

**CITY OF THE DALLES
TRANSPORTATION SYSTEM PLAN**

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Prepared for
The City of The Dalles
The Dalles, Oregon

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CHAPTER 1: INTRODUCTION

The purpose of this study is to develop a community-based multi-modal transportation system plan (TSP) that addresses transportation needs for a twenty-year period (1995 – 2015) associated with anticipated future growth in The Dalles urban area. The TSP is being prepared to address federal and state regulations that require urban areas to do long-range planning, as well as to serve as a guide for the community in the management of the existing transportation facilities and for the design and implementation of future transportation facilities.

The long-range plan will implement portions of the Oregon Transportation Plan (OTP) and 1999 Oregon Highway Plan, as well as the City's Local Street Network Plan, 1st Street Streetscape Plan and the Downtown Parking Plan. It will be in conformance with Goal 12, the Oregon Transportation Planning Rule (TPR), Oregon Administrative Rule 734.051 and the federal Intermodal Surface Transportation Efficiency Act (ISTEA), thereby helping to ensure that the City of The Dalles is eligible for future state and federal funding. The planning effort included community involvement, and it was guided by local public agency staff.

The Dalles TSP was originally prepared over a period from 1993 through 1999 with a final document dated June 1999 to cover a 20-year period (thereby the 1995 – 2015 planning period). In 2005, several sections of the document were updated to bring the TSP into compliance with the current TPR and the *1999 Oregon Highway Plan*. Street functional classification designations were updated to be consistent with the Federal Aid Functional Classification Mapping System. The project list was updated to reflect projects completed, new projects in the city's capital improvement program, and other changes in the project parameters.

THE PLANNING AREA

The Dalles is the county seat and, with almost half of the county's population, is the largest city in Wasco County. Located in the Columbia River Gorge along the eastern foothills of the Cascade Mountain Range, the city serves as the hub of the agricultural economy in north-central Oregon.




The Dalles TSP planning area includes the City of The Dalles and the area within the city's Urban Growth Boundary (UGB). The planning area is shown in *Figure 1*. Roadways included in the TSP fall under several jurisdictions: The Dalles, Wasco County, and the State of Oregon.

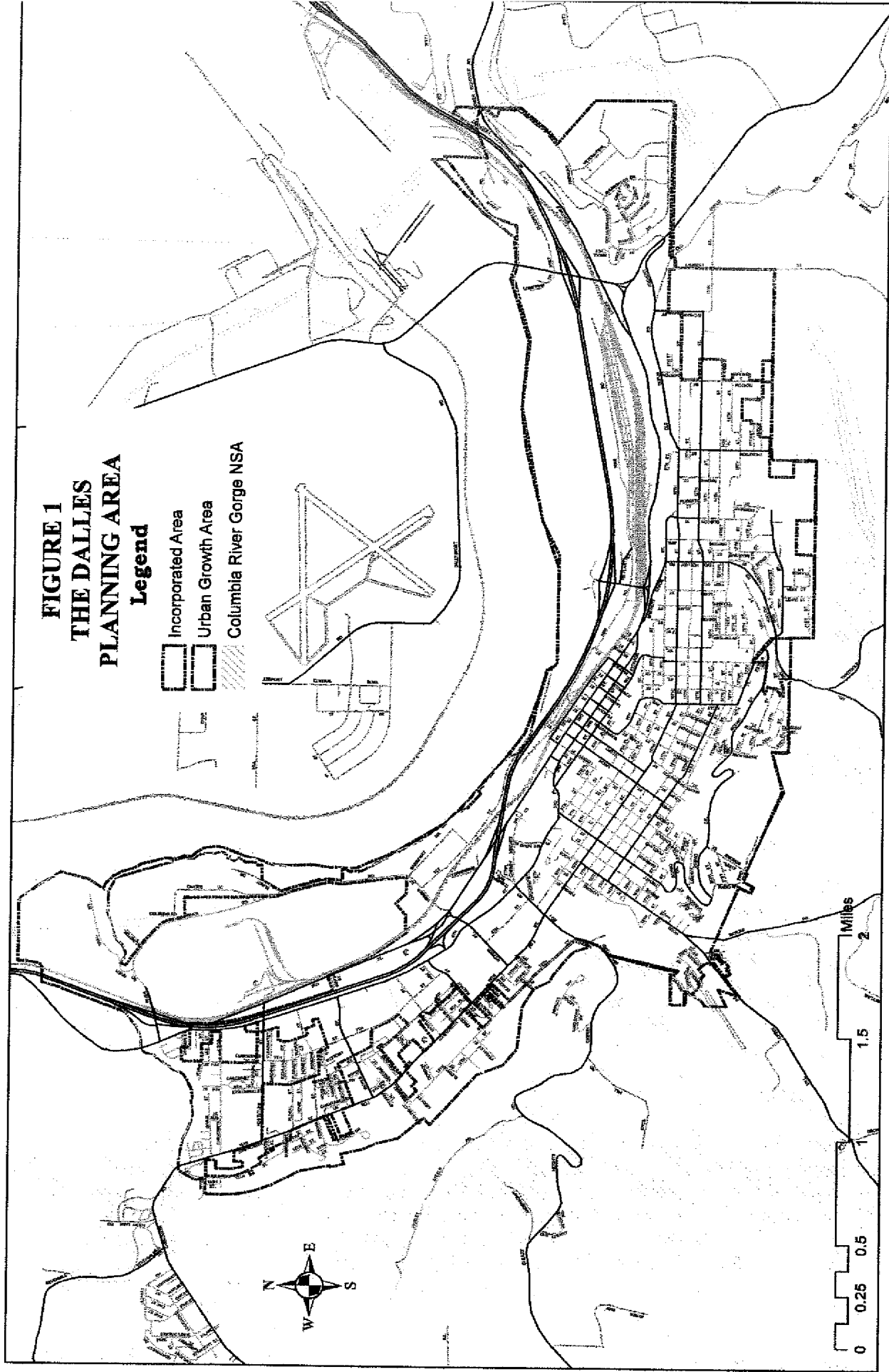
The Dalles is served by two state highways: Interstate 84 (I-84) and US 197. The interstate is a four-lane, limited access facility that connects The Dalles to Portland, located 85 miles to the west, and then passes through Idaho and Utah to the east. There are currently six interchanges with I-84 in The Dalles. These interchanges connect at several points along old US 30 and at US 197 where it crosses into Washington. US 197 is a two-lane highway that connects to US 97 and Bend located 132 miles to the south. It extends northward into Washington, terminating at State Route 14. US 30 from the Chenoweth Interchange on the west to the Marina Interchange on the east is under city jurisdiction.

A grid pattern of local streets has been maintained through much of The Dalles as it has developed over the years. The grid follows the general contour of the Columbia River and is divided into sections by various topographical features. The core of the grid lies between Mill Creek and Kelly Avenue/Seventh Street. This section contains the old downtown business district and many of the older residential areas. Another well-developed but less dense grid runs eastward from Kelly Avenue to Morton Street. The two grid sections are slightly skewed and, as a result, not all of the roadways

FIGURE 1
THE DALLEES
PLANNING AREA

Legend

-  Incorporated Area
-  Urban Growth Area
-  Columbia River Gorge NSA



continue through. A third, less densely developed grid lies northwest of the core section. This grid has much larger blocks than the other grid segments.

A land use zoning map of The Dalles is shown in *Figure 2*. The majority of the commercial zoning lies along Sixth Street. In the downtown core, a one-way couplet of Second and Third Street serves most of the commercial development. Additional commercial development is focused around the US 197 interchange with I-84.

Residential development lies along the hills primarily to the south of the commercial zones. The core of The Dalles is fairly developed with mostly infill residential development remaining. Areas on the east and west sides of the city are where most of the new residential development is occurring.

The industrial zones lies mostly along the waterfront and the adjacent railroad tracks. An industrial park has been established in the northwestern part of the city, between the railroad tracks and the river. This area is also home to the Port of The Dalles.

THE PLANNING PROCESS

The draft TSP was initially developed in 1998-99 through a series of technical analyses combined with systematic input and review by the City of The Dalles, a Transportation Advisory Committee (TAC), and the public. A graphical presentation of the planning process is illustrated on *Figure 3*.

Public Involvement

Community involvement was an important part of developing the draft TSP in 1998-99. Interaction with the community was achieved in two ways: holding open community meetings and through a Transportation Advisory Committee.

For the 2005 update of the TSP, several meetings took place between September 2004 and April 2005. Two public meetings and four stakeholder meetings were held during this time period. The stakeholder meetings were comprised of local citizens identified by the City. In addition, the Urban Renewal Advisory Committee met three times and the project management team met six times during the same time period. These meetings provided the public with opportunities for input as well as updates from the project team. All of the above meetings were tied to two other projects, the 1st Street Streetscape Plan and the Downtown Parking Plan.

Goals and Objectives

Using input from the city, the TAC, and the community, a set of goals and objectives were defined for The Dalles TSP. These goals and objectives were then used to make decisions about various potential improvement projects. They are described in Chapter 2: Goals and Objectives.

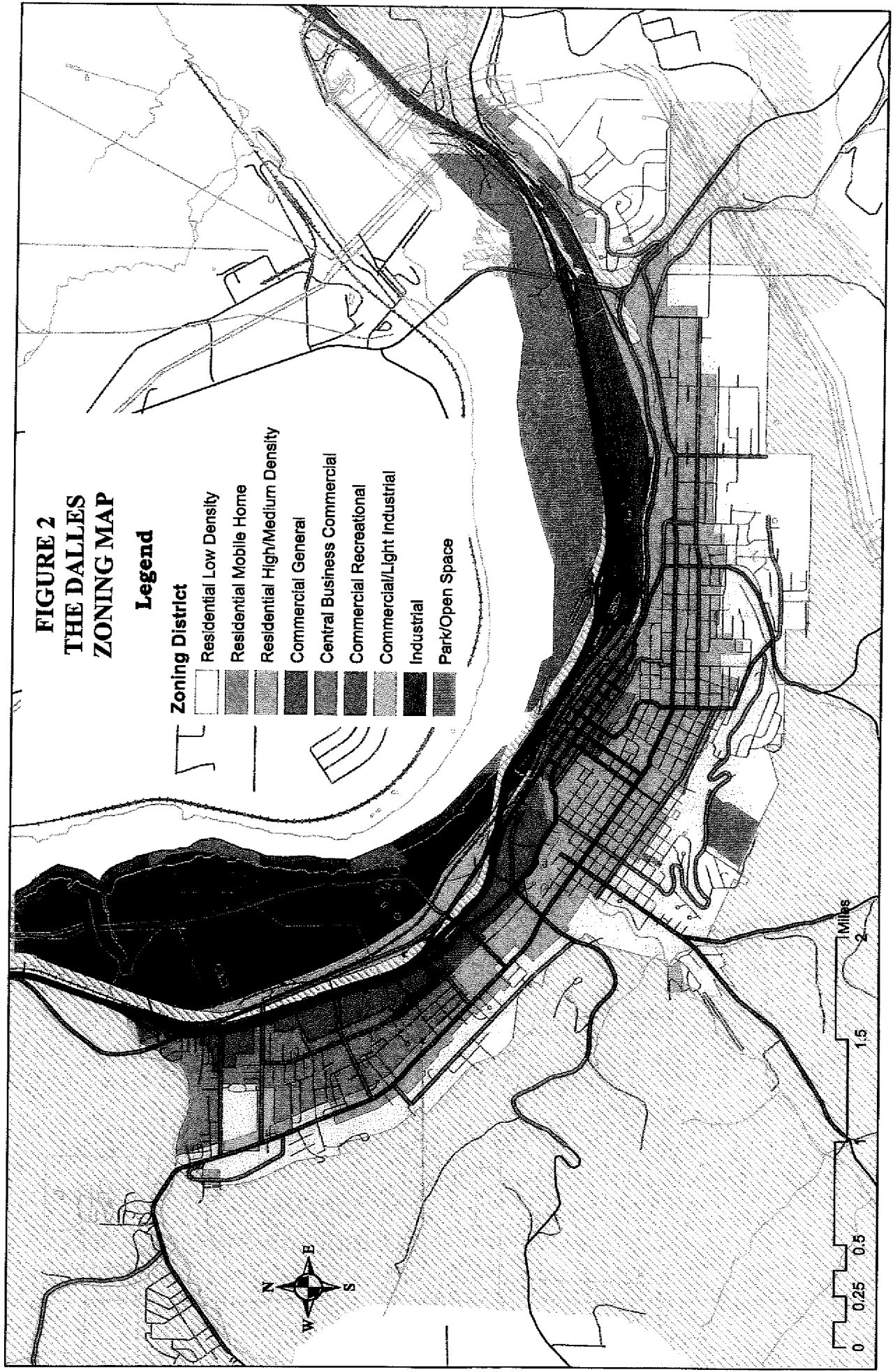
Review Existing Plans and Policies

To begin the planning process, existing plans and policies that related to the evaluation and development of the transportation system in The Dalles urban area were reviewed. The review established the history of planning in the city. It identifies how population and employment were projected and how those projections compare with current measurements; what street system improvements were planned and which were implemented; how other transportation facilities were planned and implemented; and how the city is currently managing its ongoing development. The review of existing plans and policies is summarized in Appendix B of this report.

FIGURE 2
THE DALLES
ZONING MAP

Legend

Zoning District	Description
[White box]	Residential Low Density
[Diagonal lines /]	Residential Mobile Home
[Diagonal lines \]	Residential High/Medium Density
[Horizontal lines]	Commercial General
[Vertical lines]	Central Business Commercial
[Cross-hatch]	Commercial Recreational
[Dense cross-hatch]	Commercial/Light Industrial
[Dark cross-hatch]	Industrial
[Stippled]	Park/Open Space





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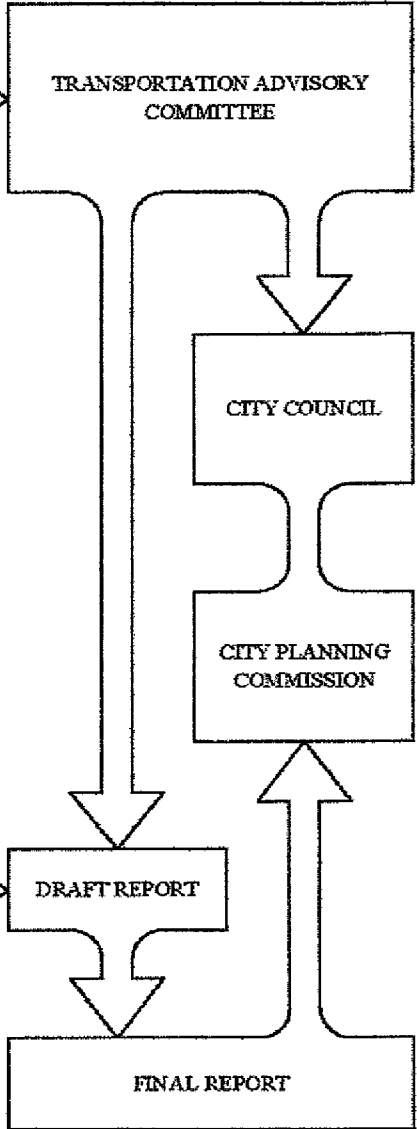
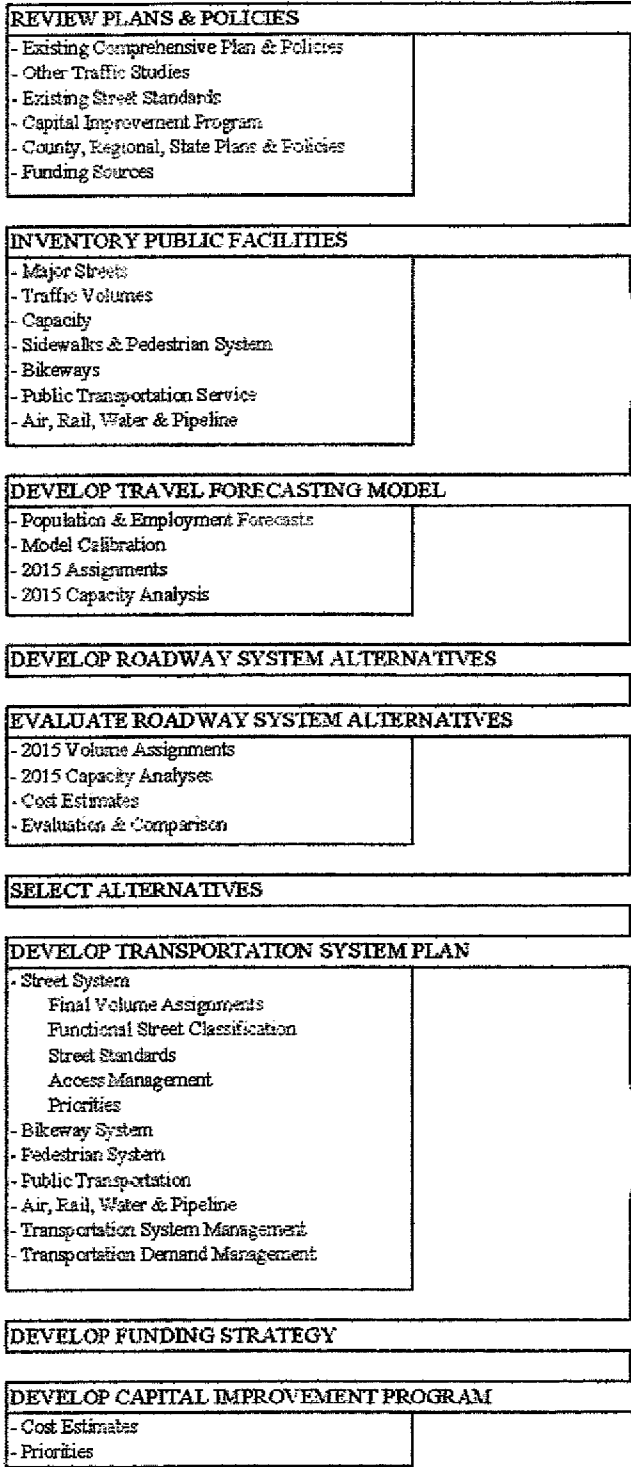


FIGURE 3
THE PLANNING PROCESS

Inventory Existing Public Facilities

The inventory of existing facilities catalogs the current transportation system and identifies how that system currently operates (this analysis and inventory was not updated in 2005). The results of the inventory are described in Chapter 3: Current Transportation Conditions. Table A-1 in Appendix A summarizes the inventory of the existing arterial and collector street system as it existed in 1993.

Forecast Demographics and Travel Demand

As required by the TPR, the TSP must address a 20-year forecasting period. The 20-year travel forecasts (1995-2015) were developed based on projections of population and employment by different land use categories within the Urban Growth Boundary and the Chenoweth Urban Reserve Area outside the UGB. These projections, along with current street capacity and travel time characteristics were then entered into a computer model to develop 2015 travel forecasts. This process is described in detail in Chapter 4: Future Travel Demand.

Roadway System Alternatives

Once the travel demand forecasting model was developed, a series of roadway system alternatives were evaluated. The initial alternative evaluated was the “base future,” which is the current street system plus any committed street system improvements. Based on projected capacity deficiencies and safety concerns identified in the base future alternative, alternative network improvements were evaluated. After comparing the alternatives with the goals and objectives established at the beginning of the process, a recommended street system plan was selected. The evaluation is described in Chapter 5: Transportation Improvement Options Analysis.

Develop Transportation System Plan

The TSP was then developed for each mode of transportation as described in Chapter 6: Transportation System Plan. The street system plan was developed from the forecasting and alternatives evaluation described above. The bicycle and pedestrian plans were developed to follow requirements set forth by the Oregon TPR and the *Oregon Bicycle and Pedestrian System Plan*, and they were based on input received from the TAC and the public. The public transportation, air, water, rail, and natural gas pipeline plans were developed based on discussions with the owners and operators of those facilities.

Develop Funding Plan and Capital Improvement Program

The capital improvement program was developed from the short-range improvements and the recommended street system plan, while the funding analysis examined methods for financing these improvements. Chapter 7: Funding Options and Financial Plan describes the funding options and financial plan.

TRANSPORTATION SYSTEM PLAN REQUIREMENTS

The City of The Dalles TSP needs to meet the requirements of ISTEA, the Statewide Planning Goal 12 and its implementing division, the TPR (OAR Chapter 660, Division 12). Goal 12 affects all levels of government, and requires that transportation plans be coordinated among all jurisdictions. The requirements for ISTEA are parallel to those required by the Oregon TPR.

Federal Intermodal Surface Transportation Efficiency Act

The ISTEA is a landmark federal legislation that specifies requirements for statewide and metropolitan area long-range planning. The law does not specify planning requirements for areas with less than a 50,000 population, such as the City of The Dalles urban area. The legislation is, however, relevant to the City of The Dalles TSP study as it redefines the manner in which federal aid is provided for highway and transit programs. The planning requirements under ISTEA are parallel to those required by Oregon's TPR.

Goal 12

In the mid-1970s, Oregon adopted 19 Statewide Planning Goals to be implemented in comprehensive plans. The aim of Goal 12, Transportation, is "to provide and encourage a safe, convenient and economic transportation system."

Each community, region, and metropolitan area updated the transportation element of their comprehensive plans according to the following guidelines set forth in Goal 12.

"A transportation plan shall (1) consider all modes of transportation including mass transit, air, water, pipeline, rail, highway, bicycle and pedestrian; (2) be based upon an inventory of local, regional and state transportation needs; (3) consider the differences in social consequences that would result from utilizing differing combinations of transportation modes; (4) avoid principal reliance upon any one mode of transportation; (5) minimize adverse social, economic and environmental impacts and costs; (6) conserve energy; (7) meet the needs of the transportation disadvantaged by improving transportation services; (8) facilitate the flow of goods and services so as to strengthen the local and regional economy; and (9) conform with local and regional comprehensive land use plans."

Oregon Transportation Planning Rule

The Oregon Transportation Planning Rule (TPR) was developed by the Oregon Land Conservation and Development Commission (LCDC) and the Oregon Department of Transportation (ODOT), and was adopted in April 1991. OAR 660 Division 12, the Transportation Planning Rule, implements Statewide Planning Goal 12.

Essentially, the TPR requires that cities, counties, Metropolitan Planning Organizations (MPOs), and state agencies prepare and adopt TSPs. A TSP is "a plan for one or more transportation facilities that are planned, developed, operated, and maintained in a coordinated manner to supply continuity of movement between modes, and within and between geographic and jurisdictional areas."

The ultimate aim of the TPR is to encourage a multi-modal transportation network throughout the state that will reduce our reliance on the automobile. It ensures that local, state, and regional transportation systems "support a pattern of travel and land use in urban areas that will avoid the air pollution, traffic and livability problems faced by other areas of the country."

Transportation Planning Rule Requirements for The Dalles

The City of The Dalles falls into the jurisdiction category of cities with a population between 2,500 and 25,000 that are located outside of a major urban area. Therefore, they must develop and adopt a TSP which includes:

A street system plan for a network of arterial and collector roadways
A bicycle and pedestrian plan
A public transportation plan
An air, rail, water, and natural gas pipeline plan
Policies and land use regulations for implementing the TSP
A transportation financing program

In addition to the TSP, the City of The Dalles must adopt land use and subdivision ordinance amendments consistent with the requirements in the TPR to protect transportation facilities for their identified functions. In particular, these amendments should include street standards and access control measures.

The city should also amend land use and subdivision ordinances to require bicycle parking facilities and facilities for safe, convenient, and direct pedestrian and bicycle access within and between residential, commercial, employment, and institutional areas.

As part of the 2005 TSP update, the TPR was reviewed so that this section could be updated to include any relevant amendments. The most recent significant changes to the TPR affecting The Dalles were adopted in 1998, and are addressed in the 1999 TSP. Subsequent amendments to the TPR do not apply to The Dalles. Therefore, as of 2005, The Dalles TSP complies with the TPR.

Oregon Transportation Plan

The OTP was completed and adopted by the Oregon Transportation Commission in September 1992. Several alternative approaches to developing the transportation plan were evaluated as part of the OTP planning process. The preferred plan presented in the OTP followed the Livability Approach, which “depends heavily on the concept of minimum levels of service within each transportation mode to assure appropriate transportation alternatives to all areas of the state.”

In its inventory of existing facilities, the OTP identifies several transportation facilities of significance in The Dalles. These include:

Interstate 84

AMTRAK inter-city passenger rail service via the Portland to Salt Lake City line (no longer in service)

Greyhound inter-city bus service along the Portland-Boise-Salt Lake City route

Freight rail service provided by the Union Pacific Railroad (UPRR)

Barge and river transportation provided by City of The Dalles

The Columbia Gorge Regional Airport

Local transit service

Oregon Highway Plan

The 1999 Oregon Highway Plan (OHP) establishes policies and investment strategies for Oregon’s state highway system over a 20-year period and refines the goals and policies found in the Oregon Transportation Plan. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the use of new techniques to improve road safety and capacity. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems.

US 30 through the Dalles is identified as a District Highway and Scenic Byway, US 197 is identified as a Regional Highway and I-84 is identified as an Interstate Highway and Statewide Freight Route in the State Highway Classification System Policy in the Oregon Highway Plan¹. ODOT uses the state highway classification system to guide management and investment decisions regarding state highway facilities.

District Highways are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements.

Regional Highways typically provide connections and links to regional centers, Statewide or Interstate Highways, or economic or activity centers of regional significance. The management objective is to provide safe and efficient, high-speed, continuous-flow operation in rural areas and moderate to high-speed operations in urban and urbanizing areas. A secondary function is to serve land uses in the vicinity of these highways.

Interstate Highways provide connections to major cities, regions of the state, and other states. A secondary function in urban areas is to provide connections for regional trips within the metropolitan area. The Interstate Highways are major freight routes and their objective is to provide mobility. The management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas.

The goal of the highway classification system is to provide direction for managing the system and a basis for developing funding strategies for improvements. The system will be used in the development of corridor plans, transportation system plans, major investment studies, review of local plan and zoning amendments, periodic review of local comprehensive plans, highway project selection, design and development, and facility management decisions including road approach permits. The following are implementation strategies included in the Oregon Highway Plan that are of significance to state highways through The Dalles urban area:

Highway Mobility Standards (Policy 1F): “It is the policy of the State of Oregon to use highway mobility standards to maintain acceptable and reliable levels of mobility on the state highway system.” These standards shall be used for –

- **Identifying** state highway mobility performance expectations for planning and plan implementation;
- **Evaluating** the impacts on state highways of amendments to transportation plans, acknowledged comprehensive plans and land use regulations pursuant to the Transportation Planning Rule (OAR 660-12-060); and
- **Guiding** operations decisions such as managing access and traffic control systems to maintain acceptable highway performance.

Classification and [Access] Spacing Standards (Policy 3A): “It is the policy of the State of Oregon to manage the location, spacing and type of road and street intersections and approach roads on state

¹ Oregon Department of Transportation - Highway Division, *1999 Oregon Highway Plan*, March, 1999.

highways to assure the safe and efficient operation of state highways consistent with the classification of the highways.”

The following are implementation strategies included in the Oregon Highway Plan that are of significance to I-84 through The Dalles urban area include:

- The maximum volume to capacity (v/c) ratio is 0.70 for I-84, an Interstate (NHS) Freight Route through a non-MPO area where non-freeway speed limit is greater or equal to 45 mph.
- Spacing standards for access to statewide highways in urban areas where the posted speed is greater or equal to 55 mph is 1,320 feet.
- Grade separated interchanges on I-84 are subject to OHP Policy 3C, Interchange Access Management Areas (IAMPs), which requires developing an IAMP to ensure the safe and efficient operation between connecting roadways and to minimize the need for major improvements of existing interchanges.

The following are implementation strategies included in the Oregon Highway Plan that are of significance to US 197 through The Dalles urban area:

- The maximum volume to capacity (v/c) ratio is 0.80 for US 197, a Regional Highway through a non- MPO area where non-freeway speed limit is less than 45 mph.
- Spacing standards for driveways on, and approaches to Regional Highways in urban areas is 750 feet where the posted speed is 45 mph. *[Source: OHP Appendix C, Table 14]*
- Old Highway US 30 is still an ODOT facility west of the Chenowith Interchange and east of the Brewery Grade interchange with I-84. With the completion of the Chenowith interchange, the ownership of US 30 between the above mentioned interchanges was transferred to the city.

Statewide Intercity Passenger Service Plan

The policy requires that specialized transportation services, airport, and intercity common carrier services must be planned as an integrated system to provide accessibility between communities. The following minimum levels of service standards for intercity passenger services apply to The Dalles:

- Intercity passenger service should be available for an incorporated city or groups of cities within five miles of one another having a combined population of over 2,500, and located 20 miles or more from the nearest Oregon city with a larger population and economy. Services should allow a round-trip to be made within a day.
- Local public transit services and elderly and disadvantaged service providers should regularly connect with intercity passenger services.
- To the extent possible, direct interconnections should be available between intercity bus, air, rail, airport limousine services, and local transit services.
- Services shall be provided in compliance with the Americans with Disabilities Act (ADA) requirements for all modes and transfer facilities.

Bicycle and Pedestrian Service Plan

The following are principles established for bikeway development in the *Oregon Bicycle and Pedestrian Plan* that apply to the City of The Dalles:

- Bicycle and pedestrian networks should be developed and promoted in all urban areas to provide safe, direct, and convenient access to all major employment, shopping, educational, and recreational destinations in a manner that would double person-trips by bicycle and walking.
- Secure and convenient bicycle storage available to the public should be provided at all major employment and shopping centers, park-and-ride lots, passenger terminals, and recreation destinations.
- Statewide and regional bicycle systems should be integrated with other transportation systems in urban and rural areas to accommodate commuting and other trips by bicycle. Safe, direct, and continuous bikeways free of unnecessary delays should be provided along all urban arterial and major collector routes.

CHAPTER 2: GOALS AND OBJECTIVES

The purpose of the TSP is to provide a guide for the City of The Dalles to fulfill its goals and objectives of improved mobility in the 21st century. Throughout the planning process, each element of the plan was evaluated against these parameters.

OVERALL TRANSPORTATION GOAL

Develop an urban area transportation system that enhances the livability of The Dalles and accommodates growth and development through careful planning and management of existing and future transportation facilities.

GOAL 1: Enhance transportation user safety.

Objectives

- 1.1 Identify measures to enhance safety along streets and at street intersections in The Dalles urban area.
- 1.2 Develop revised street cross section standards for local, collector, and arterial streets to enhance safety (and mobility) for vehicles, pedestrians, and bicyclists.
- 1.3 Develop a system for prioritizing pavement maintenance and rehabilitation.
- 1.4 Maintain sufficient roadway width and turning radii to ensure safe passage of the motoring public while integrating with pedestrian and bicycle movement.

GOAL 2: Enhance transportation mobility.

Objectives

- 2.1 Develop a safe and efficient arterial and collector street system that provides additional north-south and east-west local access routes, thereby relieving traffic congestion on the street system¹.
- 2.2 Develop a street system plan that identifies the need for additional arterial and collector streets throughout the city to accommodate future growth.
- 2.3 Improve vehicular access to the downtown area.
- 2.4 Develop a street system plan that maintains The Dalles as a hub by providing access for development in outlying areas.
- 2.5 Evaluate the need for additional traffic signals in the city, including at the I-84 interchanges.
- 2.6 Improve intersection operations through downtown by measures including, but not limited to, coordinating traffic signals along the highway.

¹ North-south direction refers to roadways perpendicular to the Columbia River; east-west direction refers to roadways parallel to the Columbia River.

- 2.7 Maintain The Columbia Gorge Regional Airport as a transportation facility of regional importance to meet the needs of the Mid-Columbia area.
- 2.8 Encourage the provision of adequate barge handling facilities to meet the present and future barge traffic on the Columbia River.
- 2.9 Identify recommended truck routes and required street improvements to safely accommodate the north-south truck movement from the hillside orchards to the downtown processing plants, and access to the commercial and industrial areas.
- 2.10 Develop access management strategies for US 30, specifically in relation to businesses located along the highway.

GOAL 3: Increase the use of alternative travel modes through improved safety and service.

Objectives

- 3.1 Develop a bicycle and pedestrian facility network.
- 3.2 Encourage transit service for The Dalles urban area.
- 3.3 Provide adequate transit access to shopping/services for the transportation disadvantaged.
- 3.4 Upgrade handicapped transportation services.
- 3.5 Maintain sidewalks, providing clear and level surfaces that are adequate for use by all citizens.
- 3.6 Provide pedestrian and bicycle access, especially when direct motor vehicle access is not possible.
- 3.7 Evaluate the need for separate bike paths or multi-use trails.

GOAL 4: Develop a transportation system that supports planned land uses.

Objectives

Identify roadway system needs to serve undeveloped areas so that steps can be taken to preserve rights-of-way and maintain adequate traffic circulation.

- 4.1 Integrate new arterial and collector routes into the existing city grid system.
- 4.2 Identify improvements to existing policies and standards that address street connectivity and spacing.
- 4.3 Maintain on-street parking, specifically in the downtown area.

CHAPTER 3: CURRENT TRANSPORTATION CONDITIONS

As part of the planning process, as part of the original work done on the draft TSP in 1993, DEA conducted an inventory of the existing street system including physical characteristics and traffic volumes. Existing bikeways; public transportation; and rail, air, water, and pipeline services were also reviewed.

ROADWAYS

The Dalles, like many other smaller communities in Oregon, developed along the state highways serving the region. However, with the construction of I-84 at its northern border, most of the conflict between highway traffic and local traffic was eliminated.

The Dalles has developed around a strong street grid pattern that is evident even today in the central and older parts of town. Several barriers to traffic flow interrupt this grid pattern. These include natural barriers such as the generally hilly terrain and Mill Creek and Chenoweth Creek, and it also includes man-made barriers such as I-84 and US 197. US 197 spans across the Columbia River, connecting The Dalles and the surrounding areas to Washington State. The railroad runs along the northern edge of the city, along the Columbia River, and has at-grade intersections with local streets.

DEA, with the support of city staff, measured and examined the current transportation conditions of the existing roadways during 1992 and 1993. Data collection included a physical inventory of the city's arterial, collector, and local roads and a traffic count program that measured volumes at about 50 street or intersection locations.

Inventory

The existing street system inventory was conducted in 1993 for all of the arterial, collector, and local roads within The Dalles as well as those in Wasco County that interact with city streets. Interstate 84 (a freeway) was not included in the inventory. Inventory elements include:

- Street classification jurisdiction
- Street and right-of-way width
- Number of travel lanes
- Presence of on-street parking, sidewalks, or bikeways
- Speed limits

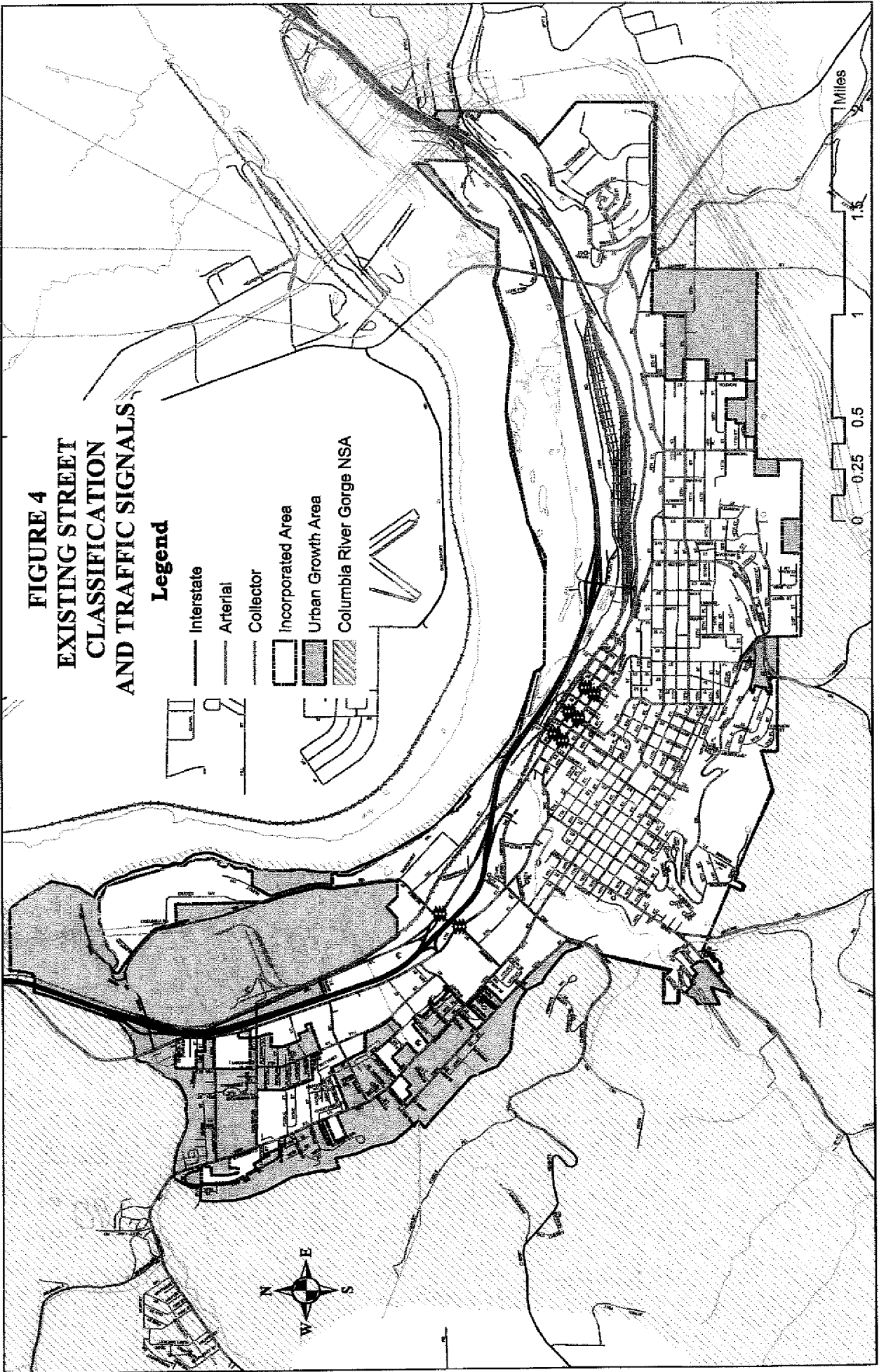
Figure 4 shows the roadway functional classification and the location of traffic signals. Appendix Table A-1 lists the complete inventory. Other roadway characteristics, such as pavement conditions, length of roadway, and curb location are included as part of the pavement management program prepared separately from this report.

Freeways generally carry long-distance traffic through a region. Some of the traffic on freeways may exit/enter to travel to/from the regional street system. Because of the access restriction, however, short-distance local trips are discouraged. Interstate 84 is the only freeway serving the City of The Dalles.

FIGURE 4
EXISTING STREET
CLASSIFICATION
AND TRAFFIC SIGNALS

Legend

- Interstate
- Arterial
- Collector
- Incorporated Area
- Urban Growth Area
- Columbia River Gorge NSA



Arterial Streets

Arterial streets form the primary roadway network within and through a region. They provide a continuous road system that distributes traffic between neighborhoods and districts. Generally, arterial streets are high capacity roadways that carry high traffic volumes with minimal localized activity. In The Dalles, the currently designated arterial network consists of state, county, and city streets. These arterial streets include:

- Second Street from Webber Street to US 197
- Third Street from 3rd Place to 2nd Street
- Sixth Street from northwest Urban Growth Boundary to 3rd Place
- Third Place from 6th Street to 3rd Street
- Chenowith Road from west Urban Reserve Area Boundary to 10th Street
- Tenth Street from Chenowith Road to Old Dufur Road
- Old Dufur Road from 10th Street to Fremont Street
- Fremont Street from Old Dufur Road to US 197
- Twelfth Street from Kelly Avenue to Thompson Street
- Webber Street from 10th Street to 2nd Street
- Cherry Heights Road from south Urban Growth Boundary to 6th Street
- Mount Hood Street from south Urban Growth Boundary to 10th Street
- Skyline Road from south Urban Growth Boundary to Mount Hood Street
- Union Street from 14th Street to 1st Street
- Court Street from 10th Street to 1st Street
- Sixteenth Place from Dry Hollow Road to Kelly Avenue
- Kelly Avenue from 16th Place to 7th Street
- Seventh Street from Kelly Avenue to Washington Street
- Washington Street from 7th Street to 1st Street
- Jefferson Street from 4th Street to 1st Street
- Madison Street from 4th Street to 1st Street
- Dry Hollow Road from 16th Place to Brewery Grade
- Brewery Grade from Dry Hollow Road to US 30
- Thompson Street from 18th Street to 10th Street
- US 197 from south Urban Growth Boundary to north Urban Growth Boundary

Since 1993, one additional arterial street has been added to the system:

- Cherry Heights Road from 6th Street to 2nd Street

Collector Streets

The function of urban collector streets, on the other hand, is equally divided between mobility and access. Collector streets connect local neighborhoods or district traffic to the arterial network. Generally, they do not connect together to form a continuous network because they are not designed to provide alternative routes to the arterial street system. Streets currently designated as collector streets in The Dalles include:

- River Road from northern terminus to 2nd Street
- First Street from Union Street to Madison Street
- Second Street from 6th Street to Webber Street

- Fourth Street from 3rd Place to 4th Street Grade
- Fourth Street Grade from 4th Street to 9th Street
- Seventh Street from Hostetler Street to Walnut Street
- Ninth Street from Dry Hollow Road to 10th Street
- Twelfth Street from Thompson Street to eastern terminus
- Columbia View Drive from US 197 to east Urban Growth Boundary
- Thirteenth Street from Irvine Street to Emerson Street
- Thirteenth Street from Verdant Street to Cherry Heights Road
- Thirteenth Street from Mount Hood Street to Kelly Avenue
- Sevenmile Hill Road from north Urban Reserve Area Boundary to Chenowith Road
- Scenic Drive from Trevitt Street to 16th Place
- Nineteenth Street from Dry Hollow Road to eastern terminus
- Irvine Street from 13th Street to 10th Street
- Chenowith Loop from 10th Street to 6th Street
- Hostetler Street from 10th Street to 2nd Street
- Emerson Street from 13th Street to 10th Street
- Snipes Street from 10th Street to 6th Street
- Walnut Street from 10th Street to 6th Street
- Trevitt Street from Scenic Drive to 6th Street
- Old Dufur Road from south Urban Growth Boundary to Fremont Street

Traffic Signals

Six traffic signals were in place in 1993 when the transportation system inventory was conducted. These signals were located at the following intersections:

- Second Street and Union Street
- Third Street and Union Street
- Second Street and Washington Street
- Third Street and Washington Street
- Second Street and Laughlin Street
- Third Street and Laughlin Street

Since then, traffic signals have been added at two locations:

- Second Street and Webber Street
- Sixth Street and Webber Street

Traffic

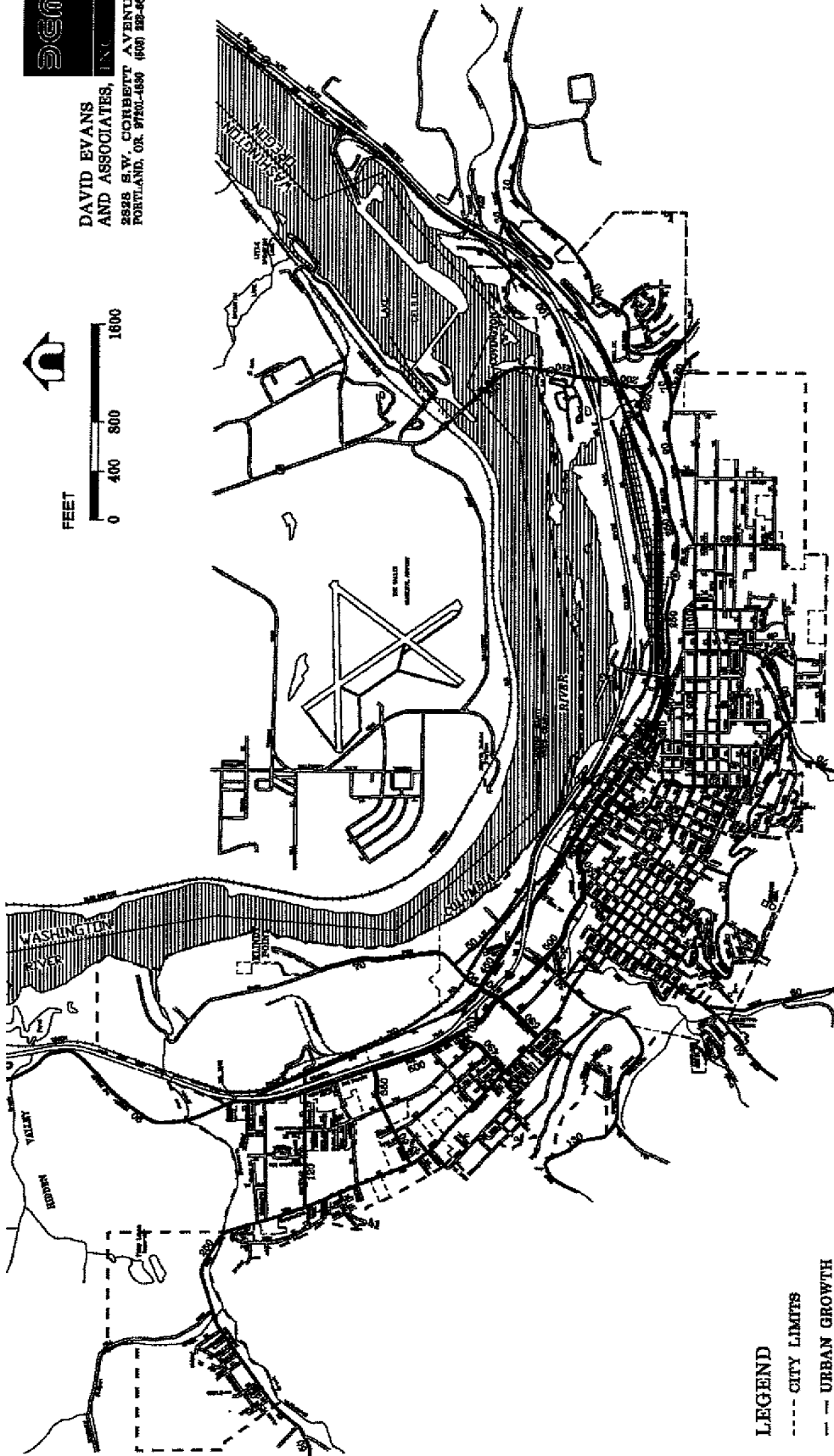
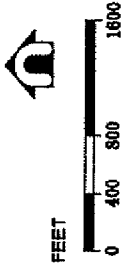
Traffic volumes on the major streets in The Dalles were measured during 1992 and 1993¹. The measured 24-hour, two-way volumes are shown on *Figure 5*. The widest band width illustrates that the highest volumes occur along the US 30 corridor. The greatest east-west activity occurs along the Second/Third Street couplet with about 18,000 vehicles per day traveling along those streets. The two-way, AM and PM peak hour volumes are shown on *Figure 6* and *Figure 7*.

A comparison of the morning and evening traffic indicates a build-up of traffic throughout the day. For example, PM peak hour volumes on the Second/Third Street couplet are nearly twice as high as those

¹ Traffic volumes were not updated for 2005



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LEGEND
 --- CITY LIMITS
 - - - URBAN GROWTH BOUNDARY

FIGURE 6
 1998 WEEKDAY AM PEAK HOUR
 TRAFFIC VOLUMES



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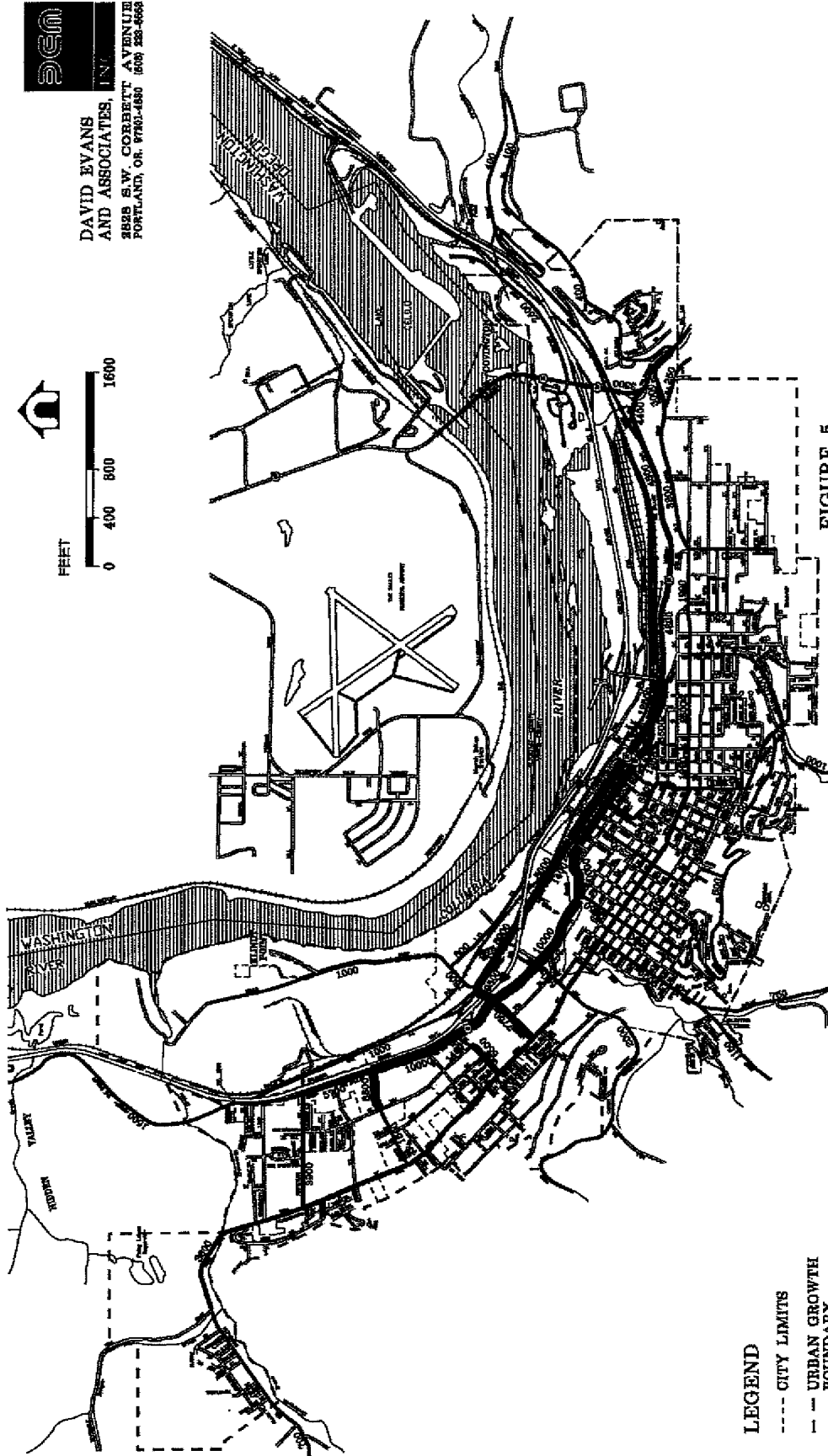
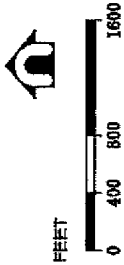


FIGURE 5

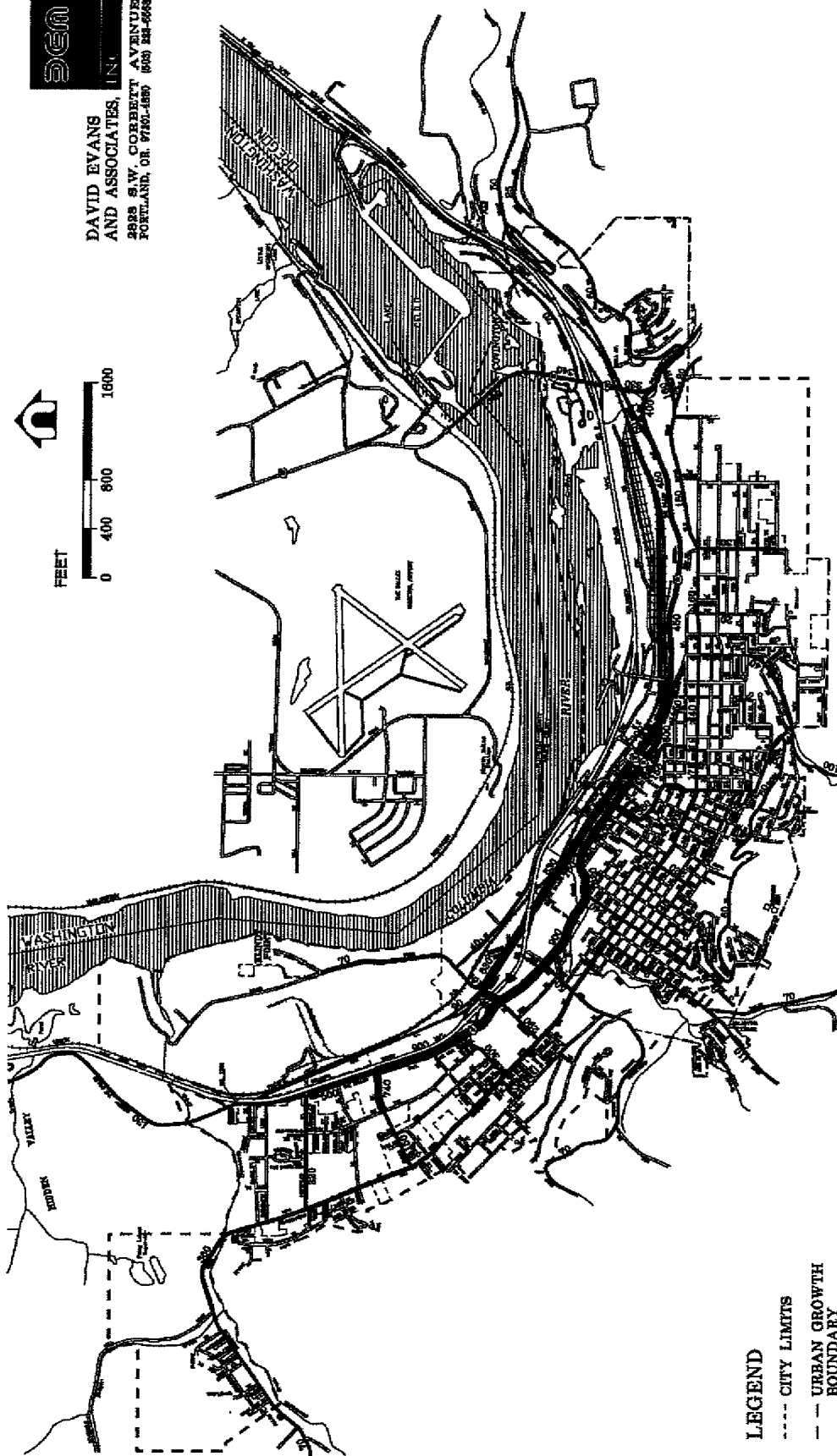
1998 WEEKDAY 24-HOUR TWO-WAY
TRAFFIC VOLUMES

LEGEND
--- CITY LIMITS
- · - URBAN GROWTH
BOUNDARY



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LEGEND
 - - - - CITY LIMITS
 - - - - URBAN GROWTH BOUNDARY

FIGURE 7
 1993 WEEKDAY PM PEAK HOUR
 TRAFFIC VOLUMES

in the AM peak hour. Because the highest hourly volumes occur in the afternoon/evening period, testing and evaluation of the street system was performed for the PM peak hour volumes.

Street Capacity

Transportation engineers have established various standards for measuring traffic capacity of roadways or intersections². Each standard is associated with a particular level of service (LOS) or mobility measured in the vehicle capacity of the facility, or V/C, one wishes to provide. The LOS concept requires consideration of factors which include travel speed, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort and convenience, and operating cost. Six standards have been established ranging from Level A where traffic flow is relatively free to Level F where the street system is totally saturated or jammed with traffic.

The capacity of each of the major streets was calculated in a generalized way to compare with the PM peak hour traffic volumes to determine locations of capacity deficiencies. Capacity is estimated so that roadways operating below capacity represent traffic conditions of LOS A to LOS D while capacity deficiencies are identified as LOS E or F conditions. For two-lane roadways, which comprise most of The Dalles, capacity was estimated at about 700 vehicles per hour in each direction. The one-way roadways, such as the couplet, would have double the capacity, or about 1,400 vehicles per hour in each direction. Three-lane roadways with very high turning activity, such as sections of Sixth Street, would have a capacity of about 900 vehicles per hour in each direction. These capacity estimates do not specifically address intersection operations.

A volume to capacity ratio (v/c) is the peak hour traffic volume (vehicles/hour) on a highway section divided by the maximum volume that the highway section can handle. For example, when v/c equals 0.85, peak hour traffic uses 85 percent of a highway's capacity; 15 percent of the capacity is not used. If the traffic volume entering a highway section exceeds the section's capacity, traffic queues will form and lengthen for as long as there is excessive demand. When v/c is less than but close to 1.0 (e.g., 0.95), traffic flow becomes very unstable. Small disruptions can cause traffic flow to break down and long traffic queues to form. This is a particular concern for freeways because the capacity of a freeway under stop-and-go traffic conditions is lower than the capacity when traffic is flowing smoothly.

Comparing these general capacity estimates with the 1993 traffic volumes shown in Figure 5 and Figure 6 indicates that the major road segments in The Dalles are operating at LOS C or better, indicating little or no congestion. All of the signalized intersections are also estimated to operate at LOS C or better during the weekday PM peak hour. The un-signalized intersections of Webber Street with both Second Street (three-way, stop-controlled) and Sixth Street (four-way, stop-controlled) were identified as being deficient at the time current conditions were analyzed in 1993. However, with the installation of traffic signals at these intersections, they currently operate at LOS C or better during the weekday PM peak hour.

PEDESTRIAN SYSTEM

The most basic transportation option is walking. Walking is the most popular form of exercise in the United States and can be performed by people of all ages and all income levels. However, it is not often considered as a means of travel. This is mainly because pedestrian facilities are generally an afterthought and not planned as an essential component of the transportation system.

² Transportation Research Board, *1985 Highway Capacity Manual*, Special Report 209. National Research Council, 1985.

