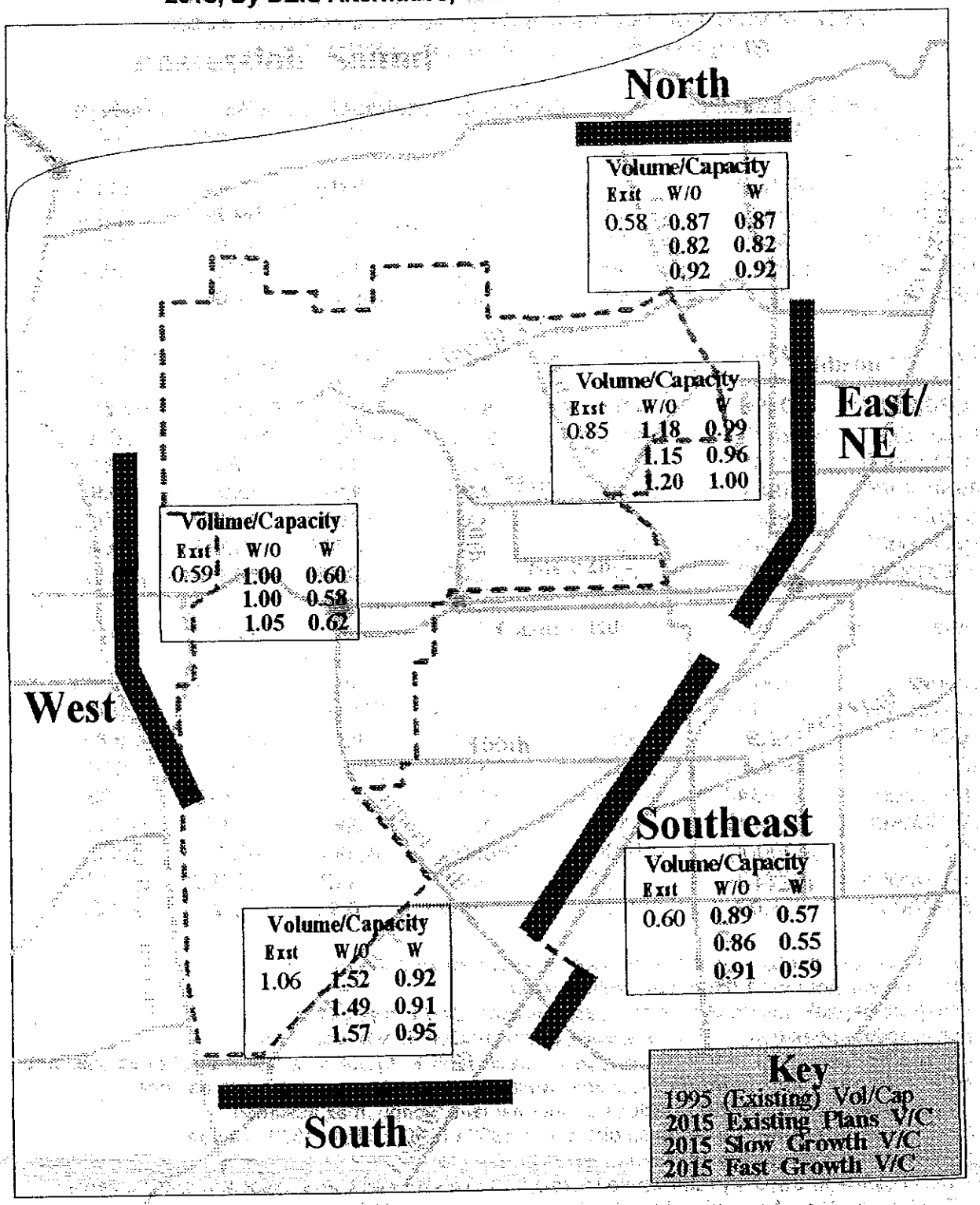
Maintaining Air Quality Standards for Mobile Source Emissions:
On-road emissions from internal combustion engines is expected to decrease over the planning period due to continued improvements in the engine (including shifts to less polluting fuels and non-polluting engines) mandated at the federal-level. This federal program combined with the continued state program for vehicle emissions inspections, comprises the primary air quality mitigation program for on-road emissions. To supplement these programs,

Table 3.2-10
Screenline Vehicle Volumes and Volume/Capacity Ratios
2015 and 2030 By DEIS Alternative, Worst Case Market Scenario
WITH 2015 Mitigation, 2015 and 2030 V/C Ratios

	All Screenlines	North	Northeast	Southeast	South	West
1991phpd	12125	855	5375	1605	2140	1295
1995daily	192500	11500	93300	32100	35600	20000
1995ph115	22137	1322	10729	3692	4094	2300
ph115pd66	14610	872	7081	2437	2702	1518
phpd Cap	18950	1500	8300	4050	2550	2550
1995 V/C	**0.77**	**0.58**	**0.85**	**0.60**	**1.06**	**0.59**
2015LGd	284500	17000	132000	48000	52500	35000
ph11pd66	20654	1234	9583	3484	3812	2541
LG012V/C	**0.79**	**0.82**	**0.96**	**0.55**	**0.91**	**0.58**
2015EPd	292000	18000	135000	49500	53500	36000
ph11pd66	21199	1307	9801	3594	3884	2613
EP012 V/C	**0.81**	**0.87**	**0.99**	**0.57**	**0.92**	**0.60**
2015HGd	299000	19000	137000	51000	55000	37000
ph11pd66	21707	1379	9946	3703	3993	2686
HG012 V/C	**0.83**	**0.92**	**1.00**	**0.59**	**0.95**	**0.62**
Lane-Capacity*	26300	1500	9950	6300	4200	4350
2030LG	370000	22000	170000	63000	70000	45000
ph10pd66	24420	1452	11220	4158	4620	2970
LG030V/C	**0.93**	**0.97**	**1.13**	**0.66**	**1.10**	**0.68**
2030EP	384000	25000	175000	65000	73000	46000
ph10pd66	25344	1650	11550	4290	4818	3036
EP030V/C	**0.96**	**1.1**	**1.16**	**0.68**	**1.15**	**0.70**
2030HG	399000	27000	180000	67000	77000	48000
ph10pd66	26334	1782	11880	4422	5082	3168
HG030V/C	**1.00**	**1.19**	**1.19**	**0.70**	**1.21**	**0.73**

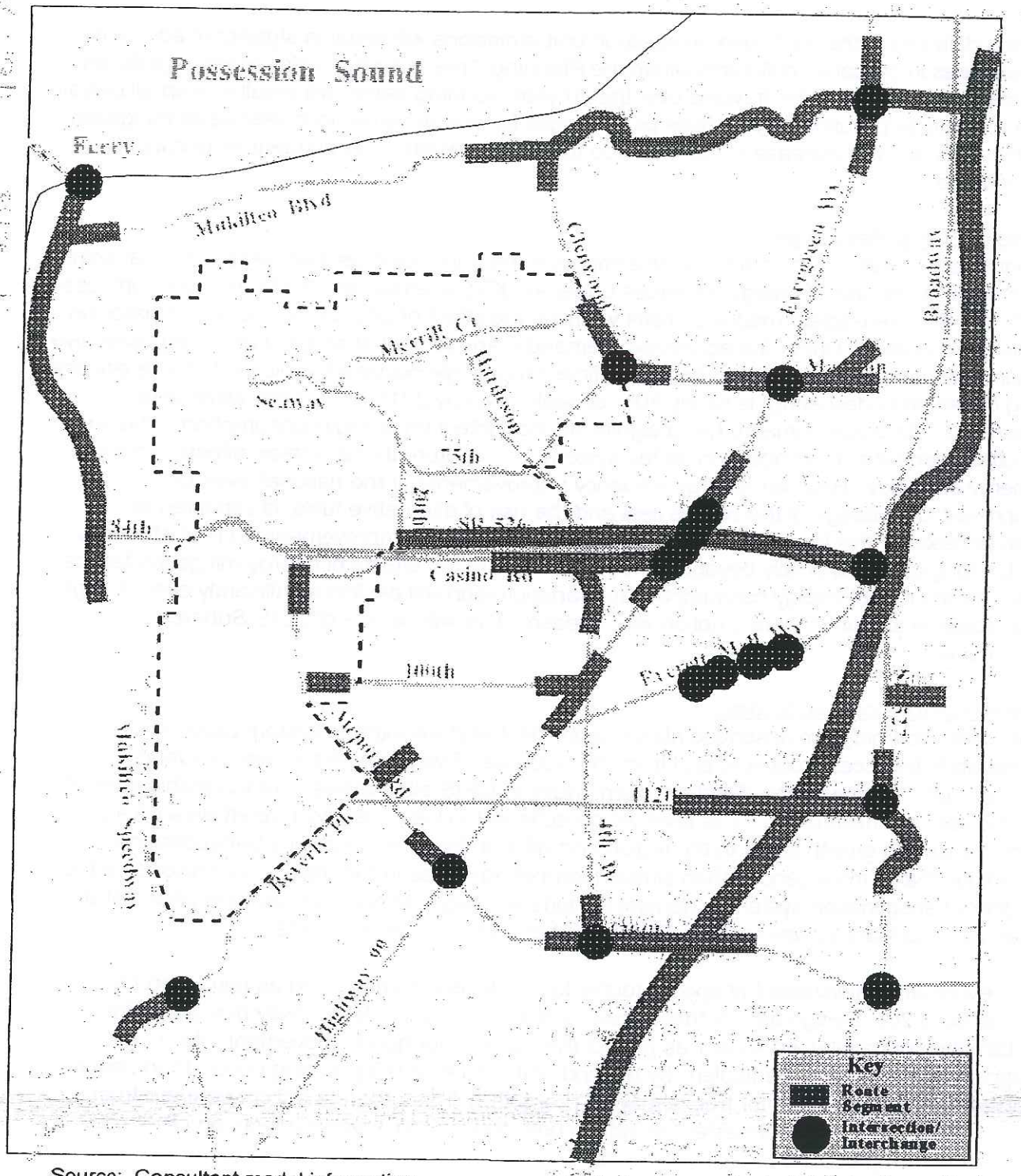
phpd=vehicles per hour, in the peak hour, in the peak direction of travel
ph115=peak hour is 11.5% of daily vehicle volume
ph11pd66=peak hour is 11% of daily, peak direction 66% of peak hour
ph115pd66=peak hour is 11.5% of daily, peak direction 66% of peak hour
ph10pd66=peak hour is 10% of daily, peak direction 66% of peak hour (spreading of peak demand)
*General, peak hour, peak direction lane capacity, 1995 system, no mitigation assumed.
2 lane arterial = 550 to 750 vehicles per hour per lane (vphpl), max assumed
5 lane arterial (2 travel lanes each direction = 1600 to 2400 vphpl ; 1800 assumed
Freeway = 1800 vehicles phpd per lane
V/C=Volume to Capacity ratio where more than 1.00 is exceeds lane-capacity in that screenline
EP=Existing Plan Alternative; LG=Slow Growth Alternative; HG=Fast Growth Alternative

Figure 3.2-22
Screenline Volume to Capacity Ratio With and Without Mitigation
2015, By DEIS Alternative, Worst Case Market Scenario



Source: Consultant model information

Figure 3.2-23
Major Facilities Exceeding Capacity, WITH Mitigation
2015 Traffic Volumes, Fast Growth Alternative
Worst Case Market Scenario



Source: Consultant model information

all of the DEIS alternatives, but especially Existing Plans and Fast Growth, promote aggressive transit/demand management tactics that significantly increase the number of daily and peak period travelers using modes of travel that are less polluting than the mix of travel modes used today. This same aggressive program could be applied to Slow Growth, but because of its lower densities would not be as effective.

On a daily basis, the continued decrease in unit-emissions will result in significant absolute decreases in critical air pollutants within the Planning Area. During peak periods, significant increases in vehicle miles traveled over the 20-year planning period will result in a small overall increase in air pollution during these peak periods for specific emissions despite all mitigation measures, but this increase is not expected to result in violations of ambient air quality standards.

Use of Energy Resources:
Significant overall growth in travel in the Impact Shed and region as a whole results in absolute increases in the use of energy resources under all DEIS alternatives. Shifts in travel from less-efficient to more-efficient modes of travel will have the effect of decreasing the unit-impacts on energy resources. Under the aggressive demand management strategy of the Comprehensive Plan, the share of trips shifting from less efficient (eg single occupant vehicles) to more efficient (eg transit and ridesharing) is nearly 10% of peak travel by 2015. This shift, while small relative to total travel demand, has a significant local effect on energy consumption. The shift is offset somewhat by congestion on the system in the future that adversely affects vehicle energy efficiency. However, energy efficiency improvements at the national level, due to improved fuel mileage of the vehicle fleet and the use of alternative fuels, is expected to compensate for this loss due to local circulation inefficiency. Improvements to fleet efficiency, in the long-term (especially beyond 2015) will dominate the effects of energy mitigation tactics. Overall, the rate of energy consumption for transportation will decline significantly even though the absolute amount of consumption will increase. This will be true of DEIS Subarea alternatives.

Sensitivity to Economic Issues:
The mitigation program described above under "Mobility" will expand system capacity, particularly for access routes to and from the Subarea. Even though the overall level of congestion increase for the Shed's system under all DEIS alternatives, a manageable level of performance is maintained. This level will be sufficient to keep the SW Everett area on a par with competing growth areas in the region and will not, by itself, result in a transportation condition that is more serious than similar (competing) areas in the region. Conditions on the region's transportation system in general will similarly degrade over the planning period at a rate that is at least as serious as in SW Everett and its surrounding areas.

The eventual establishment of special routes for trucks is recommended as mitigation (see Appendix 3.2c). Designation of these routes will allow appropriate roadway designs to be established or maintained as well as protect the capacity for goods movement. As a supplemental program, particularly by the end of the 1995-2015 planning period (and beyond), special hours of operation for trucks may be promoted. This program will concentrate truck movements during less congested periods to both reduce the adverse effects on other peak travel and to improve the trip for truck traffic.

Effects of Noise, Light and Glare and Local Traffic Conflicts:
Noise, light, glare and local traffic will increase under all DEIS alternatives. Figure 3.2-20, Impacts, illustrates corridors most susceptible to increases from Subarea traffic. Mitigation of these impacts falls into three general categories: 1.) diversion of trips; 2.) buffering of traffic impacts; and 3) self-correcting (or "benign neglect"). In cases where traffic to and from the Subarea is cutting through residential areas, and this traffic is not to/from the neighborhoods, traffic diversion tactics may be employed. While diversion is not used extensively, it may be applied in cases where available arterial or freeway routes (designated and designed for the higher volumes -- and/or axle loads) can accommodate this traffic. The actual diversion tactics must be evaluated, selected and designed by the City (and/or cooperating jurisdiction) upon consultation with the affected neighborhood. Priorities and specific projects will be established annually based on development activity and availability of resources. However, a special program, set aside specifically for this purpose, is recommended as mitigation.

In some cases, very high volume traffic corridors are immediately adjacent to sensitive noise, light and glare receptors. In these cases noise buffers may be installed (examples are freeway ramp improvements with noise walls to buffer the adjacent areas from noise, light and glare). These buffers are typically installed as a feature of improvements as they are made along the corridors. As with diversion tactics, this mitigation must be evaluated, selected and designed by the City (and/or cooperating jurisdiction) after consultation with the affected neighborhood. They become features of improvements along these routes and are included in cost estimates. The environmental review for the improvement provides the forum for identifying and designing this feature.

For the first two categories (diversion of trips and buffering), the Neighborhood Improvement Program is the primary mitigation mechanism. For this Program, an administrative policy is established by the City to determine priorities for specific neighborhood traffic projects, including a process for the annual prioritization of these projects. The process will be based upon the present method established for the Boeing 777 Expansion mitigation in which the Council of Neighborhoods and City Staff jointly created lists of potential projects, prioritized projects based on established criteria, held public meetings to gather community comments, then finalized lists through a Traffic Mitigation Committee patterned after the existing Boeing Mitigation Committee which it will replace. The Program would work within an annual mitigation budget identified in this and other Subarea Plans. The recommended amount for this program is estimated in Appendix A3.2c. The mitigation commitment is to the program for mitigating this category of impacts, not to specific projects.

"Self-correcting" impacts occur when high volumes of forecast traffic don't actually materialize on specific routes. In these cases, traffic chooses alternative routes because the narrow, inappropriately designed facilities don't have adequate vehicle carrying-capacity. These corridors are designed and maintained with lower capacity by public policy and are intended for slower moving, primarily local traffic. They will not be expanded to accommodate forecast demand. Typically, when faced with these contrained and slower corridors, traffic uses longer but faster and better designed routes to complete trips. As a result, the more severe impacts due to high demand will not occur. Two examples in the Impact Shed are Mukilteo Blvd (north of the Subarea) and a segment of SR527 (east of I-5 near Silver Lake).

Destruction/Degradation of Environmentally Sensitive Areas:
Most of the increased travel within the SW Everett area and the Impact Shed will be accommodated on the existing network of facilities. Certain network links will be widened to increase capacity and a few new links will be added. The improvements themselves represent the primary source of adverse impacts upon the natural environment. In several cases, the need to expand capacity has been out-weighed by the constraints of environmental impacts (through previous public policy decisions). In particular, the Mukilteo Blvd corridor has been excluded from consideration for expansion of vehicle capacity. The environmental cost in this corridor has been considered too high to offset any mobility benefits (even though this is potentially the most direct route for many trips to and from the SW Everett Subarea).

Other sensitive corridors have proposed improvements that are part of the mitigation program. These include parts of the 112th St corridor and SR525/Paine Field Blvd, including the potential Seaway Extension. Improvements in these corridors will be subject to more rigorous Subarea-level impact evaluation and mitigation. Some or all of the proposed improvements in these corridors may be deleted or substantially revised. Should they be deleted, the traffic must be re-assigned to alternative routes and the mitigation program adjusted accordingly. None of the improvements listed in the mitigation present fatal flaws to the mitigation program as a whole. They represent the best opportunities for improving the overall system. During the 20 year planning period, Fast Growth is most vulnerable to the effects of environmentally limited expansions of capacity and Slow Growth the least.

3.2.4.4 Site-Specific Mitigation and Requirements

In addition to the broader, primarily off-site program of transportation mitigation outlined in the previous section, each applicant may be subject to site-specific mitigation or requirements. In general, this mitigation would be applied at the time of application for permits.

Design Traffic Study. Unless otherwise approved by the Traffic Engineer, each applicant must submit a traffic study which analyzes access, site-specific safety and construction impacts. Improvements needed for safety and adequate access to the site will be the responsibility of the developer and may include traffic signals directly adjacent to the site.

Access. Driveways, access location, and on-site circulation must be approved by the Traffic Engineer and sites may be required to share or limit access points.

Commute Trip Reduction. All projects that expect to employ more than 100 employees must comply with the city's Commute Trip Reduction Ordinance. All projects should provide preferential parking for carpools and vanpools.

Transit. The location of transit stops must be approved by the City. Stops and pullouts must be constructed on site frontage and comply with other standards as required by the Traffic Engineer. Transit schedules should be prominently desplayed for employees at transit facilities and near site sidewalks.

Pedestrian and Bicycle. Internal sidewalks should connect buildings with transit facilities and public sidewalks. Site design should provide for bicycle access and parking. Individual buildings should incorporate conveniences such as lockers, shower rooms and bicycle stands.

For the Bhend Property (Griffin), a continuous looped pedestrian trail system shall be provided near the interior edge of the buffer and open space areas and connect to the sidwalk system.

Traffic Mitigation Fees for Individual Developments. This section and Appendix A3.2b, c and d describe a mitigation program associated with overall Subarea development. The program is financed primarily by public funds, but supplemented by developer contributions using the City's traffic mitigation ordinance. The amount of the fee must be established by public policy and cannot be specified with certainty in this document (it must await public review of impacts and selection of a preferred Plan and mitigation options). However, a range of possible rates is described in Appendix A3.2c. It is expected that the rate, when adopted, will fall between 5% and 10% of capital costs of the program. Each applicant will then be assessed the fee at time of application based on their project's share of the overall mitigation program. The share of each project in the program is estimated in this document based on forecast traffic due to Subarea buildout (see Table A3.2-1, Appendix A3.2b). While the estimated share is generalized among all forecast uses for the site, the proportion is not expected to vary significantly from that of individual analyses conducted for each development. The general Subarea analysis eliminates the need to conduct separate and repetitive areawide analyses for each new development.

The share is pre-approved with the Plan for the Subarea and established at the time of Plan adoption. The estimated cost per peak hour trip varies up to $1,000 under worst-case conditions. The rate, whatever it is, may be reviewed annually and adjusted to program needs. The rate and conditions associated with it will be a public policy choice made following review and public input of the Subarea Plan. It is provided in this document only to assist in that decision, which involves the entire City of Everett, not just the SW Everett Subarea for which this EIS is written.

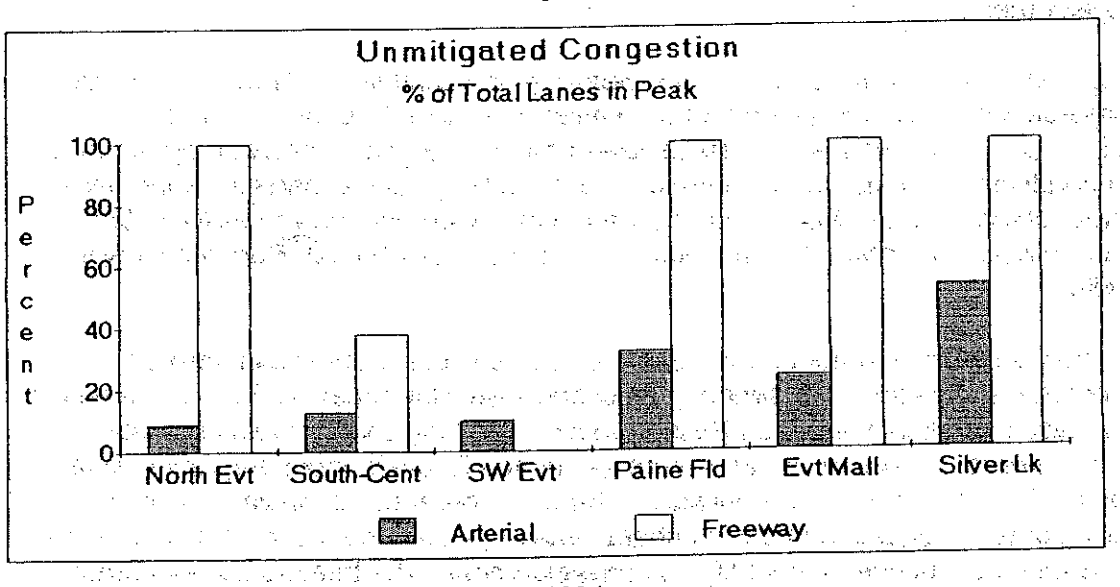
Thresholds. Individual development applications may be subject to additional analysis if certain thresholds are exceeded. In general, the overall level of trip making for the Subarea is the controlling factor since this is a Plan-Based process. As long as individual applications, collectively, are within the range of impacts identified for the Subarea, approvals should stand on the Subarea EIS findings and move forward. However, there may be instances where individual developments, because of size or characteristics, challenge the integrity of the Plan and its EIS. A threshold is used to identify such development. The threshold measurement for triggering an 'extraordinary review' for a development will be 'trips per net buildable acre'. Since the Plan assumes up to 25 employees per acre, and since the average daily trips per employee assumed for the site is 5.5, a threshold base of 137.5 daily trips per net buildable acre is used. Twice this threshold base will be considered a potential threat to the findings of the Subarea EIS. This would mean that a daily figure of 275 daily trips per net buildable acre (or about 35-40 peak hour trips per acre) will be used as the threshold during the first year of implementation. Appendix A3.2b contains several examples of hypothetical developments, including one that exceeds the threshold.

3.2.5.1 Higher Overall Roadway Congestion Levels

Increased Congestion:

The Everett Comprehensive Plan measures level of service as the number of roadway lane-miles that exceed general capacity during the peak periods of the day. Based upon this measurement, it anticipates that some 18% of all of the arterial lane miles in the Planning Area will exceed generalized capacity and that 67% of the freeway lanes will exceed capacity in twenty years under the Existing Plan Alternative, even with all planned improvements in place and with the achievement of the mode-of-travel rates discussed above. This congestion varies among Planning Subareas, from a low of about 9% of all arterial lanes exceeding capacity (during peak periods) in the North Everett Subarea to a high of 53% of arterial lanes exceeding capacity in the Silver Lake/Eastmont Subarea (see Figure 3.2-24, below). Less than 10% of arterial lanes in the Shed are expected to exceed generalized capacity during peak periods by 2015.

Figure 3.2-24



Source: Everett Comprehensive Plan, 1994

Probable Adverse, Unmitigated, Effects of Increased Congestion:

Inconveniences during peak travel periods, lowering of mobility expectations, and necessary adjustments in travel behavior. The overall increase in congested conditions, particularly during peak travel periods, will result in additional inconveniences for those traveling during these periods of the day. As a result of this decay in mobility conditions, general expectations should be that conditions will be worse than today under all DEIS alternatives. Some travelers are likely to make adjustments in their travel behavior to compensate for the inconvenience during the most congested periods. These adjustments are characteristic of those that have typically been made in other areas of the region where higher population and employment densities, high travel demand and over-capacity facilities have created increasing delays along major travel routes. Changes in behavior that can be expected to occur include shifts to other

travel modes such as transit and ridesharing, altering the time of day that certain trips are made, deferring or combining of trips or eliminating certain trips altogether. A small number of travelers may also choose to walk or use bicycles to complete their trips. These inconveniences, changes in behavior and lower expectations are an unavoidable adverse impact that will not be entirely mitigated by any of the alternatives. However they can be expected to be least in the vicinity of the Subarea under the Slow Growth Alternative; and greatest in the vicinity of the Subarea under the Fast Growth Alternative. Because of the similar overall rate of growth among DEIS alternatives for this part of the region, overall differences for this impact are very slight, except on or near travel routes to and near the Subarea.

Unavoidable adverse effects on trade and commerce:
Increased congestion may affect trade and commerce by creating significantly greater inconveniences for customers and employees and thereby impairing the conduct of business. However, since this condition is not unique to the SW Everett area [and is experienced at all of the other competitive sites in the region] it is relative and may not result in significant shifts among these areas (and away from SW Everett) unless the overall growth management strategy for the region [and the state] changes. As long as the region and all local jurisdictions in the region continue to pursue a policy of urban containment, that calls for the "filling in" of already developed parts of the region that have services in place (such as SW Everett), it is unlikely that the overall effect on trade and commerce will be significant. As long as the decay in mobility conditions is perceived as a characteristic of continued growth within already developed areas, it may have only minor adverse impacts compared to other similar areas. A change in this regional policy that permits a more spatially extensive region than promoted in current plans is likely to result in the creation of more attractive outlying areas for certain types of trade and commerce where congestion in the immediate vicinity of these sites is less severe than in and near SW Everett. This may result in the shift of new trade and commerce to these other areas. Such a change in regional and state policy would have other, potentially more severe, impacts that were discussed during the discussion of the current regional plan.

Higher levels of certain air pollutants.
Growth of both the Subarea and surrounding area will result in additional concentrations of traffic and potential for air pollution levels for certain contaminants to approach federal standards for violations. Carbon Monoxide levels are likely to increase in critical areas of congestion as discussed earlier in the Impacts Section of this document. Even though these critical areas may not exceed air quality standards, they will have increased levels of pollution. These increased levels represent an unavoidable adverse impact of growth in this area. The levels are not significantly different among alternatives because of similar overall areawide growth rates, but tend to be somewhat higher in the vicinity of the Subarea for the Fast Growth Alternative and lowest in the vicinity for the Slow Growth Alternative.

3.2.5.2 Increases in Overall Exposure to Noise, Light, Glare, Local Traffic.

The overall increase in travel demand over the next 6, 10, 20, and 30 years (and beyond) will result in proportional increases in the exposure of sensitive receptors such as residential areas to noise, light, glare and local traffic conflicts. Even with appropriate mitigation in selected areas (as provided for in the mitigation section of this DEIS), some additional exposure will occur and will be largely unmitigated. The exposure is primarily in areas outside of the Subarea Boundary and the amount of exposure due to Subarea growth is inversely

proportional to the distance of the receptors from the Subarea. In general, the most significant proportion of unmitigated impacts from these environmental elements will occur within about 1 mile of the Subarea boundary in adjacent neighborhoods. These areas are identified in the DEIS section on this subject.

Overall increases in noise, light, glare and local traffic impacts for these adjacent areas include growth in the region as well as growth within the neighborhoods themselves. Typically, the proportion of the increase that is specifically and uniquely attributable to the increment of new growth on the Subarea is less than one-fourth of the overall increase in exposure within the impacted area. The proportion of the exposure that is attributable to existing residents of the impacted area itself are excluded, even though these residents may be employed at the Subarea. Impacts attributable to new residents [eg. new residential units] within the adjacent areas must be addressed and mitigated as part of the approval process for new residential units. Existing residents who work at the Subarea or may become employed at the Subarea in the future are excluded. Impacts from other subareas are also excluded from consideration for growth decisions related to the Subarea. Impacts that now exist that are due to employment at existing employers on the Subarea are excluded since they have [or should have] already been addressed during the approval of previous development decisions. If they have not been addressed in previous decisions, it does not become a burden of development of the Subarea.

3.2.5.3 Higher Unit Costs and Lower Productivity for System Improvements

As improvements to the existing system are made, they become increasingly less productive per unit of investment in their effect on abating congestion. This will occur because of increasingly more costly solutions and limitations on the type and scale of improvements that are possible, both from a financial and community/environmental standpoint. The existing urban area, with its present network of facilities must be retrofitted with new capacity that is increasingly more complex in design and more difficult to install. Existing neighborhoods and businesses now occupy most of the available space, thereby blocking opportunities to complete or even expand capacity of the circulation network. Adding interchanges, widening roads or creating new road linkages is becoming increasingly more difficult and more expensive. This increasing inefficiency is an unmitigated impact of growth in an urban area such as the Impact Shed.

The principle of decreasing effectiveness may work in the reverse for certain transit and demand management actions, even though the overall improvement strategy is expected to have a lower net level of cost-effectiveness because of continued domination of vehicular circulation on the system. To the extent that it does work in reverse, it represents a partial mitigation of the increasing inefficiency. For transit services, the increased densities and higher levels of congestion for single occupant vehicles is expected to produce more cost-effective investments as some travelers begin to choose alternative forms of travel because of congested conditions. If these services are supported by general transportation or other revenues, any increase in this service must be accompanied by an increase in revenue to support the added service. Ridesharing programs permit a more efficient use of existing physical system capacity, but must still utilize the vehicular system. Even in 30 years, single occupant vehicle use is expected to represent 60% of all peak period travel. Transit use is expected to quadruple [or more] but still represent only about 10% of peak travel.

3.2.5.4 Adverse Effects of Continued Minimum Investment in Maintenance

During the past several decades, investment in transportation infrastructure has declined precipitously relative to travel demand. While resources have become increasingly scarce, most jurisdictions (including Everett) have diverted more and more of their available revenues to maintenance in an effort to protect existing investments. Currently, a majority of Everett's transportation revenues are focused on maintenance, operations and administration of the existing system. However, even with a high priority on maintaining existing infrastructure, the program is falling behind. Of particular concern is not just the structural integrity of existing surfaces but the design of these facilities. In many cases the current roadway designs are not adequate to safely, structurally or operationally accommodate the flood of new traffic that is expected as the City and region grows. Merely maintaining the present surfaces in their originally designed condition will not adequately prepare for a future in which substantially higher volumes of traffic circulate on increasingly obsolete roadways. If present commitments to maintenance is sustained, as assumed in this DEIS, an unmitigated impact will be additional physical deterioration and a system design that becomes increasingly less safe and is less-prepared for higher volumes. This will be a general condition throughout the region, not just in Everett.

3.3 EARTH

Information in this section is condensed from the following reports: *Everett Growth Management Comprehensive Plan, DEIS; City of Everett Zoning Code; City of Everett Design and Construction Standards and Specifications*, 1993; and the *Snohomish County Solid Waste Management Plan Update October 1989, FEIS.*

3.3.1 EXISTING CONDITIONS

3.3.1.1 Geology

Everett lies on a plateau peninsula with the Snohomish River bordering to the north and east, Port Gardner Bay and Possession Sound to the west. The plateau is a glacial drift plain underlain by soils deposited by advancing and retreating glacial ice. Layers of glacial till soil were deposited by the successive ice ages between 11,000 and 14,000 years ago, which subjected underlying soil stratas to tremendous compacting forces and shearing. Subsequent runoff from streams eroded the drift plateau, forming ravines by removing the till and exposing the stratas beneath.

The northern portion of the Subarea is a combination of ridges, separated by ravines with associated steep slopes, streams and wetlands. The streams in the northern portion of the subarea flow north to Port Gardner Bay. The southern portion of the Subarea is relatively flat. Drainages in this area flow south towards Lake Washington and west towards Possession Sound. Much of the area is urbanized, and grading has modified the natural land forms in these areas.

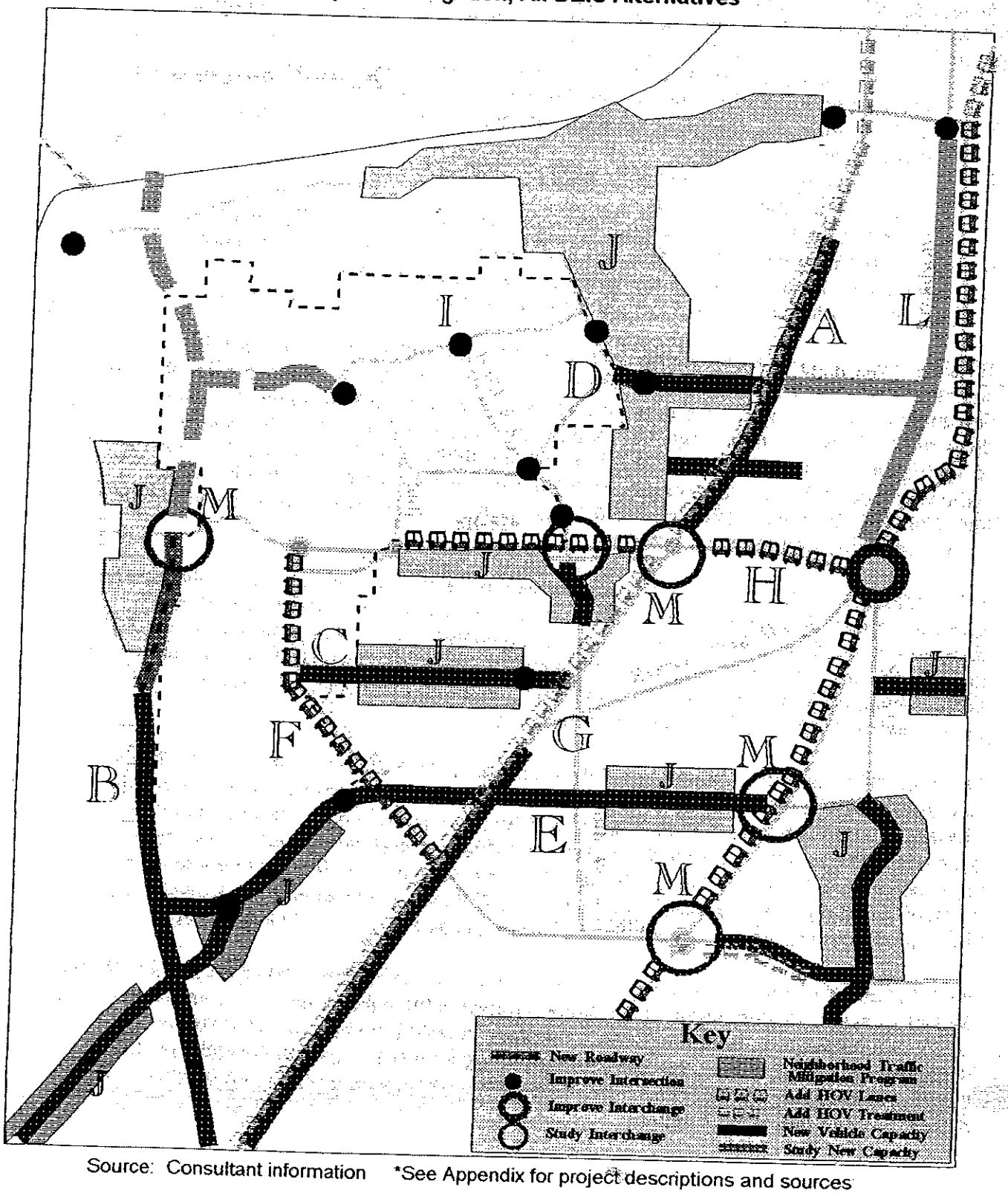
3.3.1.2 Topography

The elevation of the Subarea varies from more than 600 feet to about 100 feet, with the major grade changes occurring along streams and the mined properties. Figure 3.3-1 shows a shaded topographic map of the area, and Figure 3.3-2 provides a perspective view of topography. Topography shown is based on 20 foot contours and does not accurately show slopes for areas that have been mined (Associated Sand and Gravel and Merrill Creek Associates). Photos 3.3-1 and 3.3-2 show existing mining slopes.

3.3.1.3 Soils

Figure 3.3.-3 identifies the soils found within the Subarea per Soil conservation Service (SCS) data formatted and distributed by the Department of Natural Resources (DNR). Data regarding the different soils were obtained from the *Soil Survey of Snohomish County*. Table 3.3-1 describes development limitations for the soils. The SCS classifications are general and must be verified for individual sites. Inclusions of other soil types may occur within the broader mapping units.

Figure 3.2-21
Proposed Mitigation, All DEIS Alternatives



Source: Consultant information *See Appendix for project descriptions and sources

3.2.4.3 Discussion of Mitigation by Issue and Alternative

Safety for Both the Traveling Public and Affected Populations.

As population and employment densities increase in the Impact Shed in the future, the potential for traffic conflicts and safety impacts will increase. Key mitigation tactics include:

1) maintaining the existing system in a safe and serviceable condition;
2) providing operational and design standard improvements;
3) designing or redesigning transportation facilities to more safely accommodate different modes of travel;
4) establishing special routes for freight and goods movement to reduce truck traffic in areas with potential conflicts;
5) diverting trips to routes that are better designed to handle higher volumes safely;
6) applying systems management to more efficiently and safely accommodate increased volumes within the existing physical capacity; and
7) expanding capacity to more effectively handle higher volumes of traffic.

The first two tactics (systems management and maintenance) provide a baseline for mitigation actions upon which other tactics are added. The middle three tactics (modifying facility design, designating truck routes and diverting trips) provide standards to new or improved facilities and divert certain types of traffic away from areas where local safety may be unnecessarily compromised. The last tactic (adding physical vehicle capacity to the system) is proposed when other tactics are unable to safely accommodate travel demand. Efficiency measures (tactic 6) may be traded-off for more lane capacity (tactic 7) if it results in comparable overall system condition with respect to safety.

The mitigation strategy for DEIS alternatives assumes a maintenance program financed at present levels under all alternatives. This level is considered a baseline, or a minimum acceptable level that is scaled to prevent rapid deterioration of existing facilities. This is not necessarily an optimum level. Any decrease in this level may adversely affect the ability of the City to keep up with continually decaying road surfaces and facilities. This decay in condition has a high probability of adversely affecting safety.

Design of new or improved facilities carries a dollar value even though that value is difficult to determine without knowing what features are to be added and under what circumstances. However, improvements in facility design to better accommodate all modes of travel and provide safe separation and/or protection is considered a baseline condition in all alternatives. It is considered imperative for safety features to be incorporated into new or improved facilities. in high-accident-potential areas (see Figure 3.2-7, Existing Conditions). The specific features will be determined for the location, conditions and facility at the time of facility design.

As indicated in Table 3.2-8 above, safety is a feature in most of the mitigation projects, either as a key design consideration or as a direct purpose of the action itself. In terms of safety, the DEIS alternatives are generally neutral. However, despite the absence of significant differences in safety issues among alternatives, safety remains a central mitigation concern that must be clearly and effectively dealt with in this DEIS and carried forward as clear policy direction in its mitigation program.

Ability to Sustain Long-Term Operation of the System:
Maintenance at current levels, adjusted for growth in population and employment, is assumed as mitigation under all DEIS alternatives. Current levels are considered minimum acceptable to sustain function while not falling seriously behind in maintenance needs. The peaking of maintenance requirements, because of the convergence of maintenance cycles on many facilities, occurs at uneven intervals and is expected to be adequately managed under existing funding commitments through adjustments in schedules. The diversion of financial resources from maintenance to other transportation system investments is not considered an effective strategy because of the overall significance of an adequately maintained system to the objective of meeting area circulation needs. Mitigation for wear-and-tear on the system due to growth in the Impact Shed, and specifically from growth within the Subarea, is addressed through a commitment to the ongoing maintenance program. This commitment assumes unincorporated areas will either be maintained at current levels by the County or, if annexed, by the City. State facilities will similarly be assumed to be maintained in accordance with current programs. It is assumed that both Everett and Community Transit will adequately maintain their facilities and rolling stock.

A first-order strategy for maximizing the capacity of the existing system is to effectively apply systems management improvements. These include maximizing the timing and phasing of signals at intersections and protecting through-traffic from critical turning movements and entering traffic. It may also involve the designation of special routes to facilitate the movement of certain types of traffic (eg. multimodal corridors that more efficiently and safely accommodate transit and pedestrian traffic), or establishing more restrictive access rules in some corridors (eg. consolidating curb-cuts and/or limiting/managing left turns). The primary mitigation category for System Management is the ongoing signalization program. All DEIS alternatives use systems management improvements to maximize existing capacity and to manage increases in traffic due to growth in jobs and population.

Among DEIS alternatives, the maintenance issue may be most crucial for the Subarea under Fast Growth but most crucial for the City as a whole under Slow Growth. Since Fast Growth re-distributes employment growth away from North Everett (the CBD in particular) it may reduce future maintenance requirements there and result in a slight maintenance advantage for the City as a whole, at least in the 20-year planning period. Conversely, the Slow Growth alternative assumes higher than planned rates of growth for North Everett and lower than planned rates for SW Everett. This may reduce the maintenance impact on SW Everett but substantially increase that impact on North Everett, especially since that area's system is much older and more extensive.

Sustaining Mobility, Travel Convenience and Opportunity:
The adopted plans of Everett, the central Puget Sound region, the State and draft plans of the County and neighboring jurisdictions promote multimodal balance in transportation system solutions. These plans seek additional options/opportunities for travel by transit, ridesharing and non-motorized modes as a strategy for increasing the use of these other travel alternatives. Mitigation for the Subarea reflects these adopted plans. The mitigation program is summarized in the Transportation Appendix.

The overall mitigation strategy for all DEIS alternatives assumes that the existing road network will serve the area 20 years from now and beyond. Improvements to this network are primarily aimed at increased efficiency of existing lane capacity and the management of travel demand.

Certain network improvements are proposed to complete the circulation system and to enhance it in certain areas with critical demand/capacity deficiencies. Many of these enhancements provide advantages for transit, ridesharing and nonmotorized modes of travel, thereby complimenting the overall strategy for maximizing efficient use of the existing system. Table 3.2-8, above, indicates proposed mitigation projects and programs that address impacts identified in the previous section of this document. A description of each project, its relationship to the DEIS alternatives, its estimated cost, timing and why it is needed is provided in the Transportation Appendix of this document.

As illustrated in Table 3.2-8, above, mobility is a primary purpose for most of the mitigation measures. Among alternatives, Fast Growth is somewhat more aggressive with regard to mobility investments in and near the Subarea. Overall, for the Impact Shed and Planning Area, the magnitude of necessary mobility-related investments is somewhat greater for Fast Growth even though total Citywide growth is essentially constant among alternatives. This is the case because of a currently less-complete transportation system in the vicinity of SW Everett (as compared, for example, to North Everett where most of the system is complete).

Figures 3.2-15 and 16, in the previous section, show capacity deficiencies in 2015 and 2030 without these projects in place. These figures illustrate potential impacts on the system without mitigation projects. Table 3.2-9 and Figures 3.2-22 and 3.2-23, below, estimate deficiecies on the system and on Subarea screenlines in 2015 with mitigation in place. As noted elsewhere in this section, remaining congestion is a partially unmitigated outcome of the adopted Everett Comprehensive Plan (and a major conclusion of Vision 2020, the regional transportation strategy). This is discussed more in section 3.2.5.

Variations in growth among the DEIS alternatives will not produce significant overall differences in system performance in the Shed due largely to the relatively minor differences among alternatives in the level of growth for the Planning Area. Travel near the Subarea will be higher, and performance thereby affected more under the Fast Growth alternative, particularly for peak period travel because of the predominance of employment (and work trips) as a major source of trip generation for the Subarea.

Each DEIS alternative has mitigation comprised of systems management, maintenance, capacity expansion, capacity enhancement, demand management and associated transportation investment proposals. This mitigation is scaled to fall within the financial assumptions discussed in this document. They are comprised primarily of projects and programs approved in previous programmatic environmental reviews. Any new projects or programs introduced in this DEIS may be proposed for amendment into existing plans if they become part of the preferred mitigation of this DEIS, selected by the City Council following draft environmental review. The Transportation Appendix contains a more complete description of projects and programs in the investment packages for each DEIS alternative including assumptions and technical justification for each.

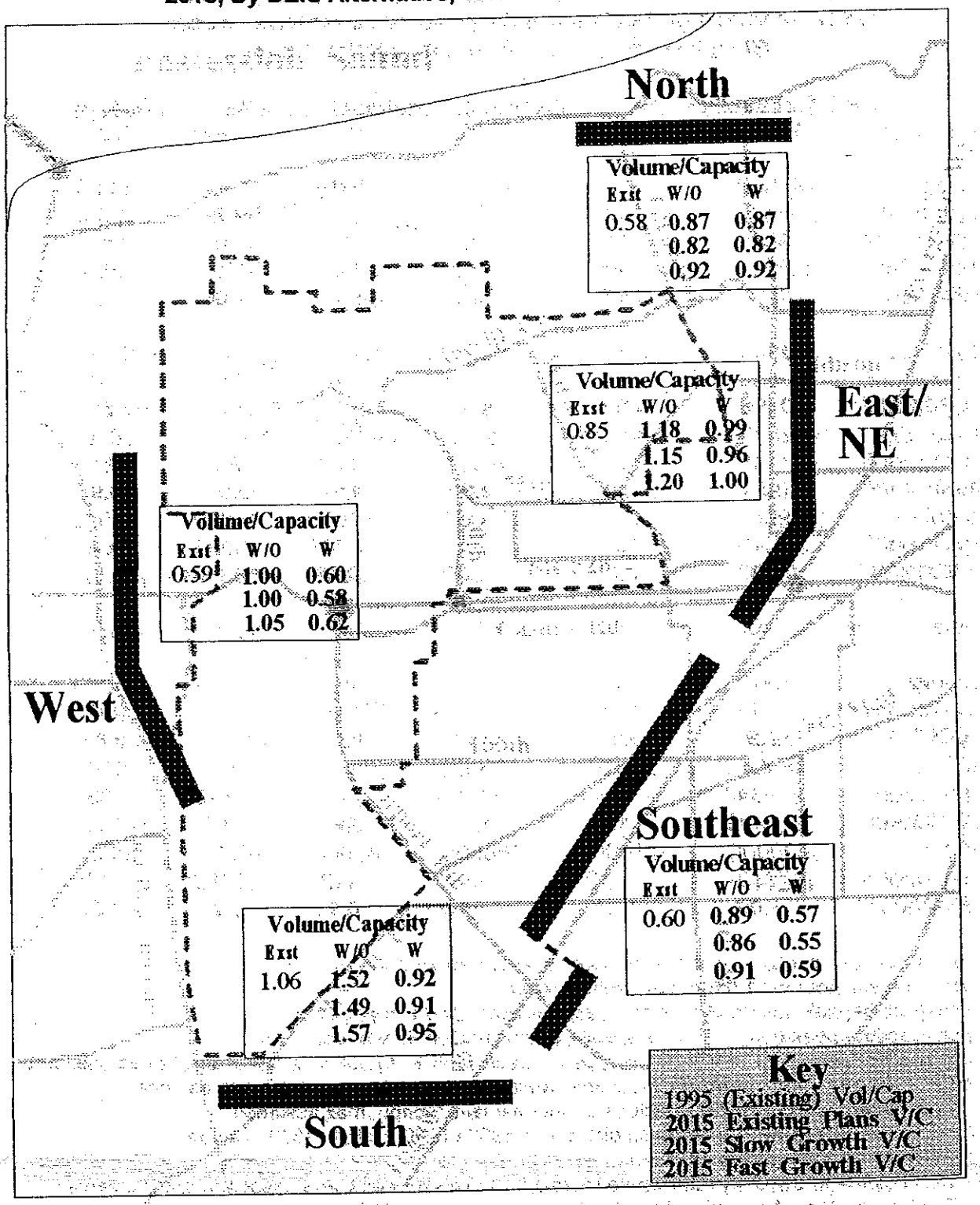
Maintaining Air Quality Standards for Mobile Source Emissions:
On-road emissions from internal combustion engines is expected to decrease over the planning period due to continued improvements in the engine (including shifts to less polluting fuels and non-polluting engines) mandated at the federal-level. This federal program combined with the continued state program for vehicle emissions inspections, comprises the primary air quality mitigation program for on-road emissions. To supplement these programs,

Table 3.2-10
Screenline Vehicle Volumes and Volume/Capacity Ratios
2015 and 2030 By DEIS Alternative, Worst Case Market Scenario
WITH 2015 Mitigation, 2015 and 2030 V/C Ratios

	All Screenlines	North	Northeast	Southeast	South	West
1991phpd	12125	855	5375	1605	2140	1295
1995daily	192500	11500	93300	32100	35600	20000
1995ph115	22137	1322	10729	3692	4094	2300
ph115pd66	14610	872	7081	2437	2702	1518
phpd Cap	18950	1500	8300	4050	2550	2550
1995 V/C	**0.77**	**0.58**	**0.85**	**0.60**	**1.06**	**0.59**
2015LGd	284500	17000	132000	48000	52500	35000
ph11pd66	20654	1234	9583	3484	3812	2541
LG012V/C	**0.79**	**0.82**	**0.96**	**0.55**	**0.91**	**0.58**
2015EPd	292000	18000	135000	49500	53500	36000
ph11pd66	21199	1307	9801	3594	3884	2613
EP012 V/C	**0.81**	**0.87**	**0.99**	**0.57**	**0.92**	**0.60**
2015HGd	299000	19000	137000	51000	55000	37000
ph11pd66	21707	1379	9946	3703	3993	2686
HG012 V/C	**0.83**	**0.92**	**1.00**	**0.59**	**0.95**	**0.62**
Lane-Capacity*	26300	1500	9950	6300	4200	4350
2030LG	370000	22000	170000	63000	70000	45000
ph10pd66	24420	1452	11220	4158	4620	2970
LG030V/C	**0.93**	**0.97**	**1.13**	**0.66**	**1.10**	**0.68**
2030EP	384000	25000	175000	65000	73000	46000
ph10pd66	25344	1650	11550	4290	4818	3036
EP030V/C	**0.96**	**1.1**	**1.16**	**0.68**	**1.15**	**0.70**
2030HG	399000	27000	180000	67000	77000	48000
ph10pd66	26334	1782	11880	4422	5082	3168
HG030V/C	**1.00**	**1.19**	**1.19**	**0.70**	**1.21**	**0.73**

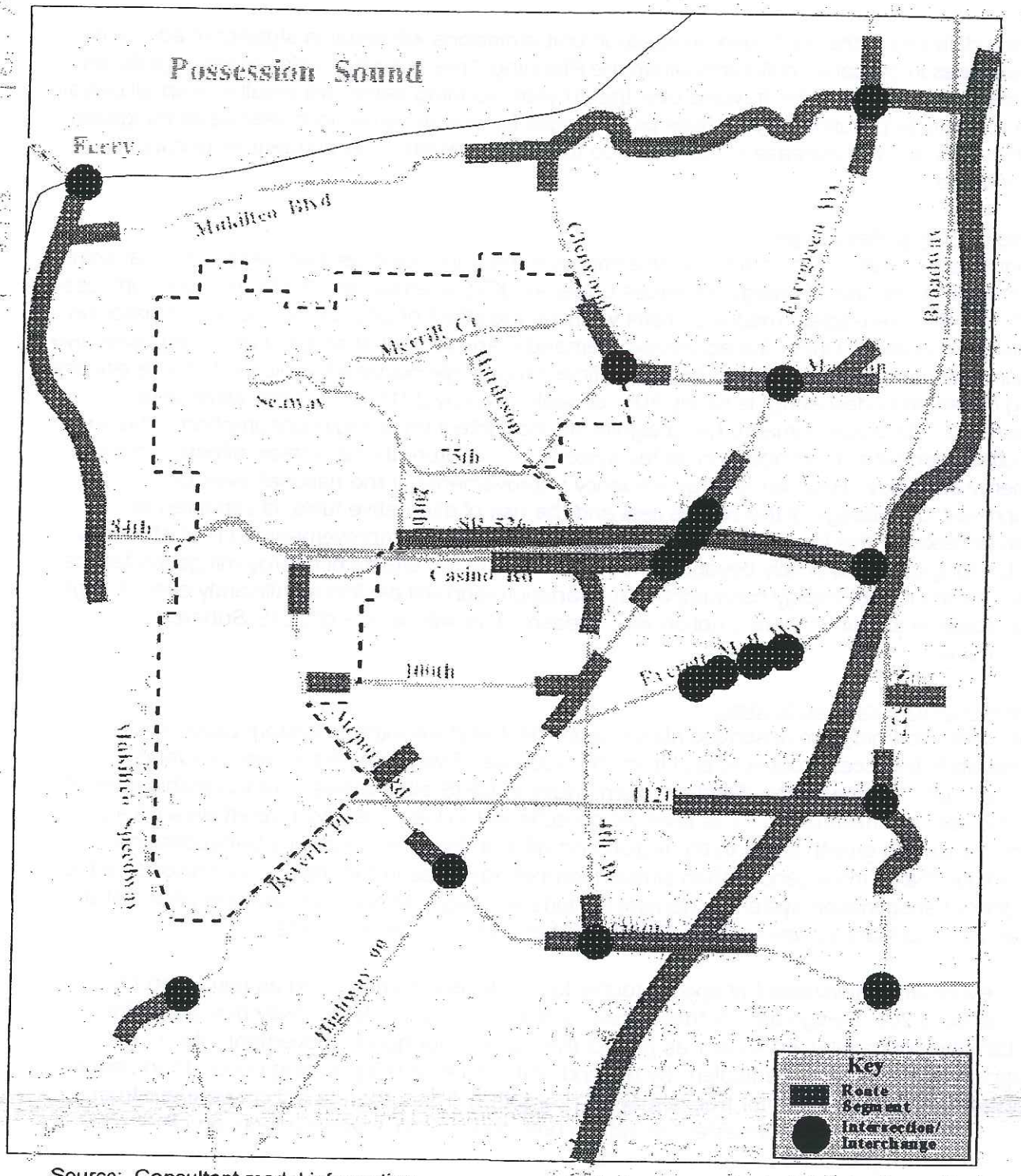
phpd=vehicles per hour, in the peak hour, in the peak direction of travel
ph115=peak hour is 11.5% of daily vehicle volume
ph11pd66=peak hour is 11% of daily, peak direction 66% of peak hour
ph115pd66=peak hour is 11.5% of daily, peak direction 66% of peak hour
ph10pd66=peak hour is 10% of daily, peak direction 66% of peak hour (spreading of peak demand)
*General, peak hour, peak direction lane capacity, 1995 system, no mitigation assumed.
2 lane arterial = 550 to 750 vehicles per hour per lane (vphpl), max assumed
5 lane arterial (2 travel lanes each direction = 1600 to 2400 vphpl ; 1800 assumed
Freeway = 1800 vehicles phpd per lane
V/C=Volume to Capacity ratio where more than 1.00 is exceeds lane-capacity in that screenline
EP=Existing Plan Alternative; LG=Slow Growth Alternative; HG=Fast Growth Alternative

Figure 3.2-22
Screenline Volume to Capacity Ratio With and Without Mitigation
2015, By DEIS Alternative, Worst Case Market Scenario



Source: Consultant model information

Figure 3.2-23
Major Facilities Exceeding Capacity, WITH Mitigation
2015 Traffic Volumes, Fast Growth Alternative
Worst Case Market Scenario



Source: Consultant model information

all of the DEIS alternatives, but especially Existing Plans and Fast Growth, promote aggressive transit/demand management tactics that significantly increase the number of daily and peak period travelers using modes of travel that are less polluting than the mix of travel modes used today. This same aggressive program could be applied to Slow Growth, but because of its lower densities would not be as effective.

On a daily basis, the continued decrease in unit-emissions will result in significant absolute decreases in critical air pollutants within the Planning Area. During peak periods, significant increases in vehicle miles traveled over the 20-year planning period will result in a small overall increase in air pollution during these peak periods for specific emissions despite all mitigation measures, but this increase is not expected to result in violations of ambient air quality standards.

Use of Energy Resources:
Significant overall growth in travel in the Impact Shed and region as a whole results in absolute increases in the use of energy resources under all DEIS alternatives. Shifts in travel from less-efficient to more-efficient modes of travel will have the effect of decreasing the unit-impacts on energy resources. Under the aggressive demand management strategy of the Comprehensive Plan, the share of trips shifting from less efficient (eg single occupant vehicles) to more efficient (eg transit and ridesharing) is nearly 10% of peak travel by 2015. This shift, while small relative to total travel demand, has a significant local effect on energy consumption. The shift is offset somewhat by congestion on the system in the future that adversely affects vehicle energy efficiency. However, energy efficiency improvements at the national level, due to improved fuel mileage of the vehicle fleet and the use of alternative fuels, is expected to compensate for this loss due to local circulation inefficiency. Improvements to fleet efficiency, in the long-term (especially beyond 2015) will dominate the effects of energy mitigation tactics. Overall, the rate of energy consumption for transportation will decline significantly even though the absolute amount of consumption will increase. This will be true of DEIS Subarea alternatives.

Sensitivity to Economic Issues:
The mitigation program described above under "Mobility" will expand system capacity, particularly for access routes to and from the Subarea. Even though the overall level of congestion increase for the Shed's system under all DEIS alternatives, a manageable level of performance is maintained. This level will be sufficient to keep the SW Everett area on a par with competing growth areas in the region and will not, by itself, result in a transportation condition that is more serious than similar (competing) areas in the region. Conditions on the region's transportation system in general will similarly degrade over the planning period at a rate that is at least as serious as in SW Everett and its surrounding areas.

The eventual establishment of special routes for trucks is recommended as mitigation (see Appendix 3.2c). Designation of these routes will allow appropriate roadway designs to be established or maintained as well as protect the capacity for goods movement. As a supplemental program, particularly by the end of the 1995-2015 planning period (and beyond), special hours of operation for trucks may be promoted. This program will concentrate truck movements during less congested periods to both reduce the adverse effects on other peak travel and to improve the trip for truck traffic.

Effects of Noise, Light and Glare and Local Traffic Conflicts:
Noise, light, glare and local traffic will increase under all DEIS alternatives. Figure 3.2-20, Impacts, illustrates corridors most susceptible to increases from Subarea traffic. Mitigation of these impacts falls into three general categories: 1.) diversion of trips; 2.) buffering of traffic impacts; and 3) self-correcting (or "benign neglect"). In cases where traffic to and from the Subarea is cutting through residential areas, and this traffic is not to/from the neighborhoods, traffic diversion tactics may be employed. While diversion is not used extensively, it may be applied in cases where available arterial or freeway routes (designated and designed for the higher volumes -- and/or axle loads) can accommodate this traffic. The actual diversion tactics must be evaluated, selected and designed by the City (and/or cooperating jurisdiction) upon consultation with the affected neighborhood. Priorities and specific projects will be established annually based on development activity and availability of resources. However, a special program, set aside specifically for this purpose, is recommended as mitigation.

In some cases, very high volume traffic corridors are immediately adjacent to sensitive noise, light and glare receptors. In these cases noise buffers may be installed (examples are freeway ramp improvements with noise walls to buffer the adjacent areas from noise, light and glare). These buffers are typically installed as a feature of improvements as they are made along the corridors. As with diversion tactics, this mitigation must be evaluated, selected and designed by the City (and/or cooperating jurisdiction) after consultation with the affected neighborhood. They become features of improvements along these routes and are included in cost estimates. The environmental review for the improvement provides the forum for identifying and designing this feature.

For the first two categories (diversion of trips and buffering), the Neighborhood Improvement Program is the primary mitigation mechanism. For this Program, an administrative policy is established by the City to determine priorities for specific neighborhood traffic projects, including a process for the annual prioritization of these projects. The process will be based upon the present method established for the Boeing 777 Expansion mitigation in which the Council of Neighborhoods and City Staff jointly created lists of potential projects, prioritized projects based on established criteria, held public meetings to gather community comments, then finalized lists through a Traffic Mitigation Committee patterned after the existing Boeing Mitigation Committee which it will replace. The Program would work within an annual mitigation budget identified in this and other Subarea Plans. The recommended amount for this program is estimated in Appendix A3.2c. The mitigation commitment is to the program for mitigating this category of impacts, not to specific projects.

"Self-correcting" impacts occur when high volumes of forecast traffic don't actually materialize on specific routes. In these cases, traffic chooses alternative routes because the narrow, inappropriately designed facilities don't have adequate vehicle carrying-capacity. These corridors are designed and maintained with lower capacity by public policy and are intended for slower moving, primarily local traffic. They will not be expanded to accommodate forecast demand. Typically, when faced with these contrained and slower corridors, traffic uses longer but faster and better designed routes to complete trips. As a result, the more severe impacts due to high demand will not occur. Two examples in the Impact Shed are Mukilteo Blvd (north of the Subarea) and a segment of SR527 (east of I-5 near Silver Lake).

Destruction/Degradation of Environmentally Sensitive Areas:
Most of the increased travel within the SW Everett area and the Impact Shed will be accommodated on the existing network of facilities. Certain network links will be widened to increase capacity and a few new links will be added. The improvements themselves represent the primary source of adverse impacts upon the natural environment. In several cases, the need to expand capacity has been out-weighed by the constraints of environmental impacts (through previous public policy decisions). In particular, the Mukilteo Blvd corridor has been excluded from consideration for expansion of vehicle capacity. The environmental cost in this corridor has been considered too high to offset any mobility benefits (even though this is potentially the most direct route for many trips to and from the SW Everett Subarea).

Other sensitive corridors have proposed improvements that are part of the mitigation program. These include parts of the 112th St corridor and SR525/Paine Field Blvd, including the potential Seaway Extension. Improvements in these corridors will be subject to more rigorous Subarea-level impact evaluation and mitigation. Some or all of the proposed improvements in these corridors may be deleted or substantially revised. Should they be deleted, the traffic must be re-assigned to alternative routes and the mitigation program adjusted accordingly. None of the improvements listed in the mitigation present fatal flaws to the mitigation program as a whole. They represent the best opportunities for improving the overall system. During the 20 year planning period, Fast Growth is most vulnerable to the effects of environmentally limited expansions of capacity and Slow Growth the least.

3.2.4.4 Site-Specific Mitigation and Requirements

In addition to the broader, primarily off-site program of transportation mitigation outlined in the previous section, each applicant may be subject to site-specific mitigation or requirements. In general, this mitigation would be applied at the time of application for permits.

Design Traffic Study. Unless otherwise approved by the Traffic Engineer, each applicant must submit a traffic study which analyzes access, site-specific safety and construction impacts. Improvements needed for safety and adequate access to the site will be the responsibility of the developer and may include traffic signals directly adjacent to the site.

Access. Driveways, access location, and on-site circulation must be approved by the Traffic Engineer and sites may be required to share or limit access points.

Commute Trip Reduction. All projects that expect to employ more than 100 employees must comply with the city's Commute Trip Reduction Ordinance. All projects should provide preferential parking for carpools and vanpools.

Transit. The location of transit stops must be approved by the City. Stops and pullouts must be constructed on site frontage and comply with other standards as required by the Traffic Engineer. Transit schedules should be prominently desplayed for employees at transit facilities and near site sidewalks.

Pedestrian and Bicycle. Internal sidewalks should connect buildings with transit facilities and public sidewalks. Site design should provide for bicycle access and parking. Individual buildings should incorporate conveniences such as lockers, shower rooms and bicycle stands.

For the Bhend Property (Griffin), a continuous looped pedestrian trail system shall be provided near the interior edge of the buffer and open space areas and connect to the sidwalk system.

Traffic Mitigation Fees for Individual Developments. This section and Appendix A3.2b, c and d describe a mitigation program associated with overall Subarea development. The program is financed primarily by public funds, but supplemented by developer contributions using the City's traffic mitigation ordinance. The amount of the fee must be established by public policy and cannot be specified with certainty in this document (it must await public review of impacts and selection of a preferred Plan and mitigation options). However, a range of possible rates is described in Appendix A3.2c. It is expected that the rate, when adopted, will fall between 5% and 10% of capital costs of the program. Each applicant will then be assessed the fee at time of application based on their project's share of the overall mitigation program. The share of each project in the program is estimated in this document based on forecast traffic due to Subarea buildout (see Table A3.2-1, Appendix A3.2b). While the estimated share is generalized among all forecast uses for the site, the proportion is not expected to vary significantly from that of individual analyses conducted for each development. The general Subarea analysis eliminates the need to conduct separate and repetitive areawide analyses for each new development.

The share is pre-approved with the Plan for the Subarea and established at the time of Plan adoption. The estimated cost per peak hour trip varies up to $1,000 under worst-case conditions. The rate, whatever it is, may be reviewed annually and adjusted to program needs. The rate and conditions associated with it will be a public policy choice made following review and public input of the Subarea Plan. It is provided in this document only to assist in that decision, which involves the entire City of Everett, not just the SW Everett Subarea for which this EIS is written.

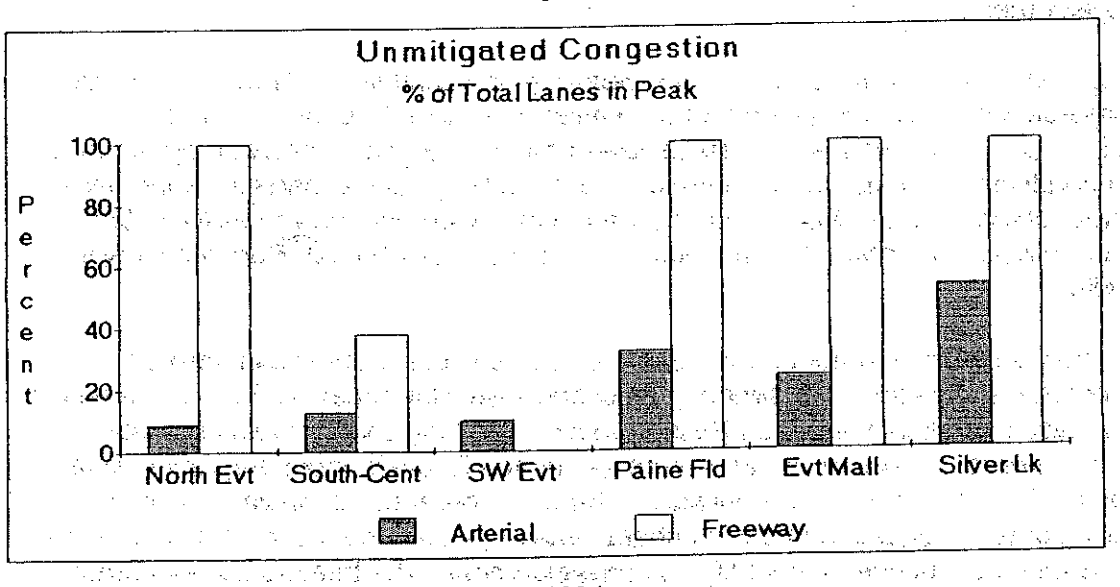
Thresholds. Individual development applications may be subject to additional analysis if certain thresholds are exceeded. In general, the overall level of trip making for the Subarea is the controlling factor since this is a Plan-Based process. As long as individual applications, collectively, are within the range of impacts identified for the Subarea, approvals should stand on the Subarea EIS findings and move forward. However, there may be instances where individual developments, because of size or characteristics, challenge the integrity of the Plan and its EIS. A threshold is used to identify such development. The threshold measurement for triggering an 'extraordinary review' for a development will be 'trips per net buildable acre'. Since the Plan assumes up to 25 employees per acre, and since the average daily trips per employee assumed for the site is 5.5, a threshold base of 137.5 daily trips per net buildable acre is used. Twice this threshold base will be considered a potential threat to the findings of the Subarea EIS. This would mean that a daily figure of 275 daily trips per net buildable acre (or about 35-40 peak hour trips per acre) will be used as the threshold during the first year of implementation. Appendix A3.2b contains several examples of hypothetical developments, including one that exceeds the threshold.

3.2.5.1 Higher Overall Roadway Congestion Levels

Increased Congestion:

The Everett Comprehensive Plan measures level of service as the number of roadway lane-miles that exceed general capacity during the peak periods of the day. Based upon this measurement, it anticipates that some 18% of all of the arterial lane miles in the Planning Area will exceed generalized capacity and that 67% of the freeway lanes will exceed capacity in twenty years under the Existing Plan Alternative, even with all planned improvements in place and with the achievement of the mode-of-travel rates discussed above. This congestion varies among Planning Subareas, from a low of about 9% of all arterial lanes exceeding capacity (during peak periods) in the North Everett Subarea to a high of 53% of arterial lanes exceeding capacity in the Silver Lake/Eastmont Subarea (see Figure 3.2-24, below). Less than 10% of arterial lanes in the Shed are expected to exceed generalized capacity during peak periods by 2015.

Figure 3.2-24



Source: Everett Comprehensive Plan, 1994

Probable Adverse, Unmitigated, Effects of Increased Congestion:

Inconveniences during peak travel periods, lowering of mobility expectations, and necessary adjustments in travel behavior. The overall increase in congested conditions, particularly during peak travel periods, will result in additional inconveniences for those traveling during these periods of the day. As a result of this decay in mobility conditions, general expectations should be that conditions will be worse than today under all DEIS alternatives. Some travelers are likely to make adjustments in their travel behavior to compensate for the inconvenience during the most congested periods. These adjustments are characteristic of those that have typically been made in other areas of the region where higher population and employment densities, high travel demand and over-capacity facilities have created increasing delays along major travel routes. Changes in behavior that can be expected to occur include shifts to other

travel modes such as transit and ridesharing, altering the time of day that certain trips are made, deferring or combining of trips or eliminating certain trips altogether. A small number of travelers may also choose to walk or use bicycles to complete their trips. These inconveniences, changes in behavior and lower expectations are an unavoidable adverse impact that will not be entirely mitigated by any of the alternatives. However they can be expected to be least in the vicinity of the Subarea under the Slow Growth Alternative; and greatest in the vicinity of the Subarea under the Fast Growth Alternative. Because of the similar overall rate of growth among DEIS alternatives for this part of the region, overall differences for this impact are very slight, except on or near travel routes to and near the Subarea.

Unavoidable adverse effects on trade and commerce:
Increased congestion may affect trade and commerce by creating significantly greater inconveniences for customers and employees and thereby impairing the conduct of business. However, since this condition is not unique to the SW Everett area [and is experienced at all of the other competitive sites in the region] it is relative and may not result in significant shifts among these areas (and away from SW Everett) unless the overall growth management strategy for the region [and the state] changes. As long as the region and all local jurisdictions in the region continue to pursue a policy of urban containment, that calls for the "filling in" of already developed parts of the region that have services in place (such as SW Everett), it is unlikely that the overall effect on trade and commerce will be significant. As long as the decay in mobility conditions is perceived as a characteristic of continued growth within already developed areas, it may have only minor adverse impacts compared to other similar areas. A change in this regional policy that permits a more spatially extensive region than promoted in current plans is likely to result in the creation of more attractive outlying areas for certain types of trade and commerce where congestion in the immediate vicinity of these sites is less severe than in and near SW Everett. This may result in the shift of new trade and commerce to these other areas. Such a change in regional and state policy would have other, potentially more severe, impacts that were discussed during the discussion of the current regional plan.

Higher levels of certain air pollutants.
Growth of both the Subarea and surrounding area will result in additional concentrations of traffic and potential for air pollution levels for certain contaminants to approach federal standards for violations. Carbon Monoxide levels are likely to increase in critical areas of congestion as discussed earlier in the Impacts Section of this document. Even though these critical areas may not exceed air quality standards, they will have increased levels of pollution. These increased levels represent an unavoidable adverse impact of growth in this area. The levels are not significantly different among alternatives because of similar overall areawide growth rates, but tend to be somewhat higher in the vicinity of the Subarea for the Fast Growth Alternative and lowest in the vicinity for the Slow Growth Alternative.

3.2.5.2 Increases in Overall Exposure to Noise, Light, Glare, Local Traffic.

The overall increase in travel demand over the next 6, 10, 20, and 30 years (and beyond) will result in proportional increases in the exposure of sensitive receptors such as residential areas to noise, light, glare and local traffic conflicts. Even with appropriate mitigation in selected areas (as provided for in the mitigation section of this DEIS), some additional exposure will occur and will be largely unmitigated. The exposure is primarily in areas outside of the Subarea Boundary and the amount of exposure due to Subarea growth is inversely

proportional to the distance of the receptors from the Subarea. In general, the most significant proportion of unmitigated impacts from these environmental elements will occur within about 1 mile of the Subarea boundary in adjacent neighborhoods. These areas are identified in the DEIS section on this subject.

Overall increases in noise, light, glare and local traffic impacts for these adjacent areas include growth in the region as well as growth within the neighborhoods themselves. Typically, the proportion of the increase that is specifically and uniquely attributable to the increment of new growth on the Subarea is less than one-fourth of the overall increase in exposure within the impacted area. The proportion of the exposure that is attributable to existing residents of the impacted area itself are excluded, even though these residents may be employed at the Subarea. Impacts attributable to new residents [eg. new residential units] within the adjacent areas must be addressed and mitigated as part of the approval process for new residential units. Existing residents who work at the Subarea or may become employed at the Subarea in the future are excluded. Impacts from other subareas are also excluded from consideration for growth decisions related to the Subarea. Impacts that now exist that are due to employment at existing employers on the Subarea are excluded since they have [or should have] already been addressed during the approval of previous development decisions. If they have not been addressed in previous decisions, it does not become a burden of development of the Subarea.

3.2.5.3 Higher Unit Costs and Lower Productivity for System Improvements

As improvements to the existing system are made, they become increasingly less productive per unit of investment in their effect on abating congestion. This will occur because of increasingly more costly solutions and limitations on the type and scale of improvements that are possible, both from a financial and community/environmental standpoint. The existing urban area, with its present network of facilities must be retrofitted with new capacity that is increasingly more complex in design and more difficult to install. Existing neighborhoods and businesses now occupy most of the available space, thereby blocking opportunities to complete or even expand capacity of the circulation network. Adding interchanges, widening roads or creating new road linkages is becoming increasingly more difficult and more expensive. This increasing inefficiency is an unmitigated impact of growth in an urban area such as the Impact Shed.

The principle of decreasing effectiveness may work in the reverse for certain transit and demand management actions, even though the overall improvement strategy is expected to have a lower net level of cost-effectiveness because of continued domination of vehicular circulation on the system. To the extent that it does work in reverse, it represents a partial mitigation of the increasing inefficiency. For transit services, the increased densities and higher levels of congestion for single occupant vehicles is expected to produce more cost-effective investments as some travelers begin to choose alternative forms of travel because of congested conditions. If these services are supported by general transportation or other revenues, any increase in this service must be accompanied by an increase in revenue to support the added service. Ridesharing programs permit a more efficient use of existing physical system capacity, but must still utilize the vehicular system. Even in 30 years, single occupant vehicle use is expected to represent 60% of all peak period travel. Transit use is expected to quadruple [or more] but still represent only about 10% of peak travel.

3.2.5.4 Adverse Effects of Continued Minimum Investment in Maintenance

During the past several decades, investment in transportation infrastructure has declined precipitously relative to travel demand. While resources have become increasingly scarce, most jurisdictions (including Everett) have diverted more and more of their available revenues to maintenance in an effort to protect existing investments. Currently, a majority of Everett's transportation revenues are focused on maintenance, operations and administration of the existing system. However, even with a high priority on maintaining existing infrastructure, the program is falling behind. Of particular concern is not just the structural integrity of existing surfaces but the design of these facilities. In many cases the current roadway designs are not adequate to safely, structurally or operationally accommodate the flood of new traffic that is expected as the City and region grows. Merely maintaining the present surfaces in their originally designed condition will not adequately prepare for a future in which substantially higher volumes of traffic circulate on increasingly obsolete roadways. If present commitments to maintenance is sustained, as assumed in this DEIS, an unmitigated impact will be additional physical deterioration and a system design that becomes increasingly less safe and is less-prepared for higher volumes. This will be a general condition throughout the region, not just in Everett.