Oregon
Theodore R. Kulongoski, Governor

Department of Land Conservation and Development
635 Capitol Street, Suite 150
Salem, OR 97301-2540
(503) 373-0050
Fax (503) 378-5518
www.lcd.state.or.us

NOTICE OF ADOPTED AMENDMENT

10/29/2012

TO: Subscribers to Notice of Adopted Plan or Land Use Regulation Amendments

FROM: Plan Amendment Program Specialist

SUBJECT: City of Tillamook Plan Amendment
DLCD File Number 001-12

The Department of Land Conservation and Development (DLCD) received the attached notice of adoption. Due to the size of amended material submitted, a complete copy has not been attached. A Copy of the adopted plan amendment is available for review at the DLCD office in Salem and the local government office.

Appeal Procedures*

DLCD ACKNOWLEDGMENT or DEADLINE TO APPEAL: Wednesday, November 14, 2012

This amendment was submitted to DLCD for review prior to adoption pursuant to ORS 197.830(2)(b) only persons who participated in the local government proceedings leading to adoption of the amendment are eligible to appeal this decision to the Land Use Board of Appeals (LUBA).

If you wish to appeal, you must file a notice of intent to appeal with the Land Use Board of Appeals (LUBA) no later than 21 days from the date the decision was mailed to you by the local government. If you have questions, check with the local government to determine the appeal deadline. Copies of the notice of intent to appeal must be served upon the local government and others who received written notice of the final decision from the local government. The notice of intent to appeal must be served and filed in the form and manner prescribed by LUBA, (OAR Chapter 661, Division 10). Please call LUBA at 503-373-1265, if you have questions about appeal procedures.

*NOTE: The Acknowledgment or Appeal Deadline is based upon the date the decision was mailed by local government. A decision may have been mailed to you on a different date than it was mailed to DLCD. As a result, your appeal deadline may be earlier than the above date specified. NO LUBA Notification to the jurisdiction of an appeal by the deadline, this Plan Amendment is acknowledged.

Cc: David Mattison, City of Tillamook
Gordon Howard, DLCD Urban Planning Specialist
Patrick Wingard, DLCD Regional Representative

<paa> YA

FORM 2

DLCD Notice of Adoption

This Form 2 must be mailed to DLCD within **5-Working Days after the Final Ordinance is signed** by the public Official Designated by the jurisdiction and all other requirements of ORS 197.615 and OAR 660-018-000

☐ In person ☐ electronic ☐ mailed

DATE STAMP

DEPT OF

OCT 25 2012

LAND CONSERVATION AND DEVELOPMENT

For Office Use Only

Jurisdiction: **City of Tillamook**

Local file number:

Date of Adoption: **10/15/2012**

Date Mailed: **10/23/2012**

Was a Notice of Proposed Amendment (Form 1) mailed to DLCD? ☒ Yes ☐ No Date:

☒ Comprehensive Plan Text Amendment

☐ Comprehensive Plan Map Amendment

☐ Land Use Regulation Amendment

☐ Zoning Map Amendment

☐ New Land Use Regulation

☐ Other:

Summarize the adopted amendment. Do not use technical terms. Do not write "See Attached".

The City is updating its Comprehensive Plan to reflect changes in population, land use, visioning & other areas, to ensure that the Comprehensive Plan is responsive to changing conditions and trends, & factual information for land use decisions & actions. The Comprehensive Plan was last updated in 2003 as part of the Periodic Review and in 1991. The revised plan is a 'housekeeping' project to update & wordsmith the Plan based on the new information, maps and development. No major changes.

Does the Adoption differ from proposal? Yes, Please explain below:

Changes at Council hearings for clarity & grammar on following pages: 1-1--1-4, 2-2--2-3, 3-1, 3-4--3-5, 4-1--4-7, 4-11--5-1, 6-7, 7-1--7-8, 7-11--7-17, 8-1--8-7, 9-1--9-2, 9-4, 9-6, 10-1--10-5, 10-8, 10-9, 10-11--10-12, 10-14, 10-15, 10-18--10-20, 10-24--10-25, 11-1, 11-2, 11-6, 11-14--11-18, 12-4, 12-6, 12-7, 12-10, 12-13, 13-1, 13-2, 14-2, 15- .

Plan Map Changed from: to:

Zone Map Changed from: to:

Location: Acres Involved:

Specify Density: Previous: New:

Applicable statewide planning goals:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☐

Was an Exception Adopted? ☐ YES ☒ NO

Did DLCD receive a Notice of Proposed Amendment...

35-days prior to first evidentiary hearing?	☒ Yes	☐ No
If no, do the statewide planning goals apply?	☐ Yes	☐ No
If no, did Emergency Circumstances require immediate adoption?	☐ Yes	☐ No

DLCD file No. 001-12 (19391) [17220]

Please list all affected State or Federal Agencies, Local Governments or Special Districts:

Local Contact: **David Mattison** Phone: **(503) 842-3443** Extension:

Address: **210 Laurel Avenue** Fax Number: **503-842-3445**

City: **Tillamook** Zip: **97141-** E-mail Address: **dmattison@tillamookor.gov**

ADOPTION SUBMITTAL REQUIREMENTS

This Form 2 must be received by DLCD no later than 5 working days after the ordinance has been signed by the public official designated by the jurisdiction to sign the approved ordinance(s)

per ORS 197.615 and OAR Chapter 660, Division 18

1. This Form 2 must be submitted by local jurisdictions only (not by applicant).
2. When submitting the adopted amendment, please print a completed copy of Form 2 on light **green paper if available**.
3. Send this Form 2 and **one complete paper copy** (documents and maps) of the adopted amendment to the address below.
4. Submittal of this Notice of Adoption must include the final signed ordinance(s), all supporting finding(s), exhibit(s) and any other supplementary information (ORS 197.615).
5. Deadline to appeals to LUBA is calculated **twenty-one (21) days** from the receipt (postmark date) by DLCD of the adoption (ORS 197.830 to 197.845).
6. In addition to sending the Form 2 - Notice of Adoption to DLCD, please also remember to notify persons who participated in the local hearing and requested notice of the final decision. (ORS 197.615).
7. Submit **one complete paper copy** via United States Postal Service, Common Carrier or Hand Carried to the DLCD Salem Office and stamped with the incoming date stamp.
8. Please mail the adopted amendment packet to:

ATTENTION: PLAN AMENDMENT SPECIALIST
DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT
635 CAPITOL STREET NE, SUITE 150
SALEM, OREGON 97301-2540

9. **Need More Copies?** Please print forms on **8½ -1/2x11 green paper only if available**. If you have any questions or would like assistance, please contact your DLCD regional representative or contact the DLCD Salem Office at (503) 373-0050 x238 or e-mail **plan.amendments@state.or.us**.

City of Tillamook



Comprehensive Plan
2012

ORDINANCE NO. 1270

AN ORDINANCE REPEALING AND REPLACING THE CITY OF TILLAMOOK COMPREHENSIVE PLAN TEXT AND REPEALING ORDINANCES NO. 1038, 1049, 1114, 1118, 1183, AND1185

WHEREAS, A Comprehensive Plan Amendment is allowed under Oregon Revised Statute Section 197. ORS 197.610 – 197.625 which describes and governs a separate process from periodic review initiated process for a plan amendment; and

WHEREAS, City Comprehensive Policy 125 states that "The plan may be reopened at appropriate times in response to completion of plans by other jurisdictions and agencies. Further, the City shall acquire and consider additional inventory information that was not available during plan development in its evaluation of future plan revisions"; and

WHEREAS, the adoption of Vision 2020 Statement, new Census 2010 figures, amendment to the Urban Growth Management Agreement, completion of waterline intertie with Bay City, new recycling goals, an amended Stormwater Drainage Master Plan, the development of a Parks and Recreation Master Plan, the development of an Economic Opportunity Analysis, and correction of other misstatements constitute some of the pieces of additional inventory information, evaluation of future plan revisions and completed plans that require the City Comprehensive Plan to be reopened for amendment; and

WHEREAS, the Comprehensive Plan goals, objectives, and policies are divided to match each chapter and are listed at the end of each chapter. The text of each goal, objective, and policy has been reviewed and updated by the Planning Commission, and the City Comprehensive Plan continues to address the relevant State wide Planning Goals; and

WHEREAS, the Planning Commission held a public hearing on August 2, 2012, following numerous public meetings on September 2, 2011, October 6, 2011, November 3, 2011, January 5, 2011, ensuring that the Comprehensive Plan is responsive to changing conditions and trends, and factual information for land use decisions and actions based on updated information, maps and development, and recommended approval of the amended Comprehensive Plan to the City Council; and

WHEREAS, the City Council held a public hearing for the amended Comprehensive Plan on September 17, 2012, to review and consider these City Comprehensive Plan text changes and additions that reflect the "housekeeping" and inventory revisions and updates of this version of the Comprehensive Plan that appears to be more understandable to the reader and are the forces and factors that determine how the community will grow and develop; and

NOW THEREFORE, the Tillamook City Council do ordain as follows:

Section 1:
Exhibit "A" shall replace the Comprehensive Plan and be hereby incorporated by reference.

Section 2:
All ordinances and parts of ordinances in conflict herewith shall be repealed in there entirety.

PASSED FIRST READING by the Council this 1st day of October, 2012.

PASSED SECOND READING by the Council this 15th day of October, 2012.

APPROVED by the Mayor this 15th day of October, 2012.

Suzanne Weber, Mayor

ATTEST:

City Recorder

CERTIFIED TO BE A TRUE AND CORRECT COPY
OF THE ORIGINAL
BY _____, CITY RECORDER
DATE 10/22/12

TILLAMOOK COMPREHENSIVE PLAN

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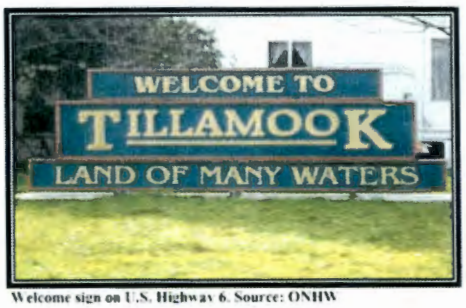
SECTION A: INTRODUCTION



Chapter 1: Tillamook's Comprehensive Plan

This is the City of Tillamook's Comprehensive Plan. Think of it as our community's map to the future. It describes:

1) where we are today,
2) where we want to be tomorrow, and
3) how we plan to get there.



Welcome sign on U.S. Highway 6. Source: ONHW

A plan of many parts

As the term "Comprehensive" suggests, this Plan covers a wide variety of topics:

Citizen Involvement and Visioning,
Community Development,
Natural and Historic Resources,
Natural Hazards,
Public Facilities,
Population,
Housing,
Economic Development, and
Urban Growth,
Land Use.

Although they may seem quite different, these topics all share one thing in common: they are forces and factors that determine how our community will grow and develop.

This Plan is based on the idea that the City of Tillamook can influence these forces and factors to shape the community it wants, and thereby can grow efficiently and effectively. Of course, the City doesn't have complete control over these forces. For example, the City can't compel a certain number of new jobs to be created each year. But the City can plan and zone land for new businesses, and new residential growth, in areas free from conflicts with other land uses, with good access and suitable public services like sewers and water. The City can prepare for growth and development in our community through this Plan.

In doing such planning, the City makes policy choices. It chooses to encourage new businesses in the City. It chooses to direct them toward certain areas in the City. It chooses to provide appropriate infrastructure in those areas. Such choosing means the Plan is a statement of what the community **wants**, not a prediction or forecast of what must be but what it may potentially become. It is based on the assumption that we can shape our future in relationship to the community's visions and future predictions.

"The future" covered by the City Comprehensive Plan is the period from 2010 to 2030. In this Plan certain accommodations for the future, future growth and development, are made. For example, the Urban Growth Boundary established by this Plan is designed to contain enough vacant land to accommodate the residential, commercial, and industrial development Tillamook expects over the next two decades.

It's the law!

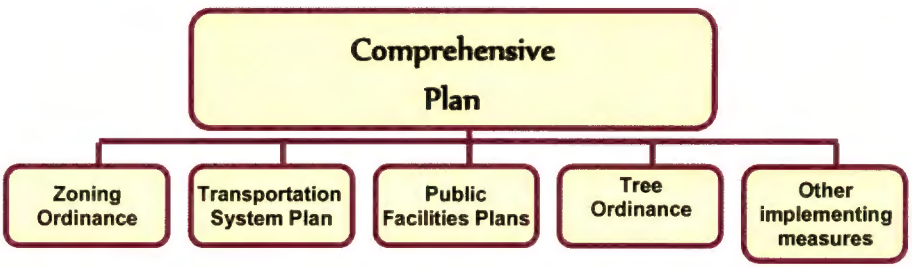
The Comprehensive Plan was adopted as an ordinance by Tillamook's City Council. It thus is a law, with the same force and effect as other city ordinances. In fact, it prevails and guides other ordinances like the zoning ordinance.

In other places and other times, comprehensive plans often have been vague statements of aspiration. As soon as they were written, they got put on a shelf, to gather dust and never be read again. This is not one of those plans! Tillamook's Comprehensive Plan is an active, legally enforceable statement of city policies. When any land in Tillamook is to be developed or divided, the first question should be, "Is the proposed action consistent with the City of Tillamook Comprehensive Plan?"

Putting the Plan into effect

The Plan does not stand-alone. It states Tillamook's general policies on land use, visioning, citizen involvement, community growth and development. Other "implementing ordinances" provide the details and procedures needed to put those policies into effect. The Zoning Ordinance, for example, specifies standards and procedures for deciding where different types of development may occur. The Tree Ordinance identifies the types of trees allowed in the public Right-of-Way (R.O.W.). and specifies the criteria necessary to plant and remove trees in the public R.OW. within the City.

The relationship between a plan and its implementing ordinances is important. The key point is simply this: the Plan is the controlling document. That is, the Plan determines what types of implementing ordinances are needed and how they should work. In case of conflict between the Plan and an implementing ordinance, the Plan prevails. Implementing ordinances are subordinate to the plan, as illustrated in the following diagram:



It's more than a map!

Many people think of a city's plan as just a map showing areas where different types of development may occur in the future. Tillamook's Comprehensive Plan contains such a map, but there's a lot more to the Plan than that. The Plan Map shows how various parts of the city are designated for residential, commercial, industrial, and public use. It also shows the location of Tillamook's Urban Growth Boundary and of "urbanizable lands" where future annexations and urban development are expected to occur. But the map is only a general guide to show where different types of development may occur. The

crucial details are found in the text and policies of the plan. It therefore is essential to consider **both** the Comprehensive Plan Map and the Comprehensive Plan Text when making decisions about growth and development in the City of Tillamook.

Each chapter of this Plan contains several sets of statements. The first contains the City's goal. A goal is the broad statement of the community need, here based on each chapter. For instance, the City's Transportation Goal is "To provide and encourage a safe, convenient and economical transportation system." This is followed by a set of statements containing one or more "Objectives". Objectives are more specific expressions that break down the community's goals so the goals are more detailed for the subject addressed, and are steps the City can take to realize its goals in that chapter. Objectives are designed to complement the next set of statements; policies. The third set of statements is for each of the objectives and contains "Policies" or "Implementing Policies". These policies are specific measures for achieving each of the chapter's goals and objectives. For example, in Chapter 3, on citizen involvement, one of the objectives states: "To have a broad base of citizen involvement in planning studies, decision making, and plan implementation." Following that statement are a number of policies on how the City will accomplish that objective. Sometimes these are the "implementing" policies because they are the last set identified to accomplish the objectives and meet the goal. However, a fourth set, if necessary, after, each policy, contains implementing procedures or recommended actions, which describe how the City will carry out and can achieve each of the policies. Sometimes, if there are a number of topics and sections in the chapter, the goal, objectives, implementing policies, and implementing procedures follow each section of the chapter.

The local Comprehensive Plan's link to the state

Every city in Oregon has a comprehensive plan. State law requires it. And the state sets broad standards for those plans in the form of 19 statewide planning goals and various administrative rules and statutes. All local plans, including this one, are reviewed under those state standards by Oregon's Land Conservation and Development Commission (LCDC) or the commission's staff, the Department of Land Conservation and Development (DLCD). Tillamook's plan thus is the product of a state-local partnership. It reflects both local and state interests.

After a plan has been reviewed and found to meet state standards, it is said to be "*acknowledged.*" That's planning shorthand for "*acknowledged to be in compliance with Oregon's statewide planning goals.*" Acknowledgment is important, because it means **Tillamook's acknowledged Comprehensive Plan** - not state law - **is the controlling document for all land use decisions made within the City's jurisdiction**.

For example, if someone raises a question about density of development in one of Tillamook's residential zones, the answer is not determined by state law. The answer is determined by the provisions of Tillamook's acknowledged Comprehensive Plan and the implementing ordinances of the plan, such as the Zoning Ordinance.

How plans are revised

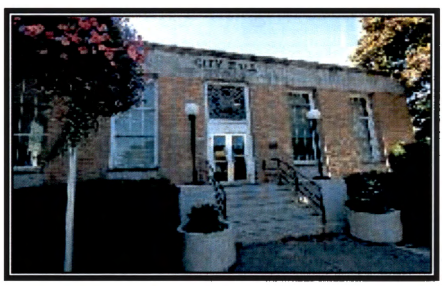
Communities change, and as they change, their plans change, too. A plan can be changed a little or a lot, with a "plan amendment" or with "periodic review." Plan amendments usually involve only a few properties or one or two strategies in the plan. There's no set schedule for making plan amendments: they're proposed as needed. In contrast, a periodic review is a major reevaluation and update - an overhaul of the entire plan. Such reviews are generally done every five to fifteen years in a schedule determined jointly by the state Department of Land Conservation and Development and the local government.

If a reevaluation and update of this Plan is needed before the time scheduled for periodic review, a post-acknowledged plan amendment (PAPA) is required. This post-acknowledged plan amendment ensures that the City's Comprehensive Plan is kept up-to-date and consistent with the State Goals.

Plan amendments and periodic reviews both are very public processes. Citizens must be notified of any proposal to change the Plan; they must have an opportunity to comment on such a proposal in a public hearing; and the State's Department of Land Conservation and Development must be notified, too. Section F, Revisions and Implementation, of this Plan lays out the policies and procedures to revise this Plan. A lot of energy and time has been invested in the Plan, and much of that investment is lost if this Plan is not kept current. Specifically, revising the Plan is discussed further in Chapter 13.

Origins of the Plan

In 1981 the Tillamook City Council and the Tillamook City Planning Commission, prepared the city's first Comprehensive Plan. This is also referred to as the Plan in these chapters. The work was designed to address local needs and concerns and to meet Oregon's statewide planning goals.



For this process technical information and base data were compiled, developed and analyzed and issues and opportunities were identified. The City Comprehensive Plan is based on the originally prepared 1972 General Plan. Development of the Comprehensive Plan was accomplished through an open process of citizen involvement and was coordinated with affected agencies where appropriate. The Comprehensive Plan describes the City of Tillamook's intentions for future development and indicates desired patterns of land use and traffic circulation and plans for the location and development of community facilities. The Plan has been updated since its inception, of course, to include more recent information on those topics, as described in the following chapters.

In the process of updating the Tillamook City Comprehensive Plan each State goal was analyzed as to its applicability to the community. The goals represent State laws, which are flexible in nature to the extent that a community must interpret their validity to the

local situation. These relevant statewide goals include the following 19 goals: 1) Citizen Involvement, 2) Land Use Planning, 3) Agricultural Lands, 4) Forest Lands, 5) Natural Resources, Scenic and Historic Areas, and Open Spaces, 6) Air, Water, and Land Resources Quality, 7) Areas subject to Natural Disasters and Hazards, 8) Recreational Needs, 9) Economic Development, 10) Housing, 11) Public Facilities, 12) Transportation, 13) Energy Conservation, 14) Urbanization, 16) Estuarine Resources, 17) Coastal Shorelands, 18) Beaches and Dunes, and 19) Ocean Resources. The City has exercised the local right to prioritize the goals in order to guide the City of Tillamook in those broad land use propositions that make a good Oregon community. Adoption of the Plan commits the City to carry out each recommendation or policy statement. It further puts the City on record as having recognized the validity of the recommendations of and the decisions or actions they imply. In each section of this Plan, the pertinent State Goals shall be identified.

The Plan describes the goals, the objectives, policies, implementing procedures/recommended actions and standards adopted as set by local officials, to meet the Statewide Planning Goals. It also provides a framework for an ongoing planning program. It is composed of policies and recommendations on future actions to be taken to guide the development of the City. The policies and recommendations vary in their scope and implications. Some call for immediate action; others call for detailed study aimed at developing more specific recommendations. Citizens and developers can look to the Comprehensive Plan as a statement of intent for public officials for the development of Tillamook. City and County officials will also look to the plan in administering all applicable ordinances, such as zoning and subdivision regulations.

Tillamook's Comprehensive Plan was reviewed and updated in 1982, acknowledged by the State in 1984, and the City completed a periodic review in 2003, in accordance with state law (ORS 197.628 – 197.636). In a letter to the City dated July 16, 2003, DLCD notified the city that it had successfully completed all of the tasks specified in its work program for periodic review.

The entire plan should be considered as **(1)** a body of technical information about the City of Tillamook Area, our assessment of that and findings of fact to support what we feel from that data analysis and prioritizing of goals, **(2)** a statement of desired goals, objectives and policies of the Tillamook residents, and **(3)** a set of recommended actions to reach the goals and resolve issues and problems uncovered by the analysis, and, **(4)** an appendix of supporting documents.

Those who must make decisions affecting the people of Tillamook shall use the Comprehensive Plan as a basic reference and guideline.

The City has amended its plan several times outside of the above reviews. Such plan amendments are actions separate from periodic review and conducted under a different process, governed by ORS 197.610 – 197.625. Key plan amendments adopted by the City of Tillamook are summarized in the following table:

Table 2-1: Key Plan Amendments Adopted by the City of Tillamook		
Date of Adoption	**Ordinance/Resolution**	**Subject**
April 1972		Adoption of the City General Plan Text and Map
October 17, 1978	Resolution #919	Amendment of General Plan Text and Map
January 7, 1981	Resolution #991	Adoption of original Comprehensive Plan
December 19, 1983	Resolution 1057	Amends Comprehensive Plan relating to coastal shorelands
May 21, 1991	Ordinance 1114	Adoption of the City Comprehensive Plan
November 3, 2003	Ordinance #1187	Adoption of the City Transportation System Plan
April 17, 2006	Ordinance #1208	Adoption of the City Transportation Refinement Plan

Chapter 2: History of the City of Tillamook

In its early years, Tillamook, the first community to be settled in the county, bore the names Lincoln and Hoquarton, the latter believed to be a Native American Indian name meaning "the landing." From the "K'Elamuck" Tribe, also known as the "Elam" Tribe, the City's name was eventually changed to Tillamook, a derivative of the K'Elamuck Native American Indian word translating to "land of many waters."



View of Tillamook looking west in 1900's

The first white settler in the vicinity was Joseph Champion, who came in 1851 and made his home in a hollow spruce tree he called his "castle." Within months other settlers came – all bachelors.

Tillamook became an incorporated city in 1891. The first County Courthouse and City Hall were erected in the early 1890s. Both the City Hall and County Courthouse have been relocated since that time. Tillamook's history will be discussed further in the Historic Resources section. By 1920, the City of Tillamook had a growing population of 1,964 residents.

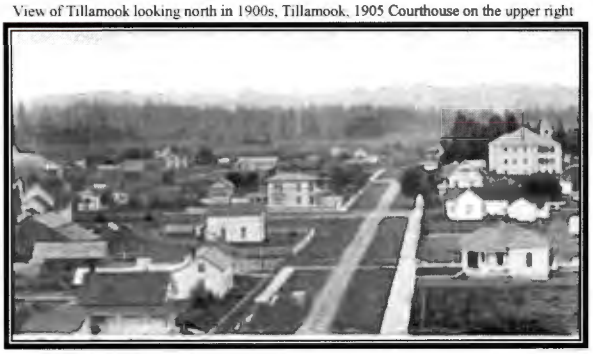
The City of Tillamook is located in the northwest part of Oregon near the Pacific Ocean. The City is approximately 70 miles west of Portland and an equal distance south of Astoria. Within the surrounding Tillamook City area are the floodplains and lower reaches of the Wilson, Trask, and Tillamook Rivers; the rich agricultural lowlands; and the forested foothills of the Coast Range with an opening to Tillamook Bay to the northwest.

The climate of the Tillamook area is typical of western Oregon with mild winters and moderate summers. As in other coastal areas, precipitation is heavy, over 90 inches per year, with about 70 percent occurring in November through March. Dairy fields, floodplains and forest lands surround the City's Urban Growth Boundary. The general climate characteristics also allow the area to participate in the growing attraction of the recreation and tourist industry to the beauties of the Oregon coast.

Today, Tillamook's City Hall is located at 210 Laurel and occupies the former Tillamook Post Office, which moved to a new facility on First Street in 1986. The building is listed on the National Register of Historical Places. It opened as a post office in 1925. In 1943, as part of a national public works program, the U.S. Treasury Department commissioned native Tillamook resident Lucia Wiley to paint a mural on one inside wall of the building. It is entitled "The Landing of Captain Robert Gray in 1788."

History of Land Use in the City of Tillamook

View of Tillamook looking north in 1900s, Tillamook, 1905 Courthouse on the upper right

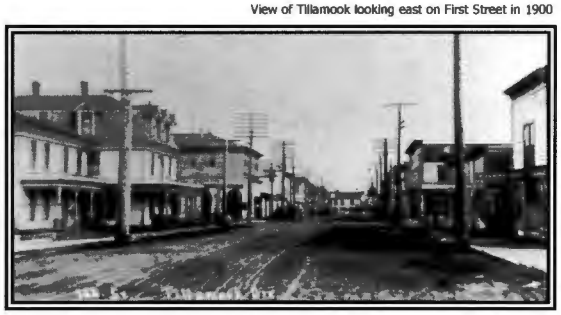


Land use in the City of Tillamook has evolved with the development of different modes of transportation. The Native American Indians who lived there before white settlers arrived called the City "Hoquarton", and during the late nineteenth century and early twentieth century, business in Tillamook was carried out along streets abutting Hoquarton Slough, where boats carrying supplies could land to load and unload cargo. The lumber mills also ran alongside the slough. Sparse urban development extended south to about Sixth Street. The Highway 101 Bridge crossing the slough was built in 1931 by the Clackamas Construction Company.

By the mid-twentieth century, Hoquarton Slough, the existing lumber mill, and the Trask River generally defined the City's limits to the north, east and west respectively.

At the time of the development of the first City Comprehensive Plan in the early 1980's, Hoquarton Slough continued to define the northern border on that part of the City west of U.S. Highway 101, Dougherty Slough for a moment defined the northern border of town on 101, but was quickly replaced with Wilson River determining the northern boundary. In general, State Highway 6 helped determine where the northern border and Urban Growth Boundary was located on that part of town east of 101. The Trask River continued to define the City limits on the west side, and Marolf Loop Road on the east side. The area, across the Trask River, once in the southwest corner of the City Limits was determined to be rural land and could not be efficiently served by public facilities. This land remains rural and was excluded from the UGB. Public hearing testimony was received by the City Council involving the inclusion of the Citadel property, east of town, into the Urban Growth Boundary. It was determined that adequate need was not shown through population and land use statistics for inclusion of the property into the Urban Growth Boundary. It was decided that the area would be considered in regard to future urban development in conjunction with eastward expansion of the City Limits. Adequate findings for goal compliance must be reviewed and accepted by the City prior to revision of the urban growth boundary for the Citadel property.

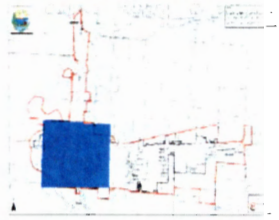
View of Tillamook looking east on First Street in 1900



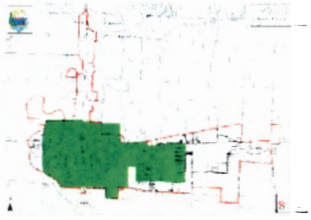
Further adjustments were made to the shape of the City by the late twentieth century. On June 4, 1980, public hearing testimony was received by the City Council concerning

Goals No.3 and 4 involving the inclusion of the Citadel property (east of Trask River Road) into the Urban Growth Boundary for future City growth and expansion. Adequate need was not shown through population and land use statistics for inclusion of this property into the Urban Growth Boundary. Tillamook City must consider the area for future urban development in conjunction with eastward expansion of the City Limits. Property along U.S. Highway 101 north to the Wilson River was annexed into the City, areas of farmland once in the City Limits were withdrawn from the City at the time of the last Periodic Review. The following maps show the City's development over the past 60 years.

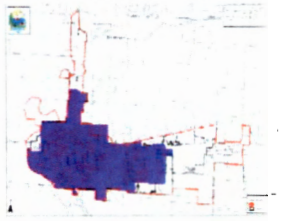
City Limits – 1950



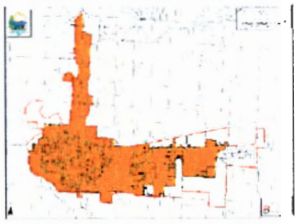
City Limits – 1960



City Limits – 1980



City Limits – 2005



(Note: pictures may be altered for clarity)

SECTION B: PLAN FOR THE PEOPLE



Chapter 3: Citizen Involvement, Community Development & Visioning (State Goal 1)

Tillamook's Planning Commission and City Council are guided by the principle that



citizen participation in planning and community development is essential. The single most important factor influencing the effectiveness of this Plan is probably the extent of citizen participation and community development in its development.

Tillamook's Planning Commission and City Council felt that citizens should be involved throughout the entire planning process. A Citizen Involvement Program (CIP) was adopted by Tillamook City in 1977. The program provides for an on-going citizen participation process. The adopted program outlines the responsibilities of the City Council, Planning Commission, the Citizen's Advisory Committees (CAC) and professional staff, and provides for methods and techniques of involving citizenry in all phases of evaluation and comment in governmental service areas.

Community Development



Community development is a broad term. It involves knitting society together at the grass roots and involves changing the relationships between ordinary people and people in positions of power, so that everyone can take part in the issues that affect their lives. It starts from the principle that within any community there is a wealth of knowledge and experience which, if used in creative ways, can be channeled into collective action to achieve the communities' desired goals.

Many committees through community development also advise Tillamook's City Council. As was mentioned earlier, the single most important factor influencing the effectiveness of this Plan and the City is probably the extent of citizen participation and community development in its development.

Through a diverse group of committees, Tillamook continues to improve its community development through citizen participation.

The City's committees are broken down into the following:

Associations,
Beautification,
Budget,
Finance,
Personnel,
Public Safety, and
Public Works.

Each of these committees assist the City Council members with community development. Please refer to Appendix XXIV for the ordinances, by-laws and programs outlining organizational functions and responsibilities of the City advisory boards, committees and City Planning Commission, and City Council. Each of these documents defines the roles and responsibilities of each of these entities in citizen participation.

Vision 2020

Visioning is one method the City has used to increase citizen involvement and community development. Visioning is simply the process by which this community envisions the future it wants, and plans how to achieve it as part of this Comprehensive Plan and the policies. By going through a visioning process a community can: 1) better understand the values of its citizens and use these values as a basis for planning; 2) identify the trends and forces that are affecting the community; 3) articulate a big picture view to guide short-term decisions and long-term initiatives; and 4) develop tools to achieve its vision. The visioning process differs from the more traditional form of community planning. First, it tends to focus on a wide range of concerns. Second, it is strongly geared to community values. Third, it uses alternative scenarios to explore the future (i.e. what is probable as well as what is possible). And fourth, it is built around the development of a shared vision. Visioning does not necessarily replace other forms of community planning. Nor does it replace the Plan. Visioning is a new tool in the community planning process and has been integrated into the Comprehensive Plan in this chapter.

In 1998 the Tillamook City Visioning Task Force, established by the Tillamook City Council, embarked on a community endeavor vital to the future of the city. The City's visioning process brought citizens of the City together including representatives from all segments of the City's population. Busy individuals in all walks of community life ambitiously undertook the difficult task of crafting the Tillamook City Vision Statement.



To best integrate the vision statement into the Comprehensive Plan, ten areas are considered vital to the community's future directions and community development. These futures include 1) City Downtown Revitalization, 2) Land Development, 3) Education, 4) Community Health and Well-being, 5) Quality Natural Resources, 6) City Gateways, 7) Community Values, 8) Community Character and Livability, 9) the Highest and Best Use of Land and 10) Transportation.

Each area of The Tillamook City 2020 Vision Statement has two main elements: the guiding principles, which are made up of the corresponding Comprehensive Plan policies, and the action plans, which are identified Vision Committee tasks.

This Vision Statement serves as a catalyst for community residents, business owners and governments in crafting the future of Tillamook City.

Purpose

The Tillamook City 2020 Vision Statement was designed to address current and future planning issues faced by the City of Tillamook. It provides a framework to guide decision-making related to the Comprehensive Plan, Zoning Ordinance and other development ordinances.

Each area of The Tillamook City 2020 Vision Statement has two main elements: the guiding principles, which are made up of the corresponding Comprehensive Plan policies, and the action plans, which are identified Vision Committee tasks, and implementing procedures in the Comprehensive Plan.

The 2020 Vision Statement areas and guiding principles represent the hopes and dreams of the community. Looking ahead frees the community from day-to-day issues and allows it to consider the community's value and character in order to shape and guide growth, development and change. The 2020 Vision Statement is a guidepost and provides a framework for future decisions. It is intended to be a broad statement that applies to all aspects of the community that add to Tillamook's quality of life.

The action plans identify a wide range of possible steps or projects needed to achieve the vision, within the Comprehensive Plan Goals and Policies. The goal is to ensure that community success or failure is not dependent on any single project. Progress can be made on a number of smaller projects to build momentum, while the hard work continues on the larger and more difficult projects. Another reason for a wide range of projects is to ensure there is something to involve everyone. The more people that become involved in implementation, the greater the chance of success for the vision as a whole.

This is just the first step in an on-going community effort to guide the future of the community. A continuing effort will be needed, and is expected, to expand on these ideas, add detail, and energize the community to take action.

A Visioning process serves as a catalyst for community residents, business owners and governments in crafting the future of Tillamook City, and has been integrated into the Comprehensive Plan.

The citizens of the City, involved in the Vision process, envision growth occurring in a livable and sensitive manner, respecting the City's heritage and providing quality of life for all socio-economic groups in the community. The Visioning Plan, through land use and public facilities, is proposed to guide growth and provide for a sustainable quality of life that reflects deliberate choices made from within the community.

Many different committees are involved in overseeing the vision process. The complete Tillamook City Vision Statement and the development of the Vision Committee are further described in Appendix XXIII.

Goal, Objectives, and Implementing Policies for Citizen Involvement

Goal

"To support citizen involvement at all stages of the decision-making process."

Objective No. 1 for Citizen Participation and Involvement: To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process and ensures cooperation among citizens, technical personnel and public officials in planning for the City.

Implementing Policies for Objective No.1 for Citizen Participation and Involvement

Policy B-1: The Planning Commission shall give reasonable public notice for meetings concerning revisions of the adopted public plan and implementing measures. Such notice shall be provided in a manner consistent with all applicable state statutes and city ordinances. When feasible, the city will use various media to encourage citizen participation. Wide and continuing exchange of information with notification to citizens about available programs and issues will be insured. The City shall ensure that adequate funding and technical information is made available to citizen participation groups as an ongoing process.

Policy B-2: Decisions by both planning and advisory bodies will be made after appropriate open planning processes and public hearings. The City shall ensure that citizens receive a response to all recommendations resulting from citizen involvement.

Policy B-3: All plans, reports, and ordinances shall be written so as to be easily read and understood by interested citizens.

Policy B-4: The Comprehensive Plan shall be used as a basic reference and guideline by those who must make decisions affecting the people of Tillamook.

Objective No. 2 for Citizen Participation and Involvement: To have a broad base of citizen involvement in planning studies, decision making, and plan implementation.

Implementing Policies for Objective No. 2 for Citizen Participation and Involvement

Policy B-5: The City Planning Commission is the group involved in review of development and implementation of a Citizen Participation and Involvement Plan. The governing body shall continue to solicit citizen membership for vacancies on any advisory body.

Policy B-6: The Planning Commission is the permanent Citizen Involvement Committee. As such, the commission shall be responsible for insuring a broad base of citizen involvement in all phases of the planning process.

Policy B-7: The Vision Statement shall serve as a catalyst for community residential, business owners and the government(s) in crafting the future of Tillamook City. The Vision Statement shall be considered a long-range, "umbrella" vision for the Comprehensive Plan, and will be integrated into the Comprehensive Plan. The Tillamook City 2020 Vision Statement was adopted and endorsed by the Planning Commission and the City Council as the 20-year vision for Tillamook City. The Vision Statement is the starting point for the creation and implementation of action plans. Given the Vision Statement's age, an update on visioning shall be considered.

Goal, Objectives, Implementing Policies for Community Development

Goal

"To better integrate citizen involvement with the community, and support outreach into the community and community development."

Objective No. 1 for Community Development: To develop a community development program that insures support for citizens to be involved in the community and better integrate citizen involvement with the community.

Implementing Policies for Objective No. 1 for Community Development

Policy B-8: The City shall provide a diverse set of community programs, activities and facilities that enhance community values.

Policy B-9: The Tillamook City 2020 Vision Statement shall serve as a catalyst for community residential, business owners and the government(s) in crafting the future of Tillamook City. Given the Vision Statement's age, an update on visioning shall be considered. The Vision Statement is the starting point for the creation and implementation of action plans.

Objective No. 2 for Community Development: To have a broad base of community outreach and support programs in the community and support outreach into the community and community development.

Implementing Policies for Objective No. 2 for Community Development

Policy B-10: The City shall support adequate housing and care for special-need citizens, and strive to remain a safe and secure community.
Policy B-11: The City shall encourage healthy lifestyles, and focus on wellness in the community.

SECTION C: PROTECTING NATURAL AND HISTORIC RESOURCES



Chapter 4: Natural and Historic Resources (State Goal 5)

Background: Natural Resources

The City of Tillamook is surrounded by active and passive recreational areas and natural resources that include wetlands, estuary units, flood plains, agricultural lands, and forestlands on the surrounding hillsides. A rich geographic setting of natural resources therefore surrounds the urbanized area of the City. Wildlife species (as listed in Table 5-3) are of prime importance to the City. Many of the listed species live within the Tillamook Urban Growth Boundary. Their preservation, where consistent with designated land uses, is encouraged. This plan reflects a recognition of these resources which were instrumental in the shaping of the Urban Growth Boundary. Where possible, lands with important natural resources were excluded from the Urban Growth Boundary. In other areas, it felt that adequate justification is presented in this plan to designate resource areas to be included in the Urban Growth Boundary, and if need be, to implement policies to insure protection of or to minimize impact on these resources.

Wetlands

The Statewide Planning Goals define wetland as "land areas where excess water is the dominant factor determining the nature of soil development and the types of plant and animal communities living at the soil surface."

The following wetlands in Table 5-1, identified in the City of Tillamook Local Wetland Inventory (Wilson et al, 1997) are Significant Natural Resources:

TABLE 5-1: TILLAMOOK SIGNIFICANT WETLANDS

Waterway	LWI wetland code	Waterway	LWI wetland code
Cojack Creek	COJ1	Holden Creek	HOL3
Colby Creek	COL1	Holden Creek	HOL4
Dougherty Slough	DOU1	Holden Creek	HOL5
Hall Slough	HAL1	Holden Creek	HOL6
Hall Slough	HAL2	Hoquarten Slough	HOQ1
Hall Slough	HAL3	Hoquarten Slough	HOQ2
Hall Slough	HAL4	Hoquarten Slough	HOQ3
Holden Creek	HOL1	Hoquarten Slough	HOQ4
Holden Creek	HOL2	Trask River	TRA1



In 1999, in conjunction with a Healthy Streams Grant from the Department of Land Conservation and Development, the entire UGB land area was evaluated as to water quality and habitat quality, after a local wetland inventory and function assessment was completed. This resulted in the accurate location and listing with analysis of the locally significant wetlands and riparian corridors. These resources were

identified and mapped as per requirements in Division 23 of the Oregon Administrative Rule, implementing State Planning Goal 5. According to the study and maps, there are approximately 87 acres of identified significant wetlands within the UGB. These resources are incorporated for adoption in the Water Resources Overlay District, Section 21.1 of the Tillamook City Land Development Code. These significant wetlands are identified on the wetlands map in Chapter 18. The following policies serve to protect the significant wetland and riparian corridor resources listed as locally significant in the City of Tillamook.

Qualifications for significance

To qualify as significant, a wetland must have a high level of function in one of four functional categories – water quality, hydrologic control, fish habitat, or wildlife habitat – and/or be rated in the second highest category for fish habitat and have a direct surface water connection to a stream segment that is mapped by DSL or ODFW as habitat for "indigenous anadromous salmonids." (DSL maps available at http://statelands.dsl.state.or.us/esshabitat.html).

A "high level of function" is defined as "intact" fish habitat, "intact" water quality, "intact" hydrologic control, or "diverse" wildlife habitat, as defined in the Oregon Freshwater Wetland Assessment Methodology ("OFWAM") (DSL, 1996). The "second highest category" for fish habitat is defined as "impacted or degraded" in OFWAM (DSL, 1996).

The significant riparian corridors and significant wetlands listed in Appendix XII and XIII, Table 5-2 have been adopted and are regulated subject to the Water Resources Overlay District Section of the City Zoning Ordinance:

In addition, and in cooperation with the Oregon Department of Fish and Wildlife, an inventory of Goal 5 Wetlands was completed. Four sites were identified and described in the following analysis:

1) The Meadow Avenue Wetland is generally located south of Meadow Avenue and contains approximately 14 acres. This acreage has multiple owners including private individuals and the Tillamook School District No. 9. It is predominantly a forested wetland with no identified conflicting uses. The City will protect this wetland.

2) The Fairlane Drive Wetland runs immediately parallel to Fairlane Drive and contains approximately two acres. The site is a shrub and forested wetland in association with a small perennial stream. The property is under single ownership with no identified conflicting uses. The City will protect this wetland.

3) The South Highway 101 Wetland is immediately adjacent to Highway 101 upon entering the southern entrance to the City. The site is a shrub and forested

wetland containing approximately one acre. The area is within an "open space" district with no conflicting uses identified. The City will protect this wetland.

4) The Fifth Street Wetland is found at the west end of Fifth Street. The site is an emergent wetland containing approximately 1.5 acres. The area is part of a large tract zoned for parks. Carnahan Park is immediately adjacent to the north, but effectively separated by a chain-link fence. No conflicting uses have been identified. The City will protect this wetland. The Map provides the physical location of these wetlands.

Wetlands Wildlife

The species listed in Appendix XII, Table 5-3, are typical of wetlands. In addition there are many other species that sometimes frequent wetlands or are benefited by wetland habitat. Several species of bats and swallows feed on insects that breed profusely in wetlands. Many kinds of sparrows, warblers and other songbirds feed and nest in the vegetation in and around wetlands. Several kinds of mice and shrews besides those listed may find wetland habitat to their liking, and various species of hawks and owls often hunt such areas.

Economic, Social, Environmental, and Energy (ESEE) Decision Process

The City has adopted a 50–foot riparian setback adjacent to waterways based on the Economic, Social, Environmental and Energy Decision Process (ESEE). The ESEE process is an analysis of economic, social, environmental, and energy consequences of the conflicts of development and the required setbacks from riparian areas (State Goal 5). OAR 660-023-040 spells out steps that local governments are to use when analyzing State Goal 5 ESEE consequences.

Application of the Goal 5 riparian "safe harbor" would have resulted in a 75-foot riparian protection setback adjacent to the river. The riparian inventory only identifies 65 feet as being significant. As noted, along both reaches there is virtually no functioning riparian vegetation or structure landward of the top of the levees, well inside the significant resource site as determined in the riparian inventory. Since there are no riparian functions or values landward of the levees, it seems prudent to use the "standard" Goal 5 inventory process to define the significant riparian corridor along the Wilson River.

The significant riparian resource sites are at the very north end of the city, adjacent to the Wilson River. The inventory identifies the sites as "R-WIL0-1L" (which signifies "riparian, Wilson River, site 1, left bank), and "R-WIL0-2L" (site 2, left bank). Site 1L is east of Highway 101, and site 2L is west of Highway 101. The inventory identifies an area extending 65 feet upland from the edge of the river as "significant" riparian corridors. Along both reaches, a dike, levee or berm has been constructed immediately adjacent to the river channel. Reach 1L has virtually no functioning riparian structure; the vegetation is mostly herbaceous, with a couple of willows. The river-facing side of the berm along reach 2L has some scattered trees and at least a couple of vegetation layers.

Along both reaches, vegetation that has any riparian function stops at the top of the levees.

The standard Goal 5 process involves several steps. First, an "impact area" is established, and land uses that occur within the impact area that conflict with the protection of a significant resource are identified. Then the consequences of either fully allowing, prohibiting, or partially allowing those uses are identified. (Prohibiting or partially allowing a use would provide some protection to the significant resource.)

Therefore, in a further attempt to achieve Goal 5 for all significant resource sites, based on an analysis of the economic, social, environmental, and energy consequences that could result from a decision to allow, limit, or prohibit a conflicting use, the City of Tillamook has developed the steps listed in Appendix XXXII to conduct an ESEE analysis. It appears that both the resource site and the conflicting uses are important compared to each other, and based on the ESEE analysis in Table 5-4, in Appendix XXIII, the conflicting uses should be allowed in a limited way that protects the resource site to a desired extent.

In terms of economics, the 50-ft setback, determined in the ESEE, allows for some protection of the Wilson River riparian area without increased restrictions, and it appears to provide a clear and objective local process for resolving development/wetland conflicts. In terms of social impacts, the existing 50-ft setback would provide educational opportunities for those individuals working near the riparian area and also provide opportunities for urban quiet and solitude, which is a positive social consequence. Environmentally, the existing 50-ft setback allows for partial riparian protection while also providing for existing amounts of development. In terms of energy impacts, the 50-ft setback provides for local recreational opportunities, reducing the need to extend drive time for outdoor experiences. Vegetation in the riparian area also has a moderating effect on climate.

Goal for Natural Resources (wetlands, estuaries, shorelands)

To conserve, protect the unique environmental, economic and social values of local estuarine resources, where appropriate, develop and restore the resources of all coastal shorelands, recognizing their value for the protection and maintenance of water quality, fish and wildlife habitat, and water dependent uses.

Objective No. 1 for Wetlands: To reduce the hazard to human life and property and minimize adverse effects on water quality and wildlife habitats for the shoreland planning area within the Tillamook Urban Growth Boundary.

Policies for Wetlands Objective No. 1

Policy C-1: The City shall encourage Cluster development as a method of minimizing development impacts in areas with sensitive/significant natural resources documented on the Significant Riparian Corridor and Wetlands list.

Policy C-2: New development shall be conducted in a manner that does not adversely affect significant riparian corridors and significant wetlands as per the water resources overlay district.

Policy C-3: Drainage from proposed developments shall be directed in a manner that does not harm significant wetland and riparian corridors.

Objective No. 2 for Wetlands: To protect, maintain, where appropriate, develop, and where appropriate restore the long-term environmental, economic and social values of estuarine resources with the Tillamook Urban Growth Boundary.

Policies for Wetlands Objective No. 2

Policy C-4: The following wetland areas, the Meadow Avenue Wetland (south of Meadow Avenue, containing approximately 14 acres), the Fairlane Drive Wetland (immediately parallel to Fairlane Drive containing approximately two acres), the South Highway 101 Wetland (immediately adjacent to Highway 101 upon entering the southern entrance to the City), and the Fifth Street Wetland (at the west end of Fifth Street, south of Carnahan Park containing approximately 1.5 acres) shall be protected by the City.

Policy C-5: All locally significant wetlands and riparian corridors as designated in the City of Tillamook Local Wetlands Inventory shown in Table V shall be protected, and shall not be modified except as provided for in the Water Resources Protection Overlay District. Significant riparian corridors and significant wetlands are hereby adopted and are regulated subject to the water resources protection overlay district (21.1).

Policy C-6: Land uses shall be guided, and enforced through the Zoning Ordinance, to minimize impact on the City's Natural Resources, as is stated and described further in the Regulatory Controls. For those projects involving development within designated estuaries, in an effort to recognize, protect, maintain, and where appropriate, restore the unique environmental, economic and social values of said estuaries, estuary standards and requirements shall be brought under special review.

Estuaries and Shorelands (State Goals 16 and 17)

Estuary management units have been identified and inventoried by Tillamook County. Map 5 in Chapter 18 illustrates the units, Appendix XXXIII describes each Estuary Management Unit Segment. The following four estuary management unit segments are found to be of concern for the Tillamook Urban Growth Boundary area.

1. Estuary Unit 40 segments which bounds Hoquarten and Dougherty Slough west of Highway 101 to the confluence with the Tillamook River.
2. Estuary Unit 43 segment which bounds the Trask River from the head of tide near the U S Highway 101 Bridge to Hoquarten Slough.
3. Estuary units 40 and 36 segments, which bound the portion of Dougherty and Hall Slough that are in or adjacent to the Urban Growth Boundary.
4. Estuary unit 35 segment which is the Wilson River. The inventoried Shorelands that are applicable for Tillamook City are shown on Map 5.

Estuarine Resources (State Goal 16)

The sensitivity and complex nature of problems associated with development in estuaries has prompted the City of Tillamook in the past to look to Tillamook County as the lead agency in reviewing these development requests.

Objective No. 3 for Estuaries: To recognize, protect, maintain, and restore where appropriate, the unique environmental, economic and social values of the designated estuaries.

Policies for Objective No. 3 for Estuaries

Policy C-7: The designated estuaries and shoreland area shall be managed in such fashion as to be consistent with the stated estuary and shoreland objectives. The City shall recognize the estuary management unit segments described in this section of the Plan. Prime importance shall be given to management and restoration of estuaries as it might relate to the economic protection of the area. Reconstruction of estuaries to be a point where they provide protection of lives and property in the surrounding area is paramount. The protection of locally significant riparian corridors and wetlands associated with estuaries and shoreland habitat is a goal in the restoration of these resources.

Policy C-8: The City recognizes that to have effective protection, maintenance and restoration of designated estuaries with the City UGB, all policies must be coordinated with all appropriate agencies. This is particularly important for estuary areas adjacent but outside the City's UGB. A thorough review of Tillamook county estuary and shoreland policies, standards and definitions which are appropriate to the City's stated objectives and the County's overall plan shall be adopted.

Policy C-9: The City will work with the County Estuary Planning Staff for the preparation of impact assessments, resource capability determinations, review of State and Federal permit applications and necessary revision of policies and standards within the estuarine area of the City.

Policy C-10: The estuarine and coastal shoreland habitat resources designated as locally significant shall be protected as per the Water Resource Protection Overlay District, Tillamook City Land Development Code.

Policy C-11: Estuary Management Units have been identified and inventoried by Tillamook County. Map illustrates these management units. The following five estuary management unit segments are found within the Tillamook Urban Growth Boundary.

Policy C-12: The City of Tillamook hereby adopts Exhibit H of the November 30, 1983 amendments to the Tillamook County Ordinance No. 32, which is the Goal 16 Element of the Tillamook County Comprehensive Plan.

Coastal Shorelands (State Goal 17)

Coastal shorelands are a unique and sensitive component of the coastal environment. The shorelands are invaluable for the protection and maintenance of water quality for fish and wildlife habitats, recreation and a variety of water dependent uses. Planning policies for these areas must insure the protection and wise management of this resource.

The Tillamook shoreland planning area was delineated according to the seven identification criteria of State Goal 17:

1) Lands within the 100 year Flood Plain and Floodway Boundary have been included, as they are impacted by the hydraulic action of coastal waters.
2) No areas of geologic instability within the Tillamook UGB have been identified. Bulletin 74, Environmental Geology of the Coastal Region of Tillamook and Clatsop Counties.
3) Riparian resources have been identified through on-site inspection in cooperation with O.D.F.W., and in the Tillamook Riparian Inventory in Spring 1999.
4) Several significant wetland habitats within the Tillamook UGB have been identified during the inventory process, mentioned in No. 3 above, and with ODFW.
5) At present, two sites within the UGB can be classified as water related. These include: Marine Park on Hoquarton Slough and Carnahan Park on the Trask River.
6) No areas within the Tillamook UGB have been identified as having "exceptional aesthetics or scenic quality" in the Visual Resource Analysis of the Oregon Coastal Zone.
7) There are no coastal headlands within the U.G.B.

The two Goal 17 significant wildlife habitats within the Shorelands Planning Area are:

1) West Hoquarton Slough Forested Freshwater Wetland. Immediately west of State Highway 101 North, this site contains approximately 59 acres within the U.G.B.
2) East Hoquarton Slough Forested Freshwater Wetland. Immediately east of State Highway 101 North, this site contains approximately 26 acres within the U.G.B.

Refer to map: Wetlands Planning Area.

Appropriate protection policies have been adopted in cooperation with ODFW within the implementing Ordinance to insure the protection of wildlife habitat and wetland values.

Objective No. 4 for Shorelands: To reduce the hazard to human life and property and minimize adverse effects on water quality in order to maintain the live ability for the Tillamook community.

Policies for Objective No. 4 for Shorelands

Policy C-13: New shoreland development, expansion, maintenance or restoration of existing development shall conform to the following general priorities for the overall use of coastal shorelands (in order of priority):

1. Uses which maintain the integrity of the estuary;
2. Water-dependent uses;
3. Water-related uses;
4. Non-dependent, non-related uses which retain flexibility of future use and don or prematurely or inalterably commit shorelands to more intensive use;
5. Development, including non-dependent, non-related uses, in urban areas (compatible with existing or committed uses);
6. Non-dependent, non-related uses which cause a permanent or long-term change in the features of coastal shorelands only upon a demonstration of public need.

Policy C-14: New shore land development, expansion, maintenance or restoration of existing development shall be sited, designed, constructed and maintained to minimize adverse impacts on riparian vegetation, water quality and aquatic life and habitats in adjacent aquatic areas, and to be consistent with existing hazards to life and property posed by eroding areas and flood hazard areas. To accomplish this:

A. The requirements of the National Insurance Program shall be used to regulate development in flood hazard areas within coastal shore lands.

B. Shoreland setbacks shall be established to protect riparian vegetation and to recognize eroding areas.

C. Priority shall be given to nonstructural rather than structural solution to problems of erosion or flooding.

D. The following state and federal authorities shall be utilized for maintaining water quality and minimizing man-induced sedimentation in aquatic areas:

   1. The Oregon Forest Practices Act and Administrative Rules, for forestlands are defined in ORS 527.610 - 527.730 and 527.990 and the Forest Lands Goal;
   2. The programs of the Soil and Water Conservation Commission and local districts and the Soil Conservation Service, for Agricultural Lands Goal;

3. The non-profit source discharge water quality program administered by the Department of Environmental Quality under section 208 of the Federal Water Quality Act as amended in 1972 (PL 92-500); and
4. The fill and Removal Permit Program administered by the Division of State Lands under ORS 541.605 - 541.665.

Policy C-15: Shoreland development shall be sited and designed to be consistent with the protection of the natural values of identified major marshes and significant wildlife habitat, within the shore lands planning boundary identified in the Tillamook City Comprehensive Plan.

Policy C-16: Forestry operations within coastal shorelands shall be consistent with the protection of the natural values of major marshes, significant wildlife habitat and riparian vegetation. The State Forest Practices Act and Forest Practice Rules administered by the Department of Forestry shall be used to protect the natural values of these resources on commercial forestlands and other lands under the jurisdiction of the Forest Practices Act within coastal shore lands.

Policy C-17: Shorelands of Tillamook City shall be managed through implementation of the Tillamook City Comprehensive Plan by means of the zoning ordinance, which shall contain the zoning and shoreland planning area maps.

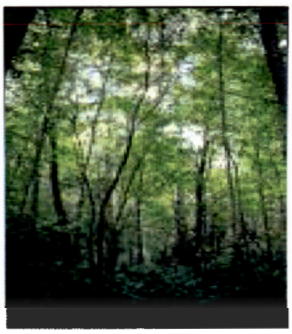
Policy C-18: Tillamook City shall review the following for consistency with the Tillamook City Comprehensive Plan, zoning map, and zoning ordinances:

A. State or federal permit applications for uses and activities within shore lands;
B. Applications for Tillamook County Development Permits;
C. Building and mobile home placement permits for flood hazard areas, preliminary subdivision plat applications and planned developments with coastal shore lands;
D. A-95 project pre-application notifications, by means of referral from and comment to the Clatsop-Tillamook Intergovernmental Council.

Policy C-19: The City shall consider the following significant wildlife habitats within the Shorelands Planning Area: the West Hoquarton Slough Forested Freshwater Wetland (approximately 59 acres within the U.G.B immediately west of State Highway 101 North), and the East Hoquarton Slough Forested Freshwater Wetland (approximately 26 acres within the U.G.B. immediately east of State Highway 101 North).

Forest Lands (State Goal 4)

Most major forestlands surround the urbanized area and are excluded from the U.G.B. To this extent, the City watershed is located southeast of the U.G.B. area and shall be guided by County land use policies, as well as managed under Oregon State Forestry Best Management Practices. However, there are also some forested areas within the City Limits and U.G.B. Many of these forested areas have already been identified as Significant Wetlands. These areas include:



1) The Meadow Avenue Forested Wetland.
2) The Fairlane Drive Forested Wetland.
3) The South Highway 101 Forested Wetland.
4) The Fifth Street Forested Wetland.
5) West Hoquarton Slough Forested Freshwater Wetland.
6) East Hoquarton Slough Forested Freshwater Wetland.

Other natural resources included in the Tillamook UGB include fish and wildlife habitat. According to the Oregon Department of Fish and Wildlife (ODFW), no species lists, population counts, or significant habitat areas can be determined. This conclusion was partly based on a stream survey conducted in 1979 by ODFW and observation of Tillamook's riparian habitat. It was concluded that the riparian areas in the Tillamook UGB are in poor condition due to diking, riprapping, and certain farming practices that lead to insufficient habitat for sustainment of fish and other wildlife.

Policy for Forestlands

Policy C-20: State Goal No. 4 is applicable for Tillamook City. Small stands of trees in future park locations shall remain in their natural settings. The City will protect the forested areas listed in this section.

Policy C-21: The City watershed is located southeast of the U.G.B. area and shall be guided by County land use policies, as well as managed under Oregon State Forestry Best Management Practices. Future logging operations within the City watershed may be reviewed by the City Council, with comments forwarded to Oregon State Forestry.

Agricultural Lands (State Goal 3)



The City is surrounded by agricultural land, primarily in high value farm soil classes II through IV. Significant farmlands with these soil classifications, have been excluded from the UGB through extensive coordination with the County and public involvement. In addition, much of the significant farmland outside the UGB is actively farmed. Since the City is surrounded by productive dairy farms, it is recognized that these physical and agricultural limitations dictate the growth of the City in an easterly direction. There are however a few farms that are within the City UGB. These include farming practices in the southwest area of the UGB (south of Ninth Street), the area north of Third Street (south of Highway 6), and the area southeast of the Fairgrounds.

Retention of Agricultural Land

Farms east of McCormick Loop Road, south of Twelfth Street, and north of First Street (Highway 6) remain outside the UGB. A prime example of the City's intention to preserve and retain as much surrounding agricultural land as possible is shown through the exclusion of property once in the City, south of the Trask River and the de-annexation of property once in the City north of First Street (Highway 6). As therein indicated, the City has de-annexed approximately 23.5 acres of agricultural land to retain the agricultural land.

Compatibility with Agricultural Activities

Tillamook City's location and being surrounded by the mutual resource base of agricultural land, is unique. As a result, a careful balance must be made to protect the agricultural land and the economic farm unit it supports. The balance must occur while retaining the social and physical characteristics of the City. These characteristics are expressed in many ways.

Where possible, the UGB has been located so that a physical barrier separates urban and urbanizable land from agricultural land to minimize conflict between urban uses and agricultural activities. Roads, rivers, sloughs and topography are the features most frequently used.

For several Highway Commercial (C-H) designated areas, the City uses buffers such as fences, vegetative plantings, and building setbacks to insure a more adequate buffer between uses.

The County Ordinance which adopted the City's Comprehensive Plan can be found in the Appendix. Within that Ordinance there are several sections dealing with the retention of and compatibility with agricultural lands.

"Agricultural practices and policies are further outlined in the County Ordinances as follows:

"For agricultural and farming practices surrounding and within the Urban Growth Boundary, including the City, the following policies shall be recognized:

1. It shall be the policy of Tillamook City and Tillamook County to protect agricultural operations from potential conflicts arising from Highway Commercial activities. Accepted agricultural practices adjacent to or within the City may create noise, dust, odors or other such properties. This includes, but is not limited to, the spreading of liquid manure on fields in the area when frequent strong winds are likely to carry the resultant odor into areas designated for non-farm development. However, Tillamook City does not consider it the agricultural operators' responsibility to modify accepted practices to accommodate Highway Commercial area. The owners of the highway commercial property shall not allow activities on their properties which create management difficulties, fire hazards or increased costs for adjacent agricultural operations, and shall not hold agricultural operators or Tillamook City or Tillamook County responsible for noise, dust, odors, or other such inconveniences resulting from those agricultural practices that are no more offensive than what is customarily required to maintain profitable farm operations."

Goal for Agricultural Lands

"To preserve and maintain agricultural lands. Agricultural lands shall be preserved and maintained for farm use, consistent with existing and future needs for agricultural products, forest and open space."

Objective No. 5 for Agricultural Lands: To retain the agricultural use of land in those areas where it is deemed the highest and best use, given the soil conditions of the area, and the suitability of competing uses.

Policies for Agricultural Lands

Policy C-22: The UGB is established in order to preserve prime agricultural land as much as possible. Any future conversions of rural agricultural land to urbanizable land shall be based upon the seven factors as listed in Goal 14 .

Policy C-23: The City shall urge the County to designate portions of prime agricultural lands adjacent to the U.G.B. for exclusive farm use to support the City's intention to preserve and retain as much surrounding agricultural land as possible.

Policy C-24: The development Ordinance as provided for under Economic Development Policy No. 34, part of which addresses compatibility between Highway Commercial and agricultural uses, shall be periodically reviewed and updated to reflect current farming practices and needs. The City shall uses buffers such as fences, vegetative plantings, and building setbacks to insure a more adequate buffer between uses.

Policy C-26: The City shall protect agricultural operations from potential conflicts arising from Highway Commercial activities. Accepted agricultural practices, adjacent to

or within the City may create noise, dust, odors or other such inconveniences for the owners or users of the commercials properties. This includes but is not limited to, the spreading of liquid manure on fields in the area when frequent strong winds are likely to carry the resultant odor into areas designated for non-farm development. However, the City does not consider it to be the agricultural operators' responsibility to modify accepted practices to accommodate Highway Commercial areas. The owners of the Highway Commercial property shall not allow activities on their properties which create management difficulties, fire hazards or increased costs for adjacent agricultural operations, and shall not hold agricultural operators or the City, or the County, responsible for noise, dust, odors or other such inconveniences resulting from those agricultural practices that are not more offensive than what is customarily required to maintain profitable farm operation.

Open Space and Scenic Areas (State Goal 5)

Significant open space and scenic areas exist in and surround the City of Tillamook. Where possible these areas were excluded from the Urban Growth Boundary. Some areas now within the City are subject to flooding and have a high water table. Other areas within the city have been identified as significant riparian corridor reaches and or significant wetlands.

Objective No. 6 for Open Space and Scenic Areas: To conserve open space and protect natural and scenic resources and maximize the use of existing resources in the provision of open space.

Policies for Open Space and Scenic Areas

Policy C-26: Banks of watercourses, drainage basins, areas subject to extreme natural hazards and otherwise unbuildable sites will be utilized to provide open space and recreational opportunities. Riparian vegetation shall be protected inside all designated significant riparian resources, as identified in the Tillamook Land Development Code.

Policy C-27: Tree preservation and planting to separate conflicting uses and provide scenic and recreational opportunities will be encouraged wherever feasible.

Policy C-28: Scenic views and scenic sites that generally include all the land within view of the Tillamook urbanized area and outside the Urban Growth Boundary, shall be preserved. This shall be achieved by coordination with Tillamook County and by encouraging a minimum of development in these areas.

Historic Resources (State Goal 5)

The history of the City of Tillamook is quite extensive for a town of its size. It includes a number of historic sites and structures as listed in the Appendix.

Background: Historic Resources

The first building of the town site was built in 1894, known as the Thayer Bank Building, at 1802 First Street. This historic building served as a bank.



This structure has been altered over the years, but remains in fair condition as an example of late 19th century architecture.

With the establishment of the post office, thereafter, the small community received the official name of Tillamook.

In 1983, a Historic Preservation District was established by the Planning Commission, to protect the historic buildings of Tillamook and to encourage the rehabilitation of these buildings.

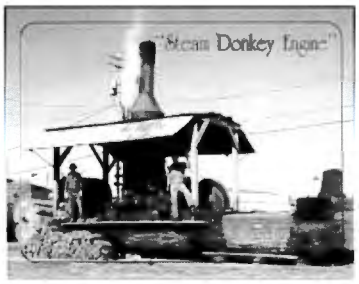
HISTORIC SITES AND BUILDINGS

Over the past two to three decades, the historic architectural continuity has been compromised, especially in the Town Center, as a result of covering facades with non-historic materials, removing traditional signs and marquees and in some cases, demolishing older buildings to make way for contemporary buildings lacking the pedestrian friendly qualities of traditional main street building types.



Several historic sites and buildings still exist in the Tillamook Urban Growth Area, including those located downtown. The Old Tillamook Post Office (City Hall) is currently registered in the National Register of Historic Places. Additionally, all of the sites listed in Appendix XXVIII are listed in the Statewide Inventory of Historic Sites and Buildings, with the State Historic Preservation Office (SHPO). Appendix XXVIII – Historical Site Inventory within the Tillamook Area – further describes Tillamook's historic sites and structures.

There are a number of additional buildings of historic importance than just those listed above. These include the following to name just a small number of them: the Masonic



Building at the northeast corner of Second Street and Ivy Avenue completed in 1914; the Kelly Building at the SW corner of Second Street and Main Avenue completed in 1925; the Alderman Building at the NW corner of Second Street and Main Avenue, built in 1932; the First National Building at the NE corner of Second Street and Main Avenue, the Odd Fellows Building at the SE corner of Second Street and Main Avenue, built in 1916; the Tillamook Hotel between Second Street and Third Street and Main Avenue and Pacific Avenue, completed in 1941; the C.B. Hadley House on the SE corner of Third Street and Laurel Avenue (as shown in the photograph above), built in 1892; and the United Brethren Church at the SE corner of 4th and Madrona, constructed in 1897-99. These historic structures and many more are listed and described further in the Appendix. Tillamook County Historical Society has published a seven-page document showing early photographs of Tillamook and interesting facts about its pioneers..

Goal for Historic Resources

"To preserve the history of the City of Tillamook."

Objective for Historic Resources: To protect the historic buildings of Tillamook and to encourage the rehabilitation of these buildings and accessibility to buildings and encourage the community to take part in this process.

Policies for Historic Resources Objective No. 1

Policy C-29: The City shall encourage the preservation and rehabilitation of sites and structures that represent significant aspects of Tillamook's historical and architectural heritage.

Policy C-30: The City shall strengthen the economy of Tillamook by protecting and enhancing the City's historic attraction to residents and visitors.

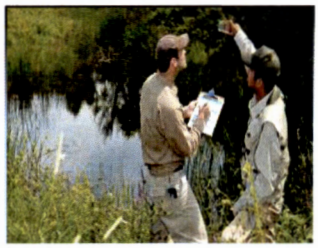
Policy C-31: The City shall enforce the Town Center Zone ordinance preserving the historic character of the downtown.

Policy C-32: The City shall consider exploring National Register designations and the benefits of developing historic preservation districts.

Policy C-33: The City will coordinate with state and county agencies and organizations to preserve current and future historic sites, buildings, and archeological sites that exist now or may be discovered at a later date, in the Tillamook Area. Future discovery or determination of historical sites and/or archeological sites shall be listed as inclusions to this plan.

Chapter 5: Air and Water Quality (State Goal 6)

Background



Air, water and land resources are inventoried and discussed in the Technical Report. The Urban Growth Boundary is shaped by taking into consideration the quality of these resources.

Air quality within the planning area is generally very good. Because of scrubbers recently installed on mill burners, smoke and fallout has been greatly reduced. Air pollution from automobiles is not a significant problem even with high volumes of summer tourist traffic going through town. A prevailing wind usually blows in Tillamook and clears the air quickly.

Water quality within the area is generally excellent. Frequent rains and tidal actions constantly change the level and velocity of rivers in the area. There are no major pollution problems with creeks, other than occasionally turbid waters due to rapid runoff. The City's sewerage treatment plant currently places good quality effluent into the Trask River. A primary issue confronting the community is the elimination of failing septic tanks within the Growth area. A prime concern is also insuring that future development has adequate sewer service without making it a financial hardship to property owners.

Significant Water Quality within the UGB depends in part on protecting designated significant wetlands and riparian corridors. The City wishes to insure that future development occur in a manner that protects all significant wetlands and riparian corridors within the Tillamook UGB.

Goal for Air and Water Quality

"To maintain and improve the quality of air, water and land resources."

Objective for Air and Water Quality: To insure the continued quality of air, water and land resources within the City.

Policies for Air and Water Quality

Policy C-34: All future development will be compatible with the air quality maintenance plan of the Department of Environmental Quality. Through all land use planning and development stages, the City shall coordinate their actions with State and Federal environmental statutes, programs and policies. The City shall also assist and coordinate, as necessary, with current planning activities.

Policy C-35: All waste and process discharges from future development will not violate applicable state or federal environmental quality statutes, rules and standards.

Policy C-36: The City shall encourage elimination of faulty septic tanks within the Urban Growth Boundary areas. The Urban Service Area Policies and Implementing Guidelines shall address the implementation of this goal. (Appendix H)

Policy C-37: The water resources of the City of Tillamook shall be protected in part by guiding future development in a manner that will not impact or alter the significant wetlands and riparian corridors within the City of Tillamook Urban Growth Boundary (UGB).

Policy C-38: All development and activities in the City of Tillamook shall comply with the state and federal air and water quality and noise-control rules, regulations, and standards.

Chapter 6: Natural Disasters and Hazards (State Goal 7)

Background

The most significant natural hazard in the Tillamook area is flooding. Flooding means a general and temporary condition of partial to complete inundation of normally dry areas from the overflow of inland or tidal water and/or the unusual and rapid accumulation of runoff or surface waters from any source. In Tillamook, there are two types of areas where flooding generally occurs. Both are part of the Flood Hazard Area. The floodplain is the area adjoining a stream, river, or lake that is subject to regional flooding. It represents the largest flood which has a one percent chance of occurring in any one year in an area as a result of periods of higher than normal rainfall or stream flows, high winds, rapid snow melt, natural stream blockages, or combinations thereof. The Floodway is the channel of a watercourse that must be kept free of any encroachments so that the 1% annual chance flood can be discharged without cumulatively or substantially increasing the water surface elevation and flood height.

The city of Tillamook lies within the geomorphic floodplain of Wilson and the Trask Rivers. Areas subject to flooding are illustrated in the Technical Report. There are approximately 100 acres of land within the City Limits that are subject to significant flooding. Flooding in Tillamook occurs frequently, with the Wilson and Trask Rivers rising to flood stage or above at least once every winter.[3] The depth of these floods is one to two feet due to the relatively flat topography. However, the City of Tillamook has sustained the most damage from more recent major flood events, with greater depths, in February 1996, December 1998, November 1999, November 2006 and December 2007.

As a result of these severe flood events and repetitive losses to homeowners and businesses, the City of Tillamook applied for funding from the Flood Mitigation Assistance Program (FMA). Oregon's Office of Emergency Management (OEM) identified Tillamook City as a high priority community in need of flood mitigation planning assistance because of the number of NFIP-identified repetitive loss properties. Tillamook City was awarded an FMA Planning Grant and funds were used to develop the *Tillamook Flood Mitigation Action Plan*. The City Flood Mitigation Action Plan is located in Appendix XVIII.

Flood mitigation plans assist communities in reducing risk from flood damages by identifying resources, information, and strategies for reducing flood risk, meanwhile helping guide and coordinate mitigation activities throughout a defined area.

The resources and information within this flood mitigation plan will:

1. Establish a foundation for coordination and collaboration among public agencies and the citizens in the City of Tillamook;

2. Identify and prioritize future flood mitigation projects; and
3. Assist in meeting qualifications for federal assistance programs.

This plan also identifies activities where Tillamook can work in collaboration with County and State flood mitigation programs.

History of Flooding



1980 flood. Source: The Headlight-Herald



1972 flood.
Source: Tillamook Historical Society

Five rivers, with a long history of flooding, feed into Tillamook Bay estuary: the Kilchis, Miami, Tillamook, Trask, and Wilson. Tillamook City has experienced flooding throughout its history, but more recently, severe flood events occurred frequently during the 1990s. Flooding poses a threat to life and safety, public and private property, and can cause great disruptions to the local economy.

One of the most severe floods in recorded history swept through Tillamook in February 1996, when a series of natural events combined to become the worst flood on record. A month earlier, heavy snowfall blanketed the county from sea level to mountaintop. Instead of slowly melting over several days and gradually feeding the runoff to coastal streams, a hard freeze preserved the snow pack. On February 3, a moderate storm brought rain to the frozen landscape. Three days later, an unusually strong subtropical jet stream carried a huge storm ashore, with warm torrential rainfall that lasted for three to four days throughout the region. During the storm, the freezing level rose to about 8,000 feet, and Oregon Department of Forestry reported 19 inches of rain on top of two feet of snow already on the ground in the forest. Between February 4-9, record rainfall of nearly 30 inches fell in some parts of the county and 14 inches in a 48-hour period resulted in the heaviest runoff and flooding ever.



Source: The Headlight-Herald

With all rivers well above flood stage, flooding spread throughout the county causing extensive damage. The county's only radio station and the source of emergency information for residents, KTIL, shut down after floodwaters reached the studio just

outside Tillamook City limits. Buildings in Tillamook were flooded while landslides closed many roads - some for months - and floodwaters washed out others. US Highway 101 to the north and south of Tillamook City and Oregon Highway 6 to the east remained closed for days, cutting off Tillamook City from the rest of the county. Logjams at bridges caused backwater and high-velocity river flows caused severe scouring at bridge foundations. When water levels began to drop, saturated riverbanks collapsed due to lack of stability. Extensive bank erosion filled all rivers with silt, mud, and debris. Receding floodwaters left miles of roads, homes, and businesses covered with silt, mud, and debris up to a depth of two feet.

Millions of dollars in property damage spurred the designation of Tillamook County as one of the first Project Impact "disaster resistant communities," which provided federal assistance to help minimize and prevent damage caused by future major flood events.

Additionally, on December 28, 1998 and again during the Thanksgiving holiday of 1999, large flood events caught the region unaware. Tillamook County commissioners declared an emergency on the Friday after the 1999 Thanksgiving holiday flood event once initial assessments indicated damage to county roads was at $300,000. The area was hit with 16 inches of rain between Wednesday and Thursday. The end of the holiday weekend meant another day of cleaning debris and tabulating damages for residents flooded from homes and businesses on Thanksgiving.

Local efforts to minimize flooding and to become a disaster resistant community heightened after the flood of 1996. Through joint efforts of the City, Tillamook County, several agencies, and local individuals, the area has achieved a substantial reduction in flood vulnerability. These efforts are on-going, including plans for improvements in both estuary drainage and habitats.

The City of Tillamook needed immediate assistance to reduce flood loss and damage. Officials have stated preventive measures taken after the 1996 flood have kept damage from more recent floods to a minimum. Since that event, 62 homes had foundations raised and at least ten cow pads (elevated mounds of fill dirt) were built at various county dairies to give cattle a place to retreat from rising waters. However there was still plenty of work left to mitigate damage from frequent flooding.

The local community organized The Tillamook County Flood Control Group to address the flood losses and to mitigate future flooding in the County. The City of Tillamook has worked closely with the Flood Control Group and has developed mitigation actions. A full time County Emergency Manager was hired to assist the City with floodplain management. The City and Federal Emergency Management Agency (FEMA) coordinated elevating structures, buyouts and opening up the floodplain, and engineering flood control structures, which mitigated the City's repetitive losses. The 1996 Flood sustained $52 million in losses. The 1998 Flood losses were reduced to only $3 million. This was a savings of $49 million in repetitive losses. The US Army Core of Engineers

(USACOE) also provided several emergency measures and advanced measures to assist the City of Tillamook as a working partner in building a disaster resistant community.

A mitigation project undertaken by FEMA is to either elevate or "buyout" properties in the Floodway Flood Hazard Area, and assist with relocation to other areas in town above the Flood Hazard Area, and reduce the amount of obstructions to the flood discharge.

Major floods have affected Tillamook citizens since the early 20th century, when reported by a life-long resident that "chairs were put on top of the beds to get out of the floodwaters." Overall, Tillamook has experienced major riverine flooding events 20 times since 1916, with extensive coastal flooding in 1939, 1967, and 1976. Severe storms of unusually long duration caused severe flooding in 1964, 1990, and (as already mentioned) 1996, 1998, and 1999. Since Tillamook was founded in 1891, the community has experienced annual seasonal flooding and several major flood events. The floods of 1996, 1998, 1999, 2006 and 2007 are the most recent and damaging of these seasonal floods.

The USACOE studied flood hazard boundaries in Tillamook and prepared preliminary Flood Insurance Rate Maps in 1982 for the area. Based on these maps, the 100-year floodplains lie mostly north of Hoquarton Slough, extending into that portion of the City Limits. Revision of these Flood Insurance Rate Maps was completed and adopted by the City in 2004. The area once considered the 100-year floodplain as mentioned above is now considered the Flood Hazard Area, which includes both the floodplain and the Floodway. A Floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation. A majority of the land north of Hoquarton Slough is in commercial use and the Flood Hazard Area.

Most floods are usually the result of the moist climate and intense rainfall during the winter months. Snow pack, if present in the basin headwaters of the Cascade Range, coupled with warm rains, often lead to more severe flood events. Flooding in the City of Tillamook results primarily from the overflow of the Wilson and Trask Rivers, and to a lesser extent, Dougherty, Hall, Hoquarton Sloughs, and Holden Creek. However, flooding is often compounded by high tides in Tillamook Bay that restrict the flow in these rivers and sloughs. Tidal levees constructed for protection of farmland can prevent proper drainage of floodwaters, creating a "bathtub effect" – a local term often used to describe inundation of lowland areas.

Historical alterations to courses of local rivers, creeks, and sloughs and development of land and recent accelerated filling of lower estuaries due to several causes, in the floodplain, have changed the nature of flooding in Tillamook. In some cases, these changes have put more property at risk to flooding. Further alterations to the landscape can impact the character of local flooding by placing new development in flood hazard areas, creating new impervious surfaces, and modifying existing storm water management and drainage systems. The City has comprehensive flood plain development standards, which restrict construction of new impediments to drainage.

Steering Committee

A Flood Mitigation Group (Project Steering Committee) has been developed with members from the community, businesses affected by flooding and experts working on developing a plan for the businesses and residents affected by the floods. The project steering committee provided overall guidance and helped create a more comprehensive flood mitigation plan by assisting in developing plan goals and action items, identifying stakeholders for interviews, reviewing and editing documents, and sharing their expertise and personal experience about community flood issues.

The City of Tillamook Flood Mitigation Action Plan provides information, goals, and recommendations to assist the City in planning for growth and protecting existing and new development from future flood damages, and is designed to assist the City in these on-going efforts to minimize the effects of flooding while enhancing the City's economic, social, and ecological attributes.

The flood mitigation goals, developed with the Tillamook Flood Mitigation Plan Steering Committee, are statements of desired outcomes for reducing community risk to floods. The goals take into account input from public workshops. The goals and the public participation process strengthen the value of this flood mitigation plan and may assist in meeting criteria for applications to state and federal funding sources for flood mitigation activities.

Business Relocation

After the flood of 2006, in a coordinated effort with the County and State, a study was commenced by the City to provide information for the relocation of businesses from the designated Floodway on Highway 101 to commercially and industrially zoned properties located elsewhere in the City. The City took on the task of preparing a packet of information for those businesses that were interested in relocating. The City will then be able to use this information to inform property owners, interested parties and governmental entities where property for potential redevelopment opportunities is available in the City of Tillamook.

This study and reports are mentioned again in Chapter 10, Economy, and further examined in terms of buildable lands and the availability of land for commercial and industrial development. Relocating businesses off of 101 is one of the local efforts to minimize flooding and to assist Tillamook in becoming a disaster resistant community.

Federal Flood Insurance Programs

The NFIP is a federal program administered by FEMA. The function of the NFIP is to provide flood insurance to homes and businesses located in floodplains at a reasonable cost, and to encourage the location of new development out of the floodplain. The program maps flood risk areas, and requires local implementation to reduce the risk, primarily through restricting new development in floodways and floodplains. The maps are known as Flood Insurance Rate Maps (FIRM).

Another program under the NFIP is the Community Rating System (CRS). This voluntary program recognizes and rewards local efforts that go beyond the minimum standards of the NFIP. This recognition is in the form of reduced flood insurance premiums for communities that adopt such standards. The Community Rating System encourages voluntary community activities that reduce flood losses, facilitate accurate insurance ratings, and promote flood insurance awareness. Currently, the City of Tillamook is participating in the CRS program.

Other Natural Hazards

Tillamook also has a risk of natural hazards from Climate Change, Coastal Erosion, El Nino, Landslide, Debris Flow, La Nina, Drought, Earthquake, Tsunamis, Wildland Urban Interface Fire, Windstorms, and Winter Storms. Tillamook has a risk of catastrophic earthquake and tsunami. The last significant distant Tsunami event was recorded on January 26, 1700. The most recent distant Tsunami event was March 11, 2011. Flooding, El Nino, Landslide, Debris Flow, La Nina, Windstorms, and Winter Storms have historically occurred frequently.

These other natural hazards that could affect the City and its residents are identified in the Tillamook County Hazard Mitigation Plan. The Tillamook County Hazard Mitigation Plan includes all of the communities in the County and is the direction that the City will adopt to recognize these other natural hazard.

Goals for Natural Disasters and Hazards and Flood Mitigation

"To protect life and property from natural disasters and hazards."

"Preserve Natural Areas Related to Flooding."

"Coordinate and Enhance Emergency Services."

"Improve Structural Projects."

"Enhance and Promote Public Education."

"Improve and Promote Partnerships, Coordination, and Implementation."

Objective for Natural Disasters and Hazards and Flood Mitigation: To maintain damage or loss of life and property caused by natural hazards in the Tillamook area by carefully managing development and redevelopment in areas subject to natural hazards.

Policies for Natural Disasters and Hazards and Flood Mitigation

Policy C-39: Development may take place within areas of natural hazards only if appropriate safeguards are provided to protect the property in question as well as adjacent properties, from damage. A developer shall assume the burden of proof that a development project is appropriate in this regard.

Policy C-40: In all areas of flood hazard the requirements of the National Flood Insurance Program will be adhered to.

Policy C-41: Flood plain and Floodway overlay zoning for all hazard areas will be applied by the City in terms of the Flood Hazard Overlay (FHO District) in the City Zoning Ordinance; building permits will be reviewed to insure that necessary requirements of structures are met. The purpose shall be to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas The legislature of the State of Oregon has in ORS Chapter 227 delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry.

Policy C-42: Natural hazards that could result from new developments, such as runoff from new buildings, paving projects and/or soil slippage due to weak foundation soils, that has the potential to have adverse impacts and a cumulative effect on property owners downstream, will be considered and evaluated. Measures that prevent or minimize the extent of the natural hazard, adverse impacts and cumulative effects on property owners downstream shall be provided for. Such natural hazards, adverse impacts and cumulative effects on property owners downstream shall be considered in evaluating zone changes, conditional uses, site plans, variances, and in issuing building permits.

Policy C-43: All estuaries in Tillamook City shall be maintained so as to not restrict water flows. Tillamook City shall develop and help coordinate a plan to clean and maintain all estuaries in the Tillamook area with Tillamook County, the Port of Tillamook Bay, the Port of Bay City, and any other affected agencies. These activities shall be centered around the task of minimizing flood conditions for areas adjacent to the estuarine areas.

Policy C-44: All water bodies within the City of Tillamook shall be maintained free and clear of all obstructions by the appropriate landowner with coordination between the property owner and DSL, ACE, and ODFW.

Policy C-45: The city will discourage residential, commercial and industrial development in the identified floodway, but will consider the fiscal ramifications of "takings" issues.

Policy C-46: Any new development within the floodplains shall be designed to avoid damage from flooding and to minimize the damage potential to other developments or properties.

Policy C-47: The city will promote increased public awareness of flood hazards and how to deal with them.

Policy C-48: The City shall enforce the Flood Hazard Development Ordinance (Ordinance No. 971), and the Flood Hazard Overlay District as listed in Ordinance #979, and promote flood control measures that help minimize flood hazards and are environmentally sound.

Policy C-49: The city will cooperate with the Tillamook County Office of Emergency Management Office and other agencies working to protect life and property from natural disasters and hazards.

Policy C-50: The city will promote flood control measures that help minimize flood hazards and are environmentally sound and encourage the continued practice of feasibility studies conducted by the County Sanitarians on proposed sites for septic system installation outside the City Limits but inside the Urban Growth Area where city services are not available.

SECTION D:
PUBLIC INFRASTRUCTURE



Chapter 7: Public Facilities and Services (State Goal 11)

A full range of urban services are provided within the City of Tillamook. These services include parks, water, sanitary sewer, storm sewer, solid waste collection, fire protection, police protection, and transportation. This chapter summarizes those services and lists the city's objectives, policies and implementing procedures for maintaining and improving them. Some key services, such as Water, Wastewater, Schools, and Transportation facilities and services are covered by special functional plans noted in this chapter.

Water

The City of Tillamook and the Fairview Water District provide water to the city and the surrounding urbanized area through a few wells located inside the City Limits along with a reservoir and treatment plant outside of the City Limits. The Fairview Water District provides water to a small portion inside the City Limits and a portion of the Urban Growth Area.



The City of Tillamook has adopted a Water System Master Plan. Supplying water can be orderly and economically advanced to those areas within the Urban Growth Boundary. Water is also supplied by the City to specific areas outside the Urban Growth Boundary and numerous water districts, as is attached on the "Tillamook Water User's Map" as part of Appendix XIV. These arrangements for the provision of City water were established far before the development of the Urban Growth Boundary, and include the provision of City water to customers along Highway 101 south of the Urban Growth Boundary and to the Port of Tillamook Bay. The Tillamook Watershed is abundant in water resources and policies within the Plan have addressed the expansion of City water services to these adjacent water service districts. The City has completed a water line inter-tie with the City of Bay City to be used for emergency purposes.

The City's network of water wells and pipes is shown on a larger map, "City Distribution and Transmission Mains, 1997". Additionally, the City has a larger map, "Supply and Transmission", that shows the transmission mains from the Killam Creek Reservoir. These maps are attached as part of Appendix XIV.

Storage of water continues to be an immediate need and future planning for water storage sites and volume is important. A detailed description of water sources, storage capacity and transmission lines is also attached as part of Appendices XIV and XV Relocation of the transmission lines from underneath the Port of Tillamook Bay runway is a priority.

With an anticipated population increase for the City of Tillamook of approximately 1,103 people over the next 20 years, as identified in Chapter 9, it is clear that reservoir storage, system capacity improvements and system upgrading are also a high priority.

Sanitary Sewer

The existing Tillamook wastewater service area is primarily contained within the incorporated City Limits. Adequate treatment services are provided by the Tillamook Waste Water Treatment Plant (WWTP) to the residents of Tillamook, a dense commercial area, a highway commercial district and limited industrial wastewater from the local sawmill facility, all within the City Limits as well as a portion of the developed area outside the City Limits but within the Urban Growth Boundary. The sanitary sewer collection systems include both gravity and pressure systems. The service area gently slopes downward from east to west and from north to south. The new facilities have the capacity to serve a population of 7,500 as identified in the WWTP Facility Plan.



In general, the Tillamook WWTP has been upgraded in the following areas.

- New influent pump station
- Submersible influent pump station
- Primary clarification with aerobic digestion
- Secondary clarifier with anaerobic digestion
- Headworks improvements including a new influent screen and bypass
- New activated sludge process including:
  - flexible aeration tank with dual parallel basins,
  - selector zones for control of filamentous sludge,
  - diffused aeration equipment and blowers,
  - maximum side water depth to minimize land area requirements;
- Two new secondary clarifiers with a new RAS and WAS pumping facility
- New chlorine contact tank with dual basins and chemical flash mixers
- Nitrifying Selector Activated Sludge with primary clarification
- Disinfection with Liquid hypochlorite and dechlorination
- New outfall for treated effluent
- New solids handling facility including a Sludge thickening plus anaerobic digestion, septage receiving station, mechanical dewatering and conversion of existing basins for sludge storage.

In October 2002, the City prepared a Wastewater Facilities Plan as part of the City's Mutual Agreement and Order (MAO) with the State Department of Environmental Quality. The Plan is attached as Appendix XVI. The Wastewater Facilities Plan addressed operational and maintenance deficiencies in the system, as well as evaluate the need for overall capacity improvements to accommodate future growth.

The WWTP, is designed to handle a dry weather and a wet weather permit capacity. The final effluent from the plant is, and will continue to be, discharged into the Trask River.

The quality of effluent discharged into the Trask River is strictly controlled through a State Discharge Permit. The City not only relies on State permit standards but commits itself to the discharge of good effluent for the benefit of proper ecological balances.

Sanitary sewer is crucial to determining what land is included in the City Limits and the Urban Growth Boundary. The location of existing sewer service and topography were considered in shaping the Urban Growth Boundary.

Sanitary sewer serves all areas, inside the City Limits of the City of Tillamook. The municipal sewage system consists of a gravity-flow network of laterals (pipes), and pressure mains, a STEP system serving an area along north Highway 101, and five (5) pump stations that are placed in the following locations:

1) On the east side of town on the County Fairgrounds to serve the Brookfield Meadow Subdivision and the Champion Park Apartment Complex;
2) At the south end of the Meadow Avenue ROW serving the residential neighborhoods east of the mill;
3) On the PUD property serving south portions of town;
4) At the intersection of Front Street and Stillwell Avenue to serve the Highway 101 North area; and
5) The Primary pump station known as the Influent Pump Station is located at the Waste Water Treatment Plant.

The current location and size of sewer lines in Tillamook is shown on Map 6 in Chapter 17 of this plan, and was prepared for the City in 2008. Older parts of the system, constructed between 1920 and 1950, consist primarily of clay pipe; and subsequent portions of the collection system are primarily made of concrete pipes. The most recent extensions were constructed of polyvinyl chloride pipe. This collection system, as was mentioned earlier, is currently in poor condition due to its age.

The City is committed to provide sewer services following annexation. Coordination of the preparation and maintenance of utility extension plans between the City and County provides a basis for the extension of services within the Urban Growth Area. Generally the City does not extend sanitary sewers beyond city limits: for properties to receive such urban services, they must annex to the city, or sign a 'consent to annex'. Tillamook and Tillamook County have signed an Urban Growth Management Agreement not to extend sanitary sewers beyond the Urban Growth Boundary, unless it is determined that a danger to public health exists, or a moratorium to construct new and repair existing septic systems has been declared by the State Department of Environmental Quality (Oregon DEQ), or an exception to State Planning Goals 11 (Public Facilities and Services) and 14 (Urbanization) is recognized, as is contained within Tillamook County Land Use Ordinance #33 Amendment #OA-02-12B which provides for the extension of urban services to the Port of Tillamook Bay and Tillamook Creamery properties.

Storm Sewers

Because the City of Tillamook lies only a few feet above sea level, drainage is often slow in certain areas of town and backs up during exceedingly heavy rainfall. As the City has evolved over many decades, there were many, relatively small, localized storm water systems developed to convey storm runoff from private properties, streets and open spaces to one or more of the water bodies in and around town. In many cases there was not much strategic or long-term planning to develop those systems within the context of providing the best functional value to the City as a whole, or much consideration given to the possible effects of its municipal storm water discharges on stream water quality. The Federal Clean Water Act, as implemented through the authority of the Oregon DEQ was impetus for a change in priorities. Today's storm drainage system serves the needs of the community.



The City's Storm Water Drainage Master Plan and its updates (Appendix XVII) provides a comprehensive, integrated "roadmap" for the City to follow in implementing improved storm water controls and conveyance systems. This "roadmap" contains both steps the City can take in the near future, such as operational changes affecting existing systems, and longer term solutions, such as Capital Improvements that will result in improving storm water quality as time progresses.

Solid Waste

Municipal solid waste generated within the Tillamook area is presently being disposed of at the Tillamook County sanitary landfill located approximately four miles south of the City limits. The disposal site is owned and operated by Tillamook County.



The City has a signed franchise agreement with City Sanitary to dispose of solid waste in the City. Curbside pick-up of solid waste is addressed through an optional 'by-request' curbside recycling program. City Council has had discussions requiring mandatory curbside pickup.

A special agreement with DEQ was made by the City to allow for an alternative to a mandatory curbside recycling program which outlined responsibilities in the alternative agreement with DEQ. The General and Expanded Education and Promotion Programs Plan for Residential, Commercial and Institutional Generators of Solid Waste is described in Appendix XIX. Currently, the City has set a recycling goal of 25% of City Sanitary customers by 2017 and anticipates renegotiating the franchise agreement to encourage greater recycling efforts.

Fire Protection and Emergency Services



A regional Fire District and a regional 911 Communication Office has been set up in the City to serve not only the City but also rural areas and other non-incorporated communities. Volunteer and professional firefighters, a Fire Chief and a Fire Marshal, staff the District. It is housed in a new building that was completed in the early 1980's. Fire protection in Tillamook is rated by the Insurance Services Organization (ISO).

911 Communications is located adjacent to the Fire District building that was expanded in 2002 and serves the entire County. It is staffed by three employees.

Tillamook County Emergency Management is located outside the City Limits at the Tillamook County Sheriff's Office, 5995 Long Prairie Road, Tillamook, Oregon.

Police

The City of Tillamook maintains a municipal police department with paid officers. The City Police Department is housed in a separate building from the City Hall, at 207 Madrona Avenue.



The City Police Department has developed an Incident Response Plan that outlines the role and responsibility of City Staff and Police Department Staff members in an emergency situation. In addition, a Hazard Mitigation Plan has been coordinated between the City and County to deal with hazards and emergency situations, identifying where critical public facilities are located in the City.

Transportation (State Goal 12)

Background

A Vehicular/Pedestrian Access – Circulation Traffic Safety Plan was first adopted by the City in 1981. The Plan addressed conditions and needs in the downtown neighborhood and Highway Commercial areas. As part of the Circulation Traffic Safety Plan, a joint City-County access management plan for the Highway 101 North Area was approved.

The ways in which we use and develop land have profound effects on streets, roads, and highways. Such effects are most obvious in the commercial "strip development" found along North Main Avenue. North Main Avenue started out as high-volume Arterial Street intended to move traffic rapidly from one place to another. But decades of uncontrolled commercial development along the highway choked it with cars entering and leaving a series of stores, service stations, and fast-food outlets.

Of course, streets, roads, and highways also have profound effects on land use. Most forms of commercial development, for example, need to be easy to find, readily seen

from a car, and convenient to reach by foot or automobile. Commercial development thus springs up near or along collectors and arterials.

Strip development illustrates a fundamental relationship in planning: land use affects streets, and streets affect land use. That close relationship is a subject of great significance in any community's comprehensive plan. The City of Tillamook has addressed that key subject by adopting the City Transportation System Plan (TSP).

A prime concern of this community is the transportation aspect of moving people and freight throughout the City for business and shopping needs. In the TSP, efforts have been made to ease the flow of congested traffic patterns and develop adequate parking and pedestrian safety programs. Access and circulation plans must be developed to facilitate these problems, and special emphasis should be given to the highway commercial areas.

The Transportation System Plan

The City of Tillamook's Transportation System Plan was prepared in 2003 by the consulting firm of CH2Mhill, and the City adopted this Transportation System Plan (TSP) in 2003. Although it is printed in a document separate from this Comprehensive Plan update, the TSP is formally adopted as an integral part of the City of Tillamook's Comprehensive Plan.

The TSP contains a wealth of information on the City of Tillamook's transportation system. It describes in detail the city's street system, traffic volumes, levels of service, and funding. But the TSP isn't just about streets. It also describes pedestrian facilities, bikeways, rail, freight, and bus service. All of those things together with streets make up the "transportation system." In a society where most people drive cars, it sometime is easy to forget that a community's transportation system is more than just streets.

This Plan touches on the information found in the TSP. It provide a brief summary of key transportation facilities, and is an analysis and guide for improvement in the City's transportation system and makes recommendations regarding transportation corridors and more localized transportation routes. It also includes the TSP's policy conclusions (from Section 5 of the TSP) in the objectives and strategies at the end of this chapter.

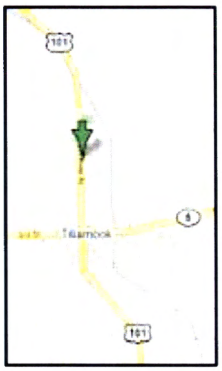
This chapter briefly identifies the transportation improvements and policies that should be implemented over the next 20 years in Tillamook to improve motor vehicle operations, safety, and pedestrian and bicycle travel. The Plan also includes public transportation, rail, freight, air and water elements.

The TSP is divided into the following plan elements:

- State Roadway System (Highways)
- Local Roadway System (Streets)
- Freight System
- Pedestrian System
- Bicycle System
- Public Transportation
- Rail System

These plan elements are briefly described below and further in the TSP.

Highways



Three highways intersect in downtown Tillamook: Highways 101, 6 and 131. All are classified by the Oregon Department of Transportation (ODOT) as "statewide highways." The primary function of such highways is to connect urban areas, ports, and major recreation areas. A secondary function is to provide for intra-urban and intra-region trips.

Highway 101 (U.S. 101), as has already been discussed briefly, is known as the Oregon Coastal Highway. This north-south route runs through the City of Tillamook's downtown, where it splits into the Main and Pacific Avenue couplet.

Highway 6 (Oregon 6) is known as the Wilson River Highway. It comes into the City of Tillamook from the east, becoming First Street inside the city.

Highway 131 (Netarts Highway), serves a small coastal area to the west of the City of Tillamook. Inside the western city limits, it is known as Third Street. Highways 6 and 131 merge at Main Avenue and Third Street, becoming a single route to Portland, 65 miles east.

This state roadway network serves local, freight and tourist traffic.

Additionally, in the vicinity of Tillamook, several of these state roadways - U.S. 101, Netarts Highway (131), Oregon 6 - and others - Latimer Road and Wilson River Loop - are designated as lifeline routes. U.S. 101 (south of Oregon 6), Netarts Highway (131), Latimer Road, Wilson River Loop and Oregon 6 (between U.S. 101 and Wilson River Loop) are designated as Priority 1 lifeline routes, which means they are essential for emergency responses in the first 72 hours after an incident. U.S. 101 (north of Oregon 6) and Oregon 6 (east of Wilson River Loop) are designated as a Priority 2 lifeline routes, which means they are desirable for emergency responses in the first 72 hours after an incident or are routes essential for economic recovery. These designations are not recommended to change.

Access management (limiting highway access for safety) improvements to consolidate driveways are recommended in certain areas and should occur with redevelopment. To protect transportation facilities and to provide for safe multimodal transportation in the City of Tillamook, several changes have been made in the city's ordinances for access management.

The Oregon Highway Plan provides for special designation of certain highway segments to guide future planning and management decisions, and to balance the needs of through traffic with local traffic and development. The designations, which include special

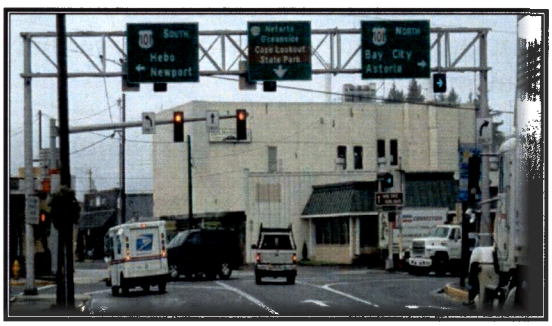
transportation areas (STAs), commercial centers, and urban business areas, have specific objectives for access management, automobiles, pedestrian and bicycle accommodation, transit amenities and development.

The STA designation is a tool developed and designed to make a downtown district function well when the state highway is also the community's main street. An STA may have special features that result in lower speeds, narrower lane widths and wider sidewalks on the state highway.

The City has an STA designation on a portion of U.S. 101 (Main and Pacific Avenues) from First Street to Ninth Street in Tillamook to better balance the needs of through traffic with local traffic and economic development. The STA designation helps the city and ODOT address through traffic needs on U.S. 101 while supporting the city's desire to maintain and enhance the downtown area as an aesthetically appealing destination that functions well for pedestrians and bicyclists and is economically vibrant.

Streets

The proper classification of each street is important to help determine the appropriate traffic control, design standards, pedestrian and bicycle facilities, and access to adjacent properties for a roadway segment.



Like most cities, Tillamook has a five-tier hierarchy of streets. The largest streets, designed to move the largest volumes of traffic, are State Highways and are called *state arterials and state collectors*. The State highways are considered state arterials and state collectors. Streets designed to move large volumes of traffic, other than the highways, are called *arterials*. The smallest streets, which are intended to provide access to homes, businesses, and neighborhoods, and are shown on the TSP map as roads, are called *local streets*. Intermediate streets that collect traffic from the network of local streets and funnel it onto arterials are called *collectors*.

The primary function of an *arterial* is to provide mobility. Therefore, arterials typically carry higher traffic volumes and allow higher travel speeds while providing limited access to adjacent properties. Tillamook has four (4) arterials: Main Avenue, Pacific Avenue (the 101 Couplet), and First Street and Third Street east of Main Avenue (the Highway 6 Couplet).

The function of a *collector* is to collect traffic from local streets and provide connections to arterial roadways. Generally, collectors operate with moderate speeds and provide more access in comparison to arterials.

All city roadway facilities not listed above are classified as local streets or roadways. The primary function of a local roadway is to provide access to local traffic and route users to collector roadways. Generally, local roadways operate with low speeds, provide limited mobility, and carry low traffic volumes compared with other roadway classifications. Each type of roadway classification is identified in the City TSP.

Any new roads or extensions, that are constructed within the City of Tillamook, should be classified based upon the Average Daily Traffic and usage by pedestrians, bicycles and trucks. Many of the proposed extensions in the Plan are expected to carry through traffic in addition to local traffic, which would likely lead to a collector functional classification.

Freight System



As part of the TSP process, the City of Tillamook and Tillamook County staffs identified the need and desire to minimize the impact of local and through freight truck traffic and large recreational vehicles in the City of Tillamook downtown commercial area and in residential neighborhoods in the City. Because of the complex nature of this problem, specific solutions are identified and discussed in the large vehicle alternative route study in the TSP, and the Transportation Refinement Plan.

The Tillamook Transportation Refinement Plan was undertaken to develop solutions to three interrelated transportation issues identified in downtown Tillamook:

- Transportation safety, with an emphasis on pedestrians
- Adverse impacts of truck traffic (volume, speed, noise, safety)
- Parking utilization and supply

To address these issues, the plan recommended changes to the Tillamook transportation system in the following areas:

- Improvements to truck routes outside of downtown, in particular minor improvements to county roads to support existing levels of truck traffic on those facilities
- Tillamook Lumber Mill circulation, in particular how trucks enter and exit the mill and the related effect on truck traffic in downtown Tillamook
- Design of Main and Pacific Avenues downtown (US 101 Couplet), in particular issues of pedestrian safety, circulation, and aesthetics
- Downtown traffic circulation, in particular congestion and safety at the intersection of US 101 and OR 6
- Downtown parking, in particular improving the management and use of existing spaces and identifying options for creating additional spaces

A detailed discussion of the changes to the TSP and parking recommendations is provided in the Refinement Plan.

Pedestrian System Plan

Pedestrian activity in Tillamook is concentrated in the downtown area, the residential areas east and west of downtown, and the commercial area north of downtown. The focus of the pedestrian system element of the TSP is to improve connections in the community and enhance pedestrian access to Tillamook's recreational features.



Providing a connected network of pedestrian facilities in Tillamook is important to:

- Serve shorter pedestrian trips from neighborhoods to area recreational and activity centers, such as schools
- Provide access to public transit
- Meet residents' and visitors' recreational needs
- Provide circulation in the downtown area

To provide a network of safe and connected facilities that will promote a balanced transportation system, sidewalk improvements have been identified. Particular focus is placed on increasing pedestrian safety by installing new sidewalks in areas frequently used by pedestrians. Where sidewalks do not exist and where it is not feasible to build them, shoulder widening is recommended.

Bicycle System Plan

Bicycle travel offers commuters, children and others an important option for transportation and is a transportation choice for people who do not own vehicles. Cycling is also an important recreational option, especially in scenic areas of Oregon such as Tillamook.

This bicycle system element of the TSP establishes a network of bicycle lanes and routes throughout Tillamook, to connect trip generators and provide a safe, interconnected bicycle system. To promote safe and convenient bicycle links between commercial, recreational and other land uses, improvements to the bicycle system have been identified. While all roadways and streets can be used as bikeways, designated routes along bicycle streets and roads and/or separated bicycle lanes on busy streets can improve safety as well as increase bicycle use.

The bicycle plan for Tillamook includes shared roadways, shoulder bikeways, bicycle lanes, and designated bike routes. The Oregon Coast Bike Route passes through Tillamook along U.S. 101 and uses marked bike lanes or shoulders that are 3 feet wide or wider and are marked with signage. The remainder of the Tillamook bicycle system generally consists of either shared roadways (particularly on local roads) or designated

shoulder bikeways and are characterized by good pavement condition. Aside from the Oregon Coast Bike Route, and improvements on streets such as Alder Lane, most bikeways are not marked with bicycle signage. Tables in the TSP describes Tillamook's designated bicycle routes and label them as city or state facilities.

Public Transit

The Tillamook County Transportation District (TCTD) currently operates public transportation services both in Tillamook, and between Tillamook and surrounding communities. In Tillamook, the addition of transit amenities at transit stops should be considered, including covered benches, bus pullouts, signage and concrete landing pads. These amenities would make the system more visible to potential users and possibly attract new riders. Also, all transit stops should be accessible to all potential riders per ADA standards.



TCTD has outlined opportunities to improve public transportation services on a county level in the TSP.

Railroad

In 1911, the completion of the Pacific Railway & Navigation Company railroad line was the beginning of daily passenger and freight service between Tillamook and the Willamette Valley. Until the railroad was damaged in 2007, trains shipped grain to the county and lumber from the mills.

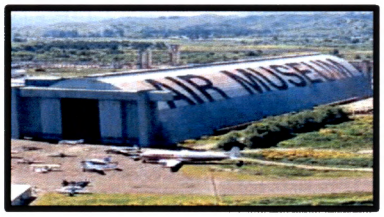


The existing rail line owned and operated by the Port of Tillamook Bay served the Tillamook Lumber Company, CHS Feed Mill and other rail line users until December 2007, when connectivity between the Tillamook and Portland areas was lost at multiple sites along the rail line as a result of severe storms and flooding. The railroad is now under a Discontinuance of Freight Service with the Federal Railroad Administration (FRA). In 2008 the Port Board decided it would be in the best interest of the public to use Federal Emergency Management Agency (FEMA) funds to complete Alternate Projects on other Port-owned facilities.

Prior to and following the December 2007 storms, the Oregon Coast Scenic Railroad (OCSR) has been operating a passenger based tourism operation along the rail line between Garibaldi and Wheeler. In 2012 the Port entered into a Memorandum of Understanding with the Oregon Department of Forestry, the Oregon Department of Parks and Recreation and Cycle Oregon to perform a Feasibility Study on the potential for a Rails and Trails project along the rail line. If successful, the project would provide additional tourism-related activities along the rail line.

In Tillamook, there are two existing at-grade crossings along the Port Railroad line, which are located at Third Street (flashing lights and automatic gate) and Twelfth Street (signage only). If rail service returns, the rail facility is upgraded, and train speeds increase in Tillamook, safety improvements at the 12th Street crossing should become a high priority. The issues regarding the rail line are addressed in the TSP.

Airport



The Port of Tillamook Bay operates the Tillamook Municipal Airport, with two runways suitable for general aviation and for emergency aircraft and fire-fighting. In 2011 the Port received a grant from the Federal Aviation Administration (FAA) for improvements to the Tillamook Municipal Airport. Improvements include updating the Tillamook Municipal Airport Master Plan and a rehabilitation of the airport's runways (i.e., paving and lighting).

Objectives and Policies

Objective No. 1 for Public Facilities and Services: Provide efficient, reliable public facilities and services adequate to maintain the health, safety and welfare of Tillamook's citizens, and meet the needs of residential, commercial and industrial land uses throughout the City.

Policies for Objective No. 1 for Public Facilities and Services

General Policies

Policy D-1: The City shall control costs of public facilities and services by maintaining a compact community, free of sprawl or leapfrog development where feasible.

Policy D-2: The City shall limit the extension of sanitary sewers and municipal water to areas inside the city limits of Tillamook, except for the extension of urban services to the south to the Port of Tillamook Bay and to the north to the County Creamery in accord with Tillamook County's Goal 11 and 14 exceptions contained in County OA-02-12B that permit urban services at the Port and the Creamery. Any other provisions of urban services shall occur beyond the Urban Growth Boundary only after a determination by affected agencies that a "danger to public health exists " as defined by Oregon Revised Statutes Chapter 431.705 (5) or a moratorium to construct new and repair existing septic systems has been declared by the Department of Environmental Quality as mandated by Oregon Revised Statutes, Chapter 454.685.

Policy D-3: The City shall coordinate the provision of public facilities and services: Do not extend one service into a new area unless provision has been made for timely extension of the other services necessary to serve development in that area.

Policy D-4: The City shall ensure that new residential, commercial, and industrial development pays the full costs of whatever public facilities and services are installed for or extended to the new development.

Policy D-5: All City services shall be provided and maintained to City standards and shall remain under the supervision of the City, unless some other arrangement acceptable to the City has been made for the supervision and maintenance of these services.

Policy D-6: The City and the County shall coordinate the preparation and maintenance of utility extension plans. These plans shall provide a basis for the extension of services within the Urban Area as mandated by Oregon Revised Statutes, Chapter 195.065.

Policy D-7: Adequate public facilities and services should be provided, as economically as possible, in order to sustain and maintain a well-ordered community life, enhance the health, safety, educational, and recreational aspects of urban living.

Policy D-8: Existing facilities and services should be upgraded to service the residential and economic needs of the area. This must be done in an orderly manner in conjunction with planning and citizen involvement processes as provided by this plan.

Water Policies

Policy D-9: The City shall find and develop additional sources of water for Tillamook's community water system to meet future demand for water, and increase water storage capacity and encourage upgrading of water facilities and water quality to ensure compliance with appropriate Federal and State Guidelines.

Policy D-10: Detailed plans for increased uses of water will take into consideration the effect on reduced stream flow and aquatic life.

Policy D-11: A regional water system should be considered which would reach from the Bay City system, to the most southern water system now being served by the City. Should a new regional water authority be formed, Tillamook City shall retain title of City land, buildings and equipment assets and lease them as necessary. This regional system may be under City authority or a new regional water authority. If an authority is formed, the City shall also adopt certain relationship controls between District and City in order to adequately serve users within its boundaries. Such controls may include Council authorization of main extensions within the City and review of user rate schedules.

Policy D-12: Prior to implementation of a regional district, Tillamook City shall consider it acceptable if mergers or consolidations take place with Water Districts and the City, provided that the City retains its chartered name and function.

Policy D-13: The City of Tillamook Urban Growth Boundary contains a large percentage of land currently served by various water districts. At the present time, the City Charter grants exclusive water service rights to the City of Tillamook. In the light of equitableness, maintenance and administration considerations in delivery of water to users, the governing body of the City feels that it is in the City's best interest to not have water served within its boundaries from more than one agency. Prior to annexation of land within any water district the City shall hold a public hearing specifically on the issue of annexing a water district, or part thereof, and shall pass a resolution addressing:

a) The expected user revenues and assets of the District being absorbed and forms of compensation thereof to the District for loss of such assets.

b) The right of the District to maintain its service to the remainder of the District, including authority to cross City boundaries with its mains.

c) The reason why consolidation or merger with the City Water Department is unacceptable or unfeasible to both parties.

Sanitary Sewer Policies

Policy D-14: The City shall develop a capital improvements program (CIP) to implement this plan's strategies for public facilities and services and to ensure cost-effective provision of city services. There is a high priority for reconstruction and maintenance of deteriorating sanitary sewer lines and extending the lines eastward.

Policy D-15: Adequate manpower and services shall be maintained to give continued assurance that current NPDES (National Pollutant Discharge Elimination System) standards are met and that the ecological concerns are protected. Tillamook City shall monitor and charge on a quarterly basis the increasing loads on the sewer treatment plant as seen through future development. The City is committed to upgrade and expand the sewer collection and treatment facilities as needed to accommodate expected growth within the Urban Growth Boundary.

Policy D-16: Adequate public services and facilities should be provided, as economically as possible, in order to sustain and maintain a well-ordered community life, enhance the health, safety, educational and recreational aspects of urban living.

Policy D-17: Existing services and facilities should be upgraded to service the residential and economic needs of the area. This must be done in an orderly manner in conjunction with planning and citizen involvement processes as provided by this plan.

Policy D-18: The governing body shall allow connection to the City's sewer collection system only after annexation. Exception to this will be only on a case-by-case basis or when it is determined in the best interest of the City to contract the service following receipt of a consent to annex form from the affected property owner or it is the extension of urban services to the Port of Tillamook Bay or the Creamery in accord with Tillamook

County's Goal 11 and 14 exceptions contained in County OA-02-12B that permit urban services at the Port. Should sewer become available and within 200 feet of the connection point of any development within the City, hook-up to that line shall be mandatory. Should a financial burden, unforeseen hardship, or the configuration of certain property make such connection costly and difficult, the City Council may address alternative solutions on a case-by-case basis. Mention should be made that the Tillamook Care Center has received previous Council authorization to hook-up to the Sewer system when the Center feels it necessary and at their expense.

Policy D-19: Sanitary sewer services shall be provided following annexation. Sewer main extensions shall be accomplished in a logical **manner**, taking into consideration the following factors:

a) Housing and economic needs concerning property which requires sewer service.

b) Serving properties nearest to City limits first, taking into consideration geographic limitations and the availability of other public facilities.

c)A method of financing through an equitable manner those benefited properties.

Policy D-20: Septic systems are allowable within the Urban Growth Area.

Storm Sewer Policies

Policy D-21: The City shall cooperate with the County in addressing the problems of inadequate tide gates for drainage into the Trask River.

Policy D-22: The City shall continue to provide a public works program to keep catch basins and storm drain lines open. New developments, including improvement of substandard streets through a Local Improvement District are required to accommodate storm drainage. Consideration shall be taken of the Storm Drainage Master Plan and drainage in the Highway North 101 area. Local Improvement Districts should also be considered to improve and maintain rural storm ditches that carry City storm water to natural water systems.

Solid Waste Policies

Policy D-23: The City shall strengthen city ordinances that regulate the appearance of buildings and yards and solid waste accumulation, and seek the cooperation of Tillamook County regarding unsightly areas within and adjacent to the city limits.

Policy D-24: The City shall strengthen city ordinances that deal with garbage collection and curbside recycling and will continue to rely on solid waste collection within the Urban Growth Boundary to be handled by a private contractor with a franchise.

Policy D-25: The City shall strengthen city ordinances that deal with garbage disposal and will rely on the solid waste disposal needs being accommodated through

implementation of the County's solid waste program, and as required by the Department of Environmental Quality.

Transportation Policies:

Policy D-26: Tillamook shall take full advantage of its present investment in street improvements and also take actions to insure future developments are in the best interest of the local residents, which includes facilitating the flow of goods and services for the local economy.

Policy D-27: The City should pursue funds from the State for implementing transportation programs. Emphasis shall be placed on programs which minimize adverse social, economic and environmental impacts and costs, and enhancement of funded projects such as future phases of the Third Street conversion and augmentation of the Highway 101/OR 6 project.

Policy D-28: Carpooling for work trips is encouraged.

Policy D-29: All new commercial developments and all new residential developments larger than a duplex shall be located on fully improved streets.

Policy D-30: The streets in new subdivisions will be designed to improve traffic circulation in nearby existing subdivisions.

Policy D-31: Street grids shall be the preferred street pattern over isolated cul-de-sacs and the broader roads that connect them.

Policy D-32: New subdivisions shall provide sidewalks and are encouraged to provide bike paths.

Policy D-33: A pedestrian/bikeway shall be encouraged in the following locations:
1. Along Holden Creek and Twelfth Street.
2. Along the Trask River on the west.
3. Adjacent to Third Street from the Southern Pacific Railroad tracks from the Trask River Road.
4. Linking all park and recreation areas in the City to one another as a Pedestrian Loop System.

Policy D-34: Walking is encouraged by sidewalks with street trees, narrow roads that slow down traffic and most importantly, commercial and recreational areas are located a short walk from most residential areas. The City will encourage walking as a means of transportation by addressing the following:

- Connectivity. The City will work to develop a connected network of pedestrian facilities. Connected networks are important to provide continuity between communities and to improve safety.

- Safety. The City will work to provide a secure walking environment. For residents to use the pedestrian system, it must be perceived as safe.
- Design. The City can ensure pedestrian-oriented design by adopting policies and development standards that integrate pedestrian scale, facilities, access and circulation into the design of residential, commercial and industrial projects.

Policy D-35: Various state programs available for development of pedestrian and bike path systems will be pursued by the City. The Oregon Coast Bike Trail travels through Tillamook. The City shall coordinate with the Department of Transportation on the particular needs of bikers using that trail.

Policy D-36: The City recognizes the important of transportation systems in the City and encourages the continuation and, where appropriate, the expansion of the following networks in addition to streets and pedestrian/bikeway systems.

Railroads:	Port of Tillamook Bay
Barge:	At Garibaldi, 9 miles north
Motor Carriers:	One common carrier
Air:	Tillamook Municipal Airport
Intercity bus:	TCTD,
Local bus:	TCTD, Senior Citizen's Group
Taxi:	Tillamook Taxi (private company)

Policy D-37: Development and maintenance of public transportation is encouraged. Bus systems such as TCTD should be maintained for all age groups. The City shall support the provision of enhanced bus facilities that are in TCTD plan and pay particular attention to the transportation disadvantaged when developing alternatives to meet growing transportation needs.

Policy D-38: The City TSP shall be included in the City's Comprehensive Plan as Appendix XXI. The City Transportation Refinement Plan shall be included in the City Comprehensive Plan as Appendix XXII.

Policy D-39: The City of Tillamook shall protect the function of existing and planned roadways, railways, waterways and airways as identified in the TSP, and as a result the Rails and Trails feasibility study.

Policy D-40: The City of Tillamook shall include a consideration of land use impacts on existing or planned transportation facilities in all land use decisions.

Policy D-41: The City shall identify and support the transportation goals, objectives and implementing strategies listed in the City TSP.

Chapter 8: Recreation (State Goal 8)

Tillamook City's Urban Growth Boundary is surrounded by forest and dairy lands; estuarine and river areas, and rolling hills. This quality environment provides recreational uses, and other benefits to the Community, as well as, economic benefits.



Although Tillamook is a small community, it has an abundant amount of recreational opportunities. The park system of the City of Tillamook consists currently of a number of parks such as Carnahan Park, Dean Memorial Wayside Park, Lillian Goodspeed Park, Hoquarton Interpretive Park, Coatesville Ninth Street Park, Sue H. Elmore Park, and others, which are underutilized for a city of its size. Carnahan Park and Sue H. Elmore Park provide boat-launching areas to the Trask River and Hoquarton Slough respectively. Dean Memorial Wayside Park has a short walking path and a memorial plaque recognizing its dedication to the City. Lillian Goodspeed Park has large Elm trees and houses children's play equipment, a tennis court, a basketball court, and hosts community events, such as 'Art in the Park'. Hoquarton Interpretive Park has an interpretive walking trail. Coatesville Ninth Street Park has a large open field, a basketball court and tennis courts. The City parks are designated on the Land Use Map. Recreational activities in the area, such as baseball fields, football fields, soccer fields, track and other children's play equipment can also be found at the public schools and the Family YMCA. There is potential for additional open space to be acquired and recreational park land to be developed in the City's Flood Hazard Area through the FEMA property "buyout" process. Properties along North Main, acquired by the City from FEMA, also mentioned in Ch. 7, Natural Disasters and Hazards, are restricted from further development in the Flood Hazard Area, and have the opportunity to be utilized as recreational sites.



Besides the recreational and social activities at the parks, Tillamook hosts the Farmer's Market every Saturday during the summer, the annual June Dairy Parade and Rodeo, the Tillamook County Fair with the famous Pig'n Ford races, the Rose Planting Festival, Tillamook Moonlight Madness, Halloween Downtown, Festival of Trees and the Tree Lighting, all big events in the area.



Tillamook County Fairgrounds

The County Fairgrounds isn't only host to the annual Fair. Many other popular events that draw in a large number of visitors to the City occur at the Fairgrounds, including, the Home and Gardens Show, the Holiday Bazaar, the



Mayor's Ball, the Moograss-Bluegrass Festival, and many other events also occur on the Fairground's property. The Swiss Hall, another host to many community events, is also located on the Fairground's property.

Additionally, many recreational and scenic areas the City supports lie outside of the U.G.B, in all directions. In this plan, recreation areas also include schools, the YMCA, a library and a museum.

Schools



The City of Tillamook has a wide range of education options for all ages from grade school to community college. The Tillamook area is part of Tillamook School District #9. The District has approximately 1,647 students in the four Tillamook schools:

- 700 at Tillamook High School;
- 300 at Tillamook Junior High School;
- 327 at East Elementary School; and
- 320 at Liberty Elementary School;

The School District is responsible for conducting detailed planning for the schools and has a "Master Plan". The recommendations of the School District Master Plan relevant to the City Comprehensive Plan are as follows:

- Buildings should be designated for maximum community use.
- Site acquisitions are recommended as follows:
  a. Short range:
     Acquire houses and publisher land east of the High School;

     Establish road right-of-way on the west side of East School from Alder Lane to Twelfth Street;
     Use parcel of land west of Miller and Twelfth for trading for other properties.
  b. Long range:
     Acquire land in the Fairview area should housing development continue. The area being considered is in a three-quarter mile radius of the intersection of Trask River Road and Third Street.
- The Junior High School should be maintained and not expanded.
- In cooperation with the City of Tillamook, build a roadway along the west property line of the East School property between Alder and Twelfth Street (Marolf Loop). A right-of-way would have to be obtained for the southern 300 feet of this right-of-way.
  a. This would give faster, safer and more convenient access for 700 pupils and 50 staff of East and the Junior High to Twelfth Street.
  b. This would permit the development of presently unused portions of East School property for one of the following:
     An athletic field for use of Junior High, High School, East School, and the community;
     Additional school buildings as needed;
     A swimming pool - conveniently located for the three largest schools in the district;
     Vocational facilities for the High School;
     An administrative building. This central location would save many dollars in mileage expense.

Each of the elementary schools have playground equipment used by all the students. The Junior High School has large playing fields. The High School also has a large playing field, track and a seating area for organized sports.

A Tillamook Option Program provides programs for students in grades 7 –12.



The Tillamook Bay Community College (TBCC) Main Campus is located in the City. Established in 1984, TBCC has grown from 19 students and 2 full-time instructors in one building to between 300 and 400 students countywide and a new Main Campus that opened in 2010. In 1993, TBCC's Planning Team completed the first college-wide Strategic Plan. TBCC offers a Small Business Center, an Electronics Technology program, a Nursing program, an Internet and a Pathways program to allow high school students to earn concurrent high school and college credits. An Associate's Degree in Arts, Sciences, General Studies and Applied Sciences can be obtained at the College.

An Oregon State University (OSU) Extensions Office is located in the City. It provides information to the community regarding agriculture, dairy, forestry, 4-H, family and community development, marine science, and watershed management.

Library



The Tillamook Public Library began with a few books from the State Library and 60 volumes donated by the public. In 1924, a County Library was formed, and the Tillamook Public Library became one of its branches.

The Tillamook County Public Library building located at 1716 Third Street was constructed in 2006. Today, the Library has a wide selection of books and periodicals. It also has conference rooms and a large number of computers with high speed Internet access for general use.

Museum



Tillamook County's rich history is preserved for all to enjoy at the Tillamook County Pioneer Museum. The Museum includes 35,000 items plus an additional 10,000 photographs ranging from prehistoric specimens to modern day.

Additional areas used for recreational purposes in the City are identified in the City Parks and Recreation Master Plan.

Planning for Parks and Recreation Is Important

The Tillamook Parks and Recreation Master Plan is intended to guide development of the City parks system and recreational needs, and future decisions and activities about how the City will acquire, develop, operate and maintain land, facilities and programs for

parks and recreation over a 10-year period. This Parks and Recreation Master Plan is a long-term vision and plan of action for Tillamook's park system and recreational needs. Currently, Tillamook has a number of park facilities, and public school playgrounds, a couple regional recreation facilities, designated bicycle routes, boat launches, a few undeveloped open space properties, a large number of natural areas, and other areas such as the 101 South Gateway, the IOOF Cemetery, the Tillamook County Fairgrounds and the Tillamook County Family YMCA. This Plan identifies strategies and techniques for the operation and development of parks, land acquisition, and funding. Through this plan, the City of Tillamook intends to continue improving the level and quality of its parks and recreation needs to meet the needs of current and future residents.

Planning for parks and recreation ensures the City can recognize and meet the changing park and recreation needs of the community by identifying potential areas for future parkland and open space, possible recreational activities, and suggesting methods for securing and funding these areas and activities. Parks and recreation planning works with the community to determine the best way to plan for the future development of the parks and recreation in the City.

Parks and recreation areas encourage passive and active recreational activities and preserve open space, wildlife habitat, and historical and cultural resources. Parks serve aesthetic purposes and create gathering spaces for public activities and events. Parks and recreation areas also provide a number of health and psychological benefits to residents of a community.



Parks are spaces where people can participate in active, outdoor, recreational pursuits, which encourage increased movement and can help reduce the risks of weight-related health problems. The trees and plants in the park help clean the air and soil of environmental contaminants, decreasing potential harm to residents. A well-designed park encourages people to leave the solitude of their homes and make more social connections. Parks provide opportunities for residents of different generations and social classes to mix, strengthening community bonds. Preservation of open space has been shown to enhance a community's livability and character.

Parks can also improve property values. Studies have shown that there is a statistically significant link between location of parks and property values. In summary, parks provide a broad range of community benefits.

To satisfy park and recreational needs and demands, with input from residents, City employees and other stakeholders, the City will need to implement the following:

Goal, Objectives, Policies, and Implementing Procedures for Recreation

Objectives for Recreation: To encourage the growth of and maximization of the use of all recreational activities provided in the parks, recreational facilities and open space, within the Tillamook UGB.

- Provide, develop, and maintain quality park and recreation areas and special use areas that are readily accessible to visitors and residents throughout the City and within its existing service area over the next ten years;
- Create additional playing fields and/or replace existing fields to prolong their life and expand their capacity, and provide quality sports and recreation facilities and programs for City residents of all ages, cultural backgrounds, abilities and income levels;
- Create a strong connection of trails segments throughout the City, and develop and maintain a core and an interconnected system of trails, to provide a variety of recreational opportunities, such as walking, bicycling and jogging;
- Create/enhance public spaces to learn and play, to create and imagine, promote health and wellness, and increase cultural awareness;
- Effectively communicate information about City goals, policies, programs and facilities among City residents, City staff, City advisory committees, City Council, Planning Commission, City Urban Renewal Agency, partnering agencies and other groups;
- Protect environmental resources, by acquiring, conserving and enhancing natural areas and open spaces within the City;
- Operate and maintain parks in an efficient, safe and cost-effective manner by incorporating principles of environmental and financial sustainability into the design, operation, improvement, maintenance and funding of City programs and facilities.

The City Parks and Recreation Master Plan further describes the recreational needs of the City.

School Policies

Policy D-42: The City will coordinate with School District #9 in implementing its plan for school facilities, will consider an amendment to the City TSP for the additional Junior High Right-of-Way, and foster improved educational facilities.

Policy D-43: The City will become a community that supports education and will develop community connections/promote community service interaction and involvement in schools through coordination with the School District.

Policy D-44: The City shall enhance the living environment of the community for and through education, encouraging an educational understanding and appreciation of the natural environment, and provide an environment for innovation and intellectual pursuits.

Policy D-45: The City will foster a collaborative effort in the educational community, and foster life-long learning to acquire knowledge and life-skills to effectively participate in the workforce, community and society at large through all the levels of education.

Policy D-46: The City shall make the community a living classroom by encouraging school-to-work opportunities for our students, and provide leadership in the economic, cultural and intellectual evolution of our community through education.

Policy D-47: The City shall ensure that school facility planning is incorporated in land use planning in coordination with the School District.

Policy D-48: The City shall foster educational and cultural diversity, focusing on statewide educational goals, knowledge and information to shape a changing society, and educating people for anticipated jobs.

Policy D-49: The City will encourage activity-involved schools, and special events, which include school, church and cultural programs.

Policies for Recreation

Policy D-50: The City shall conserve open space and protect natural and scenic resources for recreational facilities. Efforts must be taken to maintain and preserve the existing and future environment in and around the community.

Policy D-51: Recreational facilities shall be provided to serve both the Tillamook Community and those who visit the area. Existing parks should be upgraded and development of neighborhood parks is encouraged.

Policy D-52: The City shall encourage the promotion of the Tillamook June Dairy Parade and Rodeo, the County Fair and other annual events.

Policy D-53: The park and recreation areas in the City shall be developed to accommodate the growing need for recreational areas in natural settings, and shall be identified on the Comprehensive Plan Map.

Policy D-54: The City shall continue to monitor the long-term recreational needs of the people of Tillamook and the need to maximize use of all public recreational facilities.

Policy D-55: Use of the Oregon Coast bicycling trail as shown on the Transportation System Plan Pedestrian Bicycle Map is encouraged.

Policy D-56: The Oregon Coast hiking trailis recognized as a regional recreational facility. Its extension southward is encouraged by the City, along with the Rails and Trails program.

Policy D-57: The City shall continue to explore the feasibility of waterfront parks along the Hoquarton, the abandoned railroad right-of-way and extending the park trails.

Policy D-58: Tillamook City shall cooperate with appropriate agencies in maintaining its recreational vitality.

Policy D-59: Inventory data of all recreation areas within the City limits and Urban Growth Boundary shall be reviewed and where necessary supplemented. This recreation inventory shall provide the basis for a City recreation plan, which will detail the recreation needs and desires of residents, and the design of each park.

Policy D-60: The City of Tillamook Park and Recreation Master Plan shall be coordinated with the Tillamook County Plan to provide overall analysis and coordinated effort for recreation facilities within the U.G.B.

Policy D-61: The City shall develop and maintain a Park and Recreation Master Plan in the City that will describe the maintenance and use of each of the parks and properties in the City designated as open space.

SECTION E:
MANAGING URBAN GROWTH



Chapter 9: Population

Background, History

The City of Tillamook, the county seat, is a service and governmental center surrounded by agricultural land.

The historical trend of populations within Tillamook County and all incorporated cities within the County is shown on Table 9-1. Figures have been tabulated from available information over a 90 year time period. The table shows that Tillamook County has a steady growth rate until the 1960's. At that time, the southern part of the County lost population due mainly to the closing of some major lumber mills and the consolidation of the dairy industry.

The City of Tillamook's population grew by a large percent between 1920 and 1930 (approximately 30%) then again in the **1940**'s and **1950**'s (respectively 25% and 13%), stimulated by the annexations before and in 1956 in the area, which provided more housing and land available for development in the City. In much the same way, the growth and decline of the local mills affected some growth in Tillamook during the late 1960's (a loss of approximately 7%). Since that time, the number of people living in Tillamook has changed little from one year to the next until the annexations at the turn of the millenium.

TABLE 9-1: TILLAMOOK COUNTY/CITIES HISTORICAL POPULATION TRENDS

	1920	1930	1940	1950	1960	1970	1980	1990	2000	2001	2005	2010
Tillamook County	8,810	11,824	12,263	18,606	18,955	18,034	21,164	21,570	24,262	24,600	25,205	25,260
Bay City	511	427	379	761	996	898	986	1,027	1,149	-	-	1,290
Garibaldi City	-	-	-	1,249	1,163	1,083	999	886	990	-	-	780
Manzanita City	-	-	-	339	363	261	443	513	564	-	-	600
Nehalem City	192	245	247	270	233	241	280	230	203	-	-	270
Rockaway City	-	-	-	1,100	770	665	906	970	1,267	-	-	1,315
Tillamook City	**1,964**	**2,549**	**2,751**	**3,685**	**4,244**	**3,968**	**3,981**	**4,006**	**4,352**	**4,340**	**4,300**	**4,920**
Wheeler City	-	280	259	291	237	262	319	335	391	-	-	415

Source: Tillamook County, City of Tillamook Administration

From 1970 to 2010, Table 9-1 reflects positive growth in a majority of areas of the County. The City of Tillamook's population reflects one of the two smallest increases of all incorporated cities during the period between 1990 and 2000. The last major city annexation of the 20th century in the City of Tillamook, which provided increased housing opportunities, was, as mentioned earlier, in 1956. Yet, the City has still not utilized all of its developable space for housing since then, having to date approximately 12% of such land area in the City Limits remaining vacant.

It should be noted from Table 9-1 that the populations of four cities are growing as fast or faster than the County at or above 12% from 1990-2000. This is not true for the City of Tillamook. The growth rate for the City between 1990-2000 was approximately 8.6%. It should also be noted that as the 21st century begins, between 2000 and 2005, the population of Tillamook decreased 0.27%, as the County population increased by 1.4%, but then increased with the reflected growth through 2010 with annexations (these annexation dates are identified in Table 9-3).

Table 9-2, below, shows long-term changes in population for Tillamook and Tillamook County. The population data comes from the federal census.

Table 9-2: Past Population Growth in the City of Tillamook and Tillamook County

Place \ Year	1950	1960	1970	1980	1990	2000	2010
TILLAMOOK	**3,685**	**4,244**	**3,968**	**3,981**	**4,006**	**4,352**	**4,920**
Gain or loss	934	559	-276	13	25	346	568
Percent change	25 %	15 %	-6 %	0.3 %	0.6 %	8 %	13 %
Tillamook as percent of county population	**20 %**	**22 %**	**22 %**	**19 %**	**18 %**	**18 %**	**19 %**
Bay City	761	996	898	986	1,027	1,149	1,290
Garibaldi	1,249	1,163	1,083	999	886	759	780
Manzanita	339	363	261	443	513	564	600
Rockaway Beach	1,100	770	665	906	970	1,267	1,315
Unincorporated Areas	11,472	11,419	11,159	13,849	14,168	15,940	16,355
Tillamook County	18,606	18,955	18,034	21,164	21,570	24,262	25,260

As can be seen in Table 9-2, each city appears to have different growth trends. Those closest in proximity to Tillamook, such as Bay City, tend to follow a population growth trend similar to Tillamook's. The table above reflects positive growth in most areas of the County, including the City of Tillamook, with the exception of the City of Garibaldi.

The following table (Table 9-3) shows the City of Tillamook's population year by year, for the past 30 years, from 1980 through 2010. These are estimates, not actual counts, of the city's population on July 1 of each year. Estimates for 1980, 1990, 2000 and 2010 are based on the federal census. The data in this table comes from the state's Center for Population Research and Census (CPRC), the state agency responsible for maintaining official estimates of city and county populations throughout Oregon.

Table 9-3: City of Tillamook's Population, 1980-2010

Estimated Population on July 1 (Center for Population Research and Census)		
***2010**	4,920 Based on Federal Census	**+ 210**
2009	4,710	**+ 10**
2008	4,700	**+ 10**
2007	4,690	**+ 15**
***2006**	4,675	**+375**

2005	4,300	**- 50**
2004	4,350	**0**
2003	4,350	**+ 10**
2002	4,340	**0**
2001	4,340	**- 12**
2000	4,352 Based on Federal Census	**+ 82**
1999	4,270	**- 40**
1998	4,310	**- 30**
1997	4,340	**+ 65**
1996	4,275	**+ 30**
***1995**	4,245	**+ 55**
1994	4,190	**0**
1993	4,190	**+ 61**
1992	4,129	**+ 61**
1991	4,068	**+ 62**
***1990**	4,006 Based on Federal Census	**+ 3**
1989	4,003	**+ 2**
***1988**	4,001	**+ 3**
1987	3,998	**+ 2**
1986	3,996	**+ 3**
1985	3,993	**+ 2**
1984	3,991	**+ 3**
***1983**	3,988	**+ 2**
***1982**	**3,986**	**+ 3**
1981	**3,983**	**+ 2**
***1980**	3,981 Based on Federal Census	

* = annexation of land to the City.

Tillamook's average growth rate during the 30 years from 1980 to 2010 was about one percent per year. That statistic suggests slow steady growth over three decades. Tillamook's population was mostly static until the 1990's, and again after annexation in 2006 and 2010. The population jumped from 4,006 in 1990 to 4,352 in the year 2000, a more gradual rate than earlier of about 1% per year, and to 4,920 in the year 2010, still about a 1% per year increase. These greater increases are mainly due to annexations. Table 9-3 shows us that at the times of the later annexations to the City (1990, 1995, 2006, and 2010) there are the larger increases in the City population.

Tillamook County's Population Forecasting, Projections and Coordination

State law (ORS 195.025 and 195.036) calls for each county to coordinate the population forecasts used by the cities within its jurisdiction. The idea is to have individual city population forecasts be consistent with the overall population forecast for the county.

The county's forecasts are based on information from two sources:

1. Projections done by the state Office of Economic Analysis (OEA). OEA's demographers develop their projections using federal and state demographic and economic data, as well as information from local officials. OEA does not project population growth for individual cities.
2. Estimates acknowledged by the state's Department of Land Conservation and Development.

The City's population projections are also based on an analysis of historical population factors coupled with past trends of economic vitality and housing availability. Changes in life expectancy, the rate of birth and the rate at which population is moving into or out of the area must also be considered.

TABLE 9-4: TILLAMOOK UGB AREA POPULATION PROJECTIONS

	High Projection*	Low Projection*	1.5%	1.0%	0.5%	-0.25%
2005	4,918	4,689	4,678	4,569	4,460	4,298
2010	5,180	4,940	5,029	4,797	4,571	4,244
2015	5,461	5,207	5,406	5,037	4,685	4,190
2020	5,757	5,490	5,811	5,289	4,802	4,137
2025	6,041	5,760	6,247	5,553	4,922	4,085
2030	6,332	6,038	6,715	5,830	5,045	4,033
2035	6,625	6,317	7,219	6,121	5,171	3,982
2040	6,915	6,594	7,760	6,427	5,300	3,932

* - Based on Tillamook County City Projections as percentage of County Projections (Table 2)

As shown in Table 9-4, the High and Low Projections for the City's population are based on Tillamook County's population projections, and are a percentage of the County's population and projected population growth. The county and all of the cities within it, including the City of Tillamook, agreed on population forecasts for the year 2040. This number is the starting point for this plan's forecast of Tillamook's future population growth. For Tillamook, this agreed-upon number is 4,352 people based on the Federal census, in the year 2000. In the past, the County population growth projections have appeared to be quite high since there has not been as large an amount of growth in the City of Tillamook as was predicted originally in 1980. The three columns following High and Low Projections in Table 9-4 (1.5%, 1.0%, 0.5%) present more modest growth projections based on the historic trends identified earlier. The final column presents a negative growth rate to reflect a gradual loss of population similar to what occurred between 2000 and 2005, the first years of the 21st century, and in the last years of the 20th century. All of these growth projections must be taken into account for a clear perspective on the growth or decline of the City's population.

Another consideration in determining population is to predict the economic stability of the Tillamook area based upon past trends. Table 9-5 shows building activities have been

fairly stable over the past thirteen (13) years between 1996 and 2008. There have been very minor fluctuations as shown in Table 9-5. The construction costs continue to fluctuate greatly on a year-by-year basis, with no comparable reference to the number of permits issued. Additionally, the table does not differentiate between new construction and repair/renovation/remodel projects.

TABLE 9-5: CITY BUILDING PERMITS

Year	No. Permits	Commercial	Residential
1996	106	$1,051,681	$1,508,166
1997	87	$8,757,185	$1,289,890
1998	87	$2,953,602	$1,793,575
1999	78	$1,624,956	$2,481,900
2000	98	$ 468,110	$ 509,468
2001	92	$1,484,393	$4,953,904
2002	87	$2,298,095	$ 916,590
2003	89	$8,757,185	$1,289,890
2004	92	$2,953,602	$1,793,575
2005	77	$1,624,956	$2,481,900
2006	105	$ 468,110	$ 509,468
2007	105	$1,484,393	$4,953,904
2008	99	$2,298,095	$ 916,590
2009	74	$5,195,921	$1,463,515
2010	68	$1,827,253	$1,057,399
AVERAGE	90	$2,883167	$1,861,982

New single-family residential construction is another way to determine population predictions based upon trends. Table 9-6 shows the number of new single-family residential dwelling construction between 2000 and 2010, for the City.

TABLE 9-6: SINGLE FAMILY DWELLING PERMITS ISSUED

Jurisdiction	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Uninc. Tillamook County				145	202	214	244				
Manzanita				27	27	38	24				
Nehalem				1	0	8	0				
Wheeler				1	4	3	0				
Rockaway Beach				17	38	56	192				
Garibaldi				0	1	3	6				
Bay City				3	6	8	6				
Tillamook	**3**	**7**	**2**	**5**	**1**	**7**	**10**	**11**	**7**	**10**	**8**
Uninc. Lincoln County				152	149	180	90				
Depoe Bay				12	23	24	30				
Waldport				9	10	10	6				

Sources: US Census Bureau, http://censtats.census.gov/ Exc Unincorporated Tillamook County, provided by County

A larger amount of single-family residential dwelling construction occurred from 2006 to 2010 than in other years. It should be noted that this increase occurred immediately after the annexation in 2005. The relationship of single-family residential growth to the unincorporated County, other incorporated cities in the County, unincorporated Lincoln County, and a couple of incorporated cities in Lincoln County can also be seen in the table between 2003 and 2006, to compare Tillamook's residential development with other coastal community's residential development.

Another factor to examine in predicting population is Tillamook's current supply of housing and vacancy rates. The vacancy rate in the City has gradually been increasing since 1980. This will be discussed further in Chapter 11.

Demographics of Tillamook's Population

Appendix XXIX characterizes the demographic make-up of the population of the City of Tillamook as of the year 2000 and reflects it with the demographic identified in 2010. With these numbers it can be easier to predict the future projected growth of the City.

In the 2000 demographics, the largest age group included approximately 15 percent of the population of the City between the ages of 35 and 44. In 2010 the largest group was approximately 15% between the ages of 20 and 29. In 2000 the home-owner vacancy rate was 2.5% while the rental vacancy rate is 7.7%. That means that there were about 47 vacant houses in the City and 146 rentals were unoccupied ten years ago. In 2010, according to the 2010 Census, the housing unit vacancy rate increased to 9.4%. That means that now there are a total of about 211 vacant homes in the City – an increase of about 10%. The vacancy rate in the City has gradually been increasing since 1980 even with the most recent annexations. There's about a 50/50 split between owner-occupied and renter-occupied households.

Forecasting Tillamook's Population Growth

Tillamook needs to look at least 20 years ahead to adequately plan for matters such as public facilities and services and buildable land for development and to satisfy state law. This plan is using a target year of 2030.

To forecast city populations, the county analyzed each city's current population as a fraction of the county's total and used that as the main factor for forecasting future population growth. The historical data in Table 9-1 above show Tillamook's portion of the county's total population during the past half century held fairly constant, within a range of 22 percent to 18 percent. Census data for the years 2000 and 2010 probably provide the most accurate and recent data: they show Tillamook's population of 4,352 people in 2000 to be 18 percent of Tillamook County's total population of 24,262, and the population of 4,920 people in 2010 still to be 19 percent of the County's total population of 25,260, respectively. Tillamook County's forecasts for the year 2015 put Tillamook's share of the total at 20 percent.

A comparison of Tillamook's population in 2000 (4,352 people) and 2010 (4,920 people) with the County's adopted forecast for Tillamook of 5,207 people in the year 2015 indicates an average annual growth rate of approximately 1.3 percent. A population forecast of 6,038 people by the year 2030, indicates a more gradual annual growth rate. This long-term average is consistent with Tillamook's growth during the past half century and with the county's coordinated forecasts. The same percentage can be used here to forecast Tillamook's growth until the year 2030.

In 1982, the City estimated a population of 6,575 by the year 2000, and in 1998 the Vision Committee, involved in the Vision process, envisioned a community of 6,000 to 8,000 people by the year 2020. The first estimation was never reached, and the highest projections in Table 9-4 show Tillamook's population to be just under 6,000, but on average to just over 5,000 by the year 2020 could potentially be attained. The question is when. When will the City's population reach this size? And secondly, can a population of this size be maintained?

There is little hard evidence on which to base a forecast for the period from 2015 to 2030. The main source of information here is the long-term forecast for county population done by the state's Office of Economic Analysis in 2002. This forecast is shown in Table 9-7 below. The forecast for Tillamook County shows a gradually slowing of growth rates during the next decades, with annual increases of 0.5 to 0.6 percent during the period from 2015 to 2030.

In the absence of evidence to the contrary, it seems likely that Tillamook's population growth will mirror the County's projections. Therefore an average annual rate of 0.9 percent growth in Tillamook's population is projected for that same time period.

Tillamook's population as a share of the county total is projected to decrease slightly from 18 percent of the county's total to approximately 17 percent of the county's total.

Together, the data and assumptions described above result in the following forecast identified in Table 9-7 for Tillamook's population growth to the year 2030. The populations forecast in Table 9-7 are the basis for calculations of Tillamook's need for vacant, buildable residential, commercial, and industrial lands.

Table 9-7: Future Population Growth in Tillamook

Variable \ Year	2000	2005	2010	2015	2020	2025	2030
Tillamook City's Total Population Projection	**4,352**	**4,689**	**4,940**	**5,207**	**5,490**	**5,760**	**6,038**
Average annual growth rate	0.5% (from 1995)	1.5 %	1.1 %	1.1 %	1.0 %	0.7%	0.7%
5-year population increase	107 (from 1995	337	251	267	283	270	278
5-year percentage increase	2.5% (from 1995	7.7 %	5.3 %	5.4 %	5.4%	4.9%	4.8%
Tillamook as percent of county	17.9 %	17.9%	17.9%	17.9 %	17.9%	17.9%	17.1%
Tillamook County	24,262	26,143	27,538	29,030	30,604	32,114	33,663

Tillamook's need and the provision of an appropriate level of police protection, fire protection, recreational facilities, energy and communication services and community and governmental services, must be monitored by the City proactively to support a growing population.

Chapter 10: Past, Existing and Future Land Use (State Goal 2)

History of Land Use in the City of Tillamook

In 1861 Thomas Stillwell, aged 70, arrived with his family from Yamhill and purchased land. The following year he laid out the town that would become Tillamook and opened the first store. In 1866 the first post office was opened and the town was permanently renamed Tillamook. An election in 1873 chose Tillamook as the county seat.

Land use in the City of Tillamook has evolved with the development of different modes of transportation. During the late nineteenth century and early twentieth century, business in Tillamook was carried out along streets abutting Hoquarton Slough (Front Street), where boats carrying supplies could land to load and unload cargo. The lumber mills also ran alongside the slough. Sparse urban development extended south to about Sixth Street. The Highway 101 Bridge crossing the slough was built in 1931 by the Clackamas Construction Company.

By the mid-twentieth century, Hoquarton Slough, the existing lumber mill, and the Trask River generally defined the City's limits to the north, east and west respectively.

At the time of the development of the first City Comprehensive Plan in the early 1980's, Hoquarton Slough was quickly replaced with Wilson River determining the northern boundary. In general, State Highway 6 helped determine where the northern border and Urban Growth Boundary was located on that part of town east of US Highway 101. The Trask River continued to define the City limits on the west side, and Marolf Loop Road on the east side.

Further adjustments were made to the shape of the City by the late twentieth century. Property along U.S. Highway 101 north to the Wilson River was annexed into the City, **and a**reas of farmland once in the City Limits were withdrawn from the City at the time of the last Periodic Review (2003). Map 7, as presented below, shows the City's development.

EXISTING LAND USE

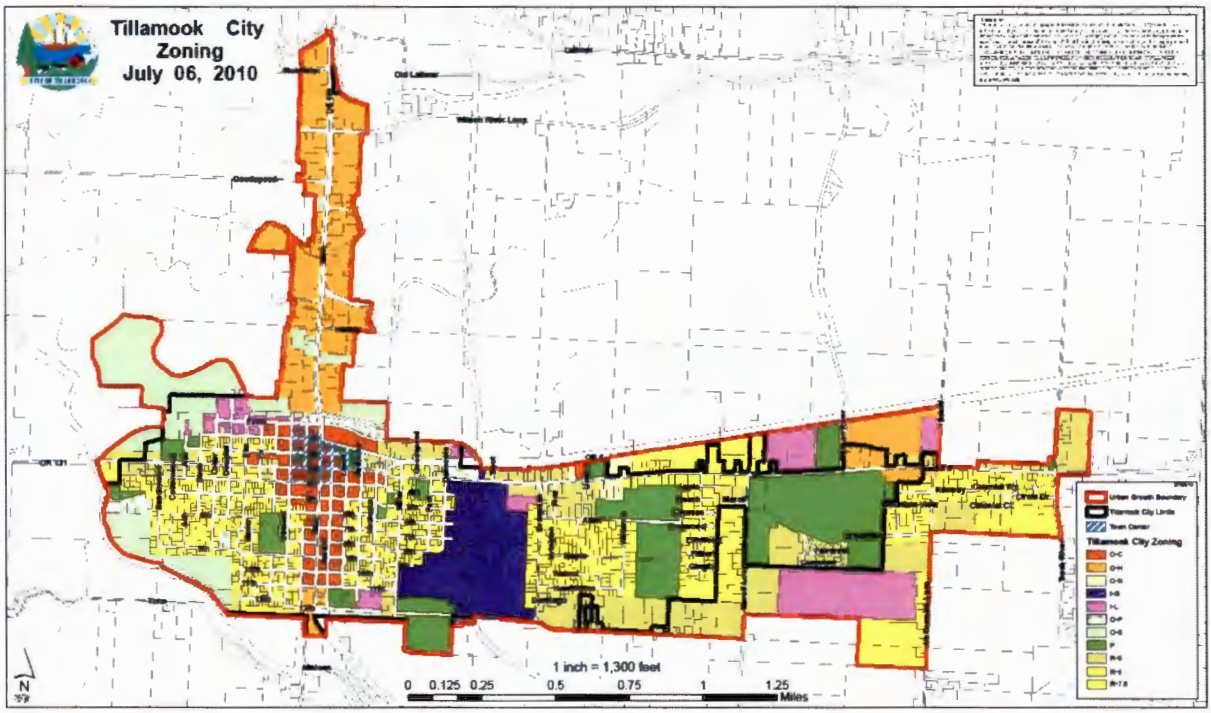
One of the most important pieces in planning for future land use is identifying the amount, type, and location of existing land use. The location of existing residential (both single-family and multiple-family), commercial, industrial, public/semi-public, and open space areas provides a basis for understanding present conditions and for making projections for future land use patterns. The Comprehensive Plan Map and Zoning Map for the City of Tillamook reflect zonation and planned land uses within the City's Urban Growth Boundary as of 2008. The Existing Land Use Map reflects the uses, both conforming and non-conforming, in the City. In this chapter, each land use (residential,

commercial, industrial, public, semi-public, open space, and the overlay zones will be discussed with a description of their locations and the goals, objectives and policies for the different uses at the end of the chapter.

In Chapter 16, Maps, the following land use maps are presented:

Map 1: The Comprehensive Plan and Zoning Map
Map 2: Existing Land Use (which includes Non-Conforming Uses) Map
Map 3: The Vacant and Re-developable Lands (Potential Development) Map
Map 4: Significant Wetlands/Flood Hazard Overlay Map
Map 5: Sanitary Sewer Map

Each of these maps will be utilized for reference purposes throughout the Comprehensive Plan text. The acreage distribution of existing land use and zoned land use within the City of Tillamook is also indicated in Appendix VI.



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Land Use Designated Areas

The City of Tillamook Comprehensive Plan and Zoning Map **(shown above)** shows the zoning designations for land in the City of Tillamook. These land use and zone designations include the following:

Open Space,
Residential - Single Family,
Residential - Single Family & Duplex,
Residential - Multiple-Use,
Public & Semi-Public,
Commercial - Neighborhood,
Commercial - Highway,
Commercial - Central,
Industrial - Light,
Industrial – General.

The location and boundaries of each of the areas designated for each land use are described on the approved and State acknowledged City Comprehensive Plan and Zoning Map and further in Appendix V. The Land Use Policies also describe the purpose of each zone designation listed above.

The community's physical development centers on the Land Use and Zoning Map. The Map is a graphic portrayal of how land use in and around Tillamook will look as the goals, policies and recommendations of the Comprehensive Plan are implemented. All the details of the plan are not directly shown on the Land Use Map, but the essential concepts - from agricultural preservation to commercial development - do appear. The map is thus an important recommendation in its own right and a summation of the comprehensive planning process.

Residential Land

Residential uses include lands used for single-family, duplex and multi-family development. There are essentially two levels of residential development: lower-density single-family and duplex residential development and medium-density multi-family and multiple use residential development. Secondary residential development is also allowed in each of the commercial areas.

Most land currently in, and designated for, residential use is south of First Street, surrounding the downtown area and extending from downtown west to the Trask River, from downtown east to the mill. Additionally, the residential land extends east of the mill to surround the elementary and middle schools and farther east to the County Fairgrounds. Land extending east of the Fairgrounds to the Urban Growth Boundary is also designated and used for residential purposes. These portions of land are made up of a majority of low-density single-family residential units.

The small areas of land made up of higher density multiple family residential units are scattered throughout the City and not concentrated around the downtown. These areas are further described in Appendix V and on the Comprehensive Plan Map. These lands are designated for higher-density residential uses but also contain a large number of single-family residential dwellings. These areas are also conditionally available for small-scale commercial development. This is discussed further below under Mixed-Use Office.

Most of the vacant and not fully developed land zoned for residential uses lies east and south of the County Fairgrounds and north of Twelfth Street between Evergreen Drive and Marolf Loop Road.

Commercial Land

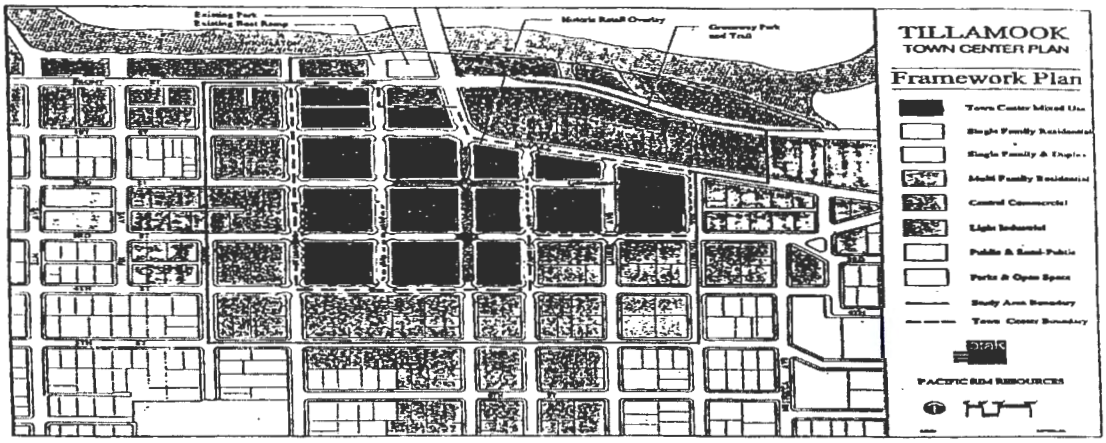
There are essentially three levels designated for commercial uses and development: lower-density commercial lands used for small business and service development convenient to nearby residents, medium density commercial lands providing for those

commercial uses appropriate to major thoroughfare or highway locations dependent upon thoroughfare travel which additionally require large land areas, and last, high-density commercial lands intending to serve as the central trading areas for the City, and to create a pedestrian oriented, mixed-use downtown core development. As was mentioned before, secondary residential development is allowed in each of the commercial areas. These three levels are also known respectively as the low-density Neighborhood Commercial lands, the medium-density Highway Commercial lands, and the high-density Central Commercial lands.

These land currently in commercial use and designated for each type of density are again further described in Appendix V. Commercial land is categorized by the designation of downtown, highway-oriented, and neighborhood uses.

Town Center and Downtown Commercial:

The downtown area of Tillamook exhibits strength and vitality. Retail, professional and service needs are provided to residents of the Tillamook urbanized area as well as a large part of the county's population. In this core area of town, there is a large amount of already developed land for small store establishments. This space could be occupied by small retail and offices. Currently second stories are not being used to their full potential primarily due to building code and occupancy requirements. A vital downtown is an asset to the community that should be maintained and reinforced through City policies.



Land Use in the Town Center includes the following:

1. Mixed use developments, a broader range of housing types, and more intense residential and non-residential developments are permitted and encouraged within the Town Center Plan boundary.

2. New open space in the form of a greenway park extending from the Port of Tillamook Bay Railroad Right-Of-Way to the Hoquarton, consistent with the

Tillamook Town Center Plan, implemented on a phased basis to provide a connected open space network.

3. The new Town Center Overlay District replaces the Central Commercial District for the area identified in the Town Center Plan and includes the following:

   a. Development and design standards for buildings, streets and public spaces oriented toward the pedestrian while not excluding the automobile;

   b. Concentration of housing and/or jobs to encourage users to live and work near and in the Town Center district;

   c. Provision for public amenities including parks, plazas and other facilities to support the higher densities and mixed use developments; and

   d. Reduced off-street parking requirements within portions of the Town Center area.

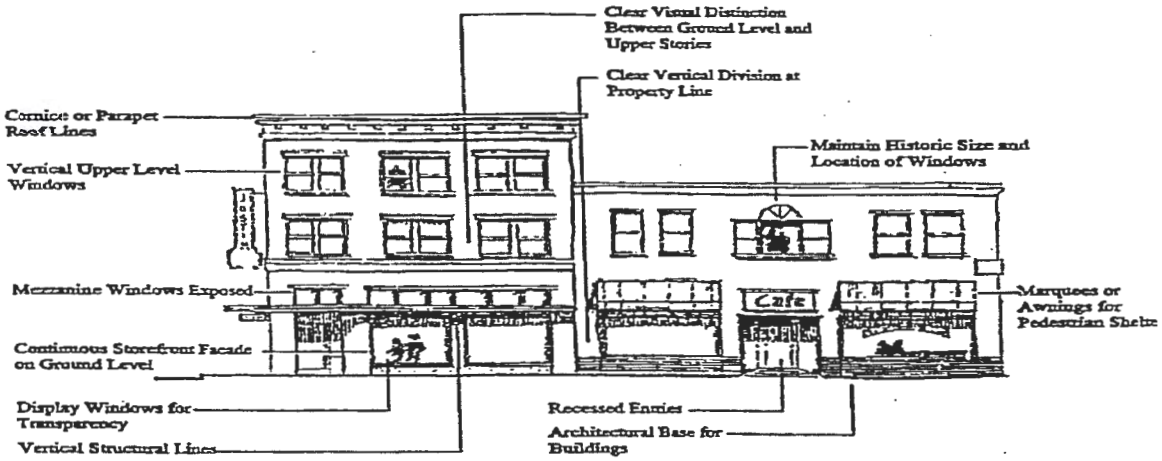
4. The government center will be the location for civic uses and will be supported by a town square and other outdoor public spaces.

5. A Historic Retail Overlay consistent with the Town Center Plan exists on Main Avenue. In the Historic Retail Overlay ground floor spaces facing the street are limited to retail and service use in order to encourage pedestrian activity and retail vitality.

Urban Design in the Town Center should include the following:

1. A consistent design for streetscape improvements within the public-right-of way established in the Town Center Plan area. Guidelines consider sidewalks, street furniture (benches, drinking fountains, trash cans), sculptures, murals and street lighting.

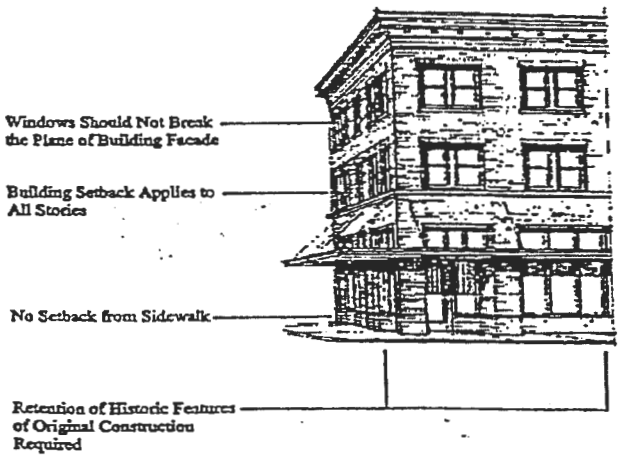
2. Streetscapes in the Town Center Plan area promoting a strong building and pedestrian oriented environment. Pedestrian oriented environments include: minimal setbacks, architectural guidelines, uses such as sidewalk cafes and flower vendors, new buildings oriented to the public streets, etc.



Tillamook Town Center District
Historic Architectural Guidelines

Historic Considerations in the Town Center:

Over the past two decades, the architectural continuity has been compromised as a result of covering facades with non-historic materials, removal of traditional signs and marquees and in some cases, demolition of older buildings to make way for contemporary buildings lacking the pedestrian friendly qualities of traditional main street building types. To reverse this trend and revitalize the appearance of the Town Center, implementing design guidelines and standards that provide a framework for design review is necessary.



1. Historic design guidelines include the following:

    a. New construction fronting streets in keeping with the original architectural character, color, mass, scale and materials of the neighboring buildings.

b. Additions to existing buildings in keeping with original architectural character, color, mass, scale and materials. Wherever possible, new additions or alterations to existing buildings done in such a manner that if they were to be removed in the future, the essential form and integrity of the original building would not be impaired.

c. New construction fill in gaps in the urban fabric; adjacent to the sidewalk or vertical edge, reinforcing the enclosure of the street.

d. Existing additions to historic buildings evaluated for their compatibility with the historic building and their contribution to the character of the overlay area.

e. Every reasonable effort made to provide a compatible use for existing buildings in the overlay area that will require minimum alteration to the building and its environment.

f. Rehabilitation work not destroying the distinguishing qualities or character of the property and its environment; and deteriorated historical architectural repaired rather than replaced whenever possible.

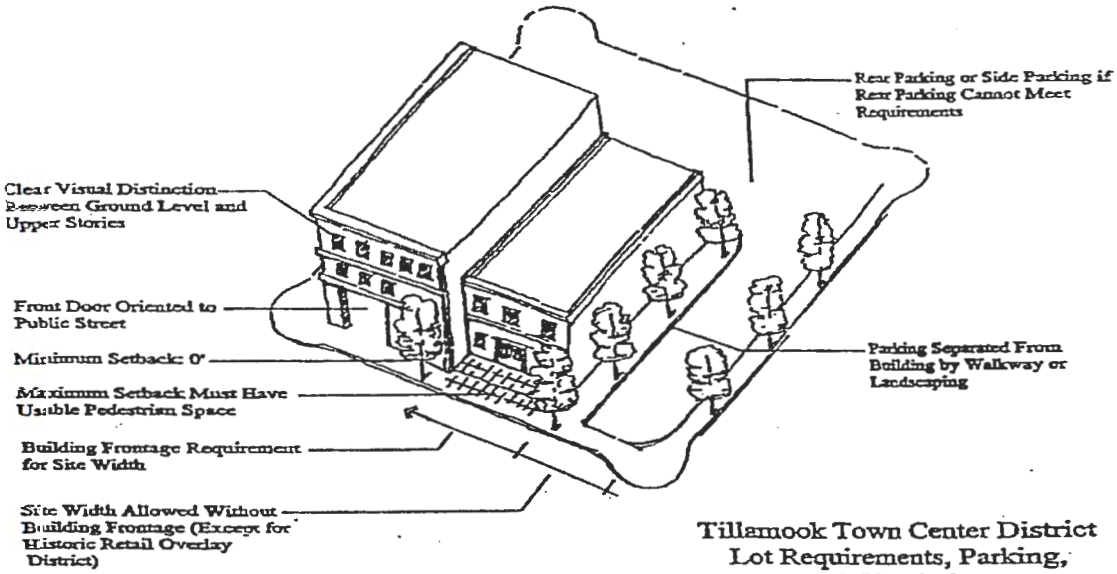
g. Distinctive stylistic features or examples of skilled craftsmanship, which characterize older structures and often predate the mass production of building materials conserved.

h. Many changes to buildings that have taken place in the course of time and are evidence of the history of both the building and the downtown and have developed significance in their own right, this significance recognized and respected.

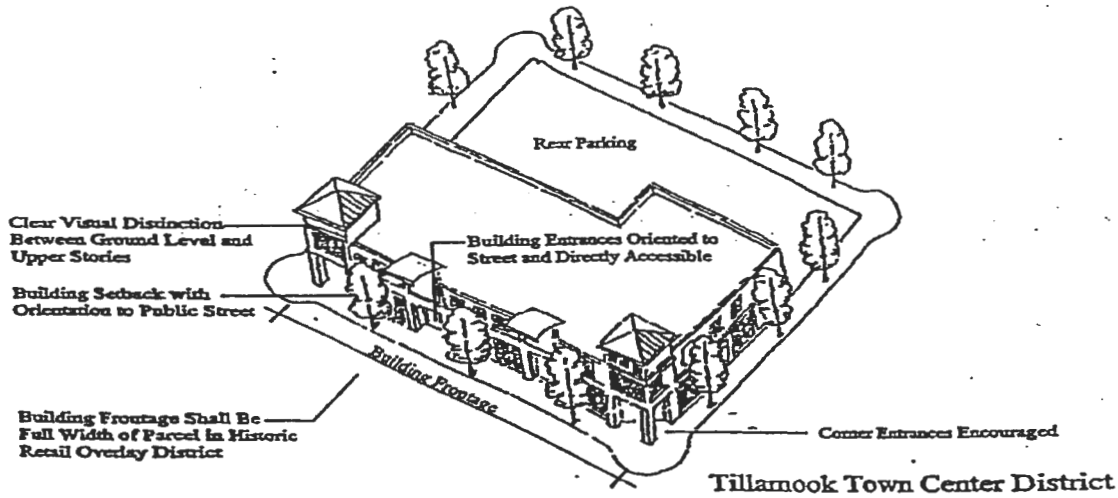
i. All buildings should be recognized as products of their own time. Alterations to create an appearance inconsistent with the actual character of the building should be discouraged.

j. Contemporary design for new buildings and additions to existing buildings permitted only if such design is compatible with the size, scale, color, material and historic character of the area.

k. A structural soundness survey obtained prior to any substantial rehabilitation.



Tillamook Town Center District
Lot Requirements, Parking, and Circulation



Tillamook Town Center District
Site Planning and General Building Design

2. The Planning Commission will be considered as the review body for design review of buildings located in the Town Center Area.

3. Building rehabilitations in the Town Center area follow the Historic Building Restoration Recommendations in the Town Center Plan.

4. Landscaping and artistic design in the Historic Retail Overlay area focused on streetscape, including elements such as street trees, sculptures, murals and hanging flower baskets.

In addition, there is a small piece of commercial property east of the POTB Railroad Right-of-Way on Third Street that is zoned Central Commercial. This is due to prior City approval.

Highway Commercial:

Businesses in the Tillamook City core area are generally located along Highway 101. Parking, traffic congestion and narrow streets with no easy means of widening streets pose a problem for many existing downtown businesses. Thus, the Highway Commercial areas along 101 North shall carefully address adequate parking and traffic circulation. Retail businesses that attract large numbers of cars shall be generally grouped so as to facilitate one-stop shopping; smaller retailers should try to locate on adjacent properties when possible. Professional offices that attract less concentrated traffic may be more dispersed throughout the highway commercial zone, as can other highway related businesses. The ease of parking, ingress and egress, convenience and efficiency in serving the consumer, are of prime importance in the Highway Commercial areas.

The three areas designated for Highway Commercial all have their own characteristics.

The area along North Main Avenue north of the Hoquarton has its advantages and disadvantages. The advantages this area has are: continuous commercial development along Highway 101, sanitary sewer, was annexed to the City in the spring of 1982, with commercial zoning by the County prior to annexation, and the existing businesses appear to be successful. The disadvantage of this area is its seasonal flooding with a larger percentage of property located in the 100-year floodplain and the Floodway.

The area east of Wilson River Loop Road, north of the County Fairgrounds is slowly being partitioned. Much of the undeveloped portion is under single ownership, out of the Flood Hazard Area, and along State Highway 6. The disadvantages of this area are that it is removed from the major business center, access, and lack of immediate infrastructure availability. An advantage of this area is Highway 6 does not carry the traffic load Highway 101 does, and therefore gradual population growth will eventually make this area desirable as a community shopping area.

That area along Main Avenue and Pacific Avenue (the Highway 101 couplet) south of Eleventh Street is almost fully developed. This includes non-conforming uses such a single-family houses as well as smaller scale commercial. It is within close proximity to the downtown core, but will require large-scale developers to acquire several homes and lots, competing with home buyers looking for housing, move, demolish or remodel the buildings and/or construct a new building on the site.

The necessity of small communities' dependency on tourism must be considered in the extension of commercial uses. Motels, restaurants and service stations are generally compatible and tend to offer both convenience and financial support to one another; they all require maximum parking and traffic flexibility with deep setbacks desirable. Auto and equipment dealerships, retail lumberyards, parts stores and service businesses tend to be compatible with each other. When possible, practical groupings shall be encouraged. It will be the responsibility of landlords to provide adequate off-street parking. Several light industry uses can be complimentary to highway uses and should be allowed as a

conditional use. A full discussion of highway commercial development is found in the previous section discussing land requirements and urbanization.

Neighborhood Commercial:

Land areas are needed for convenience shopping close to residential neighborhoods. These areas are designed Neighborhood Commercial and have a limited range of uses permitted at these locations. Grocery stores, barbershops, beauty shops and dry cleaning stores are the type of use that should be permitted in Neighborhood Commercial developments.

Neighborhood Commercial centers are located in areas east of the POTB Railroad Right-of-Way. There are other small-scale non-conforming commercial areas in residential neighborhoods in town that could be considered Neighborhood Commercial.

Mixed Use Office:

Additionally, certain areas are designated medium density residential and office. It is estimated that 6% of the land in the category will be used for office development or conversion, the other being used for multi-family dwelling purposes.

Industrial Land

The industrial uses in the City include wholesale, commercial, or retail uses, and the manufacturing, processing, or assembly of semi-finished or finished products. There are two levels designated for industrial uses and development: Light Industrial lands and Heavy Industrial lands. Much of the city's industrial use is concentrated in the following areas:

1. That area along Front Street designated as Light Industrial;
2. That area on Third Street north of the County Fairgrounds designated as Light Industrial;
3. That area around and including the Hampton Lumber Mill, Werner Gourmet Meat Snacks, and TP Freight extending along the POTB Railroad Right-Of-Way designated as Heavy Industrial.

Outside of the City Urban Growth Boundary, the Port of Tillamook Bay, an industrial park of approximately 1,600 acres, is available for general industrial development. The Port of Tillamook Bay industrial park is a few miles south of the Tillamook Urbanized area and is separated from the urbanized area by agricultural land. New industrial business at the park will rely on employees from the Tillamook Urbanized area. Tillamook County and the Port of Tillamook Bay have control of land use designations in the industrial park area.

Public, Semi-Public and Open Space Land:

Public and Semi-Public uses include lands designed for public buildings, public utilities, schools, playgrounds, churches, meeting halls, and other similar uses which are

considered public facilities. The purpose of the public and semi-public district is to recognize existing public facility land use and areas for those uses, which generate large public gatherings, and to provide for the development of public facility services and other public-oriented uses.

A large amount of the land allocated for these public and semi-public uses lies east of the POTB Railroad Right-of-way. This area includes: the Transportation District Building at 3600 Third Street, East Elementary School, Tillamook Junior High School, the IOOF Cemetery, the Tillamook County Fairgrounds, Tillamook County Public Works Department, the Swiss Hall, and the Fairview Grange at 5520 Third Street.

Other lands designated as public and semi-public include the City Hall, the County Courthouse, the Pioneer Museum clustered around the intersection of Second Street and Laurel Avenue, Wilson School, Tillamook High School, Tillamook PUD, Liberty Elementary School and Tillamook County YMCA, Tillamook City Public Works Department, Tillamook General Hospital, and the City Sewer Plant

Open space uses include land designed for parks, land to remain undeveloped, and future parks. The purpose of the open space zone designation is to maintain, preserve, conserve and otherwise continue in existence desirable and appropriate uses of open space lands in the more undeveloped sections of the City in order to assure continued public health by counteracting pollutants and to assure the use and enjoyment of natural resources and scenic beauty for the economic and social well-being of the city and its citizens.

Parks and open space enhance the livability of an urbanized area. The cost of acquisition, development, and maintenance often falls low in the priority list in the community's budget. However, park and open space needs are provided for in the Parks and Recreation Master Plan.

A majority of the land allocated for open space lies west of the POTB Railroad Right-Of-Way, on the north side of the Trask River, along the Hoquarton, along the Twelfth Street Right-of-Way east of Pacific Avenue, and along the western Urban Growth Boundary. Those areas designated and maintained as parks and open space include: Carnahan Park, Lillian Goodspeed Park, Hoquarton Interpretive Park, Sue H. Elmore Park, Coatesville Ninth Street Park, and Veteran's Peace Park. Areas allocated for future parks include the area at the confluence of the Hoquarton and Dougherty Sloughs and the area south of the County Fairgrounds.

Additionally, a large number of properties deeded to the City of Tillamook by FEMA in the City designated Floodway along North 101 have been designated as open space and are to remain undeveloped.

Open space designations are given to establish strict limitations on development in the floodplain, to lessen soil erosion along the banks of waterways and minimize water pollution resulting from development.

Public and Semi-Public land needs will be less than current acres per hundred population. This is due mainly to the large land area of the County Fairgrounds which have no need for duplication. There are approximately one hundred seventy-eight (178) acres serving a UGB population of 4,648. An additional forty (40) acres are provided which basically come from the projected future development of two (2) large park areas as mentioned above and noted on the Comprehensive Plan Map.

Approximately one hundred six (106) acres of land within the City Limits are subject to significant flooding. This land, located north of the Trask River, is primarily used for agricultural purposes and is designated on the Plan Map as Open Space.

City Public Buildings

Current City functions of administrative services, Municipal Court, Planning, Public works are currently housed in the City Hall building located at Third Street and Laurel Avenue. The City Police Department has been expanded and improved and is located at Third Street and Madrona Avenue, 207 Madrona Avenue. The Fire District is located at Fourth Street and Madrona Avenue, 2310 Fourth Street. City shops are located at Third Street just east of Marolf Loop Road. The City Waste Water Treatment Plant is located at the end of Fifth Street on the Trask River adjacent to Carnahan Park, 710 Fifth Street and 845 Third Street.

Any need for additional space is based on the assumption that the City's governmental responsibilities will increase as it gains jurisdiction over additional land within the Urban Growth Boundary with the resultant population increase.

All of the areas for residential, commercial, industrial, public and semi-public and open space uses and designations are further described in terms of exact location on the approved and State acknowledged City Comprehensive Plan and Zoning Map and in Appendix V.

Overlay Zones

The City of Tillamook has a number of overlay zones that are located in special areas of the City and are applicable in addition to the underlying base zone districts. Properties under the overlay zones are subject to the requirements of the underlying base zone district and additionally the overlay zone district. There are six (6) overlay zones within the City. These include the following:

Town Center (or TC) Overlay Zone District;
Flood Hazard (or FHO) Overlay Zone District;
Airport (or AO) Overlay Zone District;
Hazard (or HO) Overlay Zone District;
Water Resource Protection Overlay District.

The Land Use Policies describe the purpose of each overlay zone designation listed above.

CITY LIMITS

The City Limits is the boundary line that defines the City of Tillamook proper. Within these limits the properties receive all City services (water, sewer, police).

Within the City Limits, there are approximately 1,091 acres. Of these acres approximately 30% of the land is zoned for residential use, 20% for commercial use, 10% industrial, 16% public/semi-public, and 7% for open space. Approximately 17% of the urbanizable area is used for streets and right-of-ways. The existing land uses within the City Limits are shown in Appendix VI.

As a contrast to the Tillamook City Limits, Appendix VI, shows the zoning and existing land uses within the Tillamook Urban Growth Area.

CITY URBAN GROWTH AREA

The Urban Growth Boundary (also known as the UGB) is the boundary line beyond the City Limits that indicates the outermost limit of the City of Tillamook's planned expansion. The boundary is designed to indicate the planned extent of Tillamook's growth over a period of time. The UGB is not static. In some ways it needs to remain flexible to growth and change especially in response to land use changes as a result of changed public needs and the rate of development in order to carry out the Statewide Planning goals. The Urban Growth Area (also known as the UGA) includes the land that is inside the UGB but outside the City Limits. It is the area for future urban development and growth, served by urban services. Within the Urban Growth Area, approximately 52% of the land is zoned for residential use, 6% for commercial use, 18% industrial, 3% public/semi-public, and 14% for open space. Approximately 7% of this urbanizable area is used for streets and right-of-ways.

Overall, within the UGB approximately 36% of the land is zoned for residential use, 16% for commercial use, 12% industrial, 12% public/semi-public, and 9% for open space. Approximately 15% of this area is used for streets and right-of-ways. This area includes both the land within the City Limits and the land within the UGA.

EXISTING LAND USE

Currently, the existing land uses in the City and Urban Growth Area are a little different than the zone designations. Map 2 in Chapter 17 shows these existing land uses. Tables

in Appendix VI further describe the existing land uses in the City Limits and the Urban Growth Area.

In summary, within the City Limits, approximately 27% of the land is used for residential use, 11% for commercial use, 9% industrial, 18% public/semi-public, and 2% for open space. As mentioned earlier, approximately 17% of the area inside the City Limits is used for street right-of-ways. This leaves approximately 15% of the land within the City Limits vacant. Within the Urban Growth Area, approximately 23% of the land is used for residential use, 1% for commercial use, 2% industrial, 7% public/semi-public, and 0.1% for open space. Approximately 7% of the area inside the Urban Growth Area is used for street right-of-ways. This leaves approximately 60% of the land within the Urban Growth Area vacant for residential development.

PRE-EXISTING NON-CONFORMING

Pre-existing non-conforming uses mean those uses or activities occurring in a structure or on a parcel of land that are in existence before the current zone designation for the property is in effect and are not allowed as permitted use or a conditional use in the current zone designation for that piece of property. Map 2 displays the location of existing and non-conforming uses on tax lots within the UGB. According to Appendix VI, there are approximately 122 non-conforming uses on individual properties within the City Limits, and six (6) within the Urban Growth Area. The corresponding non-conforming acreage is as follows:

Residential:	**12.49 acres**
Commercial:	**13.08 acres**
Industrial:	**11.58 acres**
Total:	**37.15 acres**

This consumes approximately 2.5% of the total area of the City. These pre-existing non-conforming uses consist of primary single-family and multiple-family residential dwellings in the Central Commercial District where only secondary residential uses are allowed; primary residential dwellings in the Industrial District, where only care-taker dwellings are allowed conditionally; commercial and industrial uses within the Residential Districts that don't allow such uses; and multiple-family residential development within the Low Density Residential Districts. Some of this pre-existing non-conformity may be brought into compliance with rezones of the properties.

The allocation of undeveloped land and developed land designated for conversion or redevelopment to another use from a non-conforming use is listed in Appendix VI. The acreage listed for conversion or redevelopment is for land development currently with a use other than that given in the Plan.

FUTURE LAND USE

In developing policies about future land use, the City is concerned both with land inside the city limits that is now underdeveloped and with land outside the city limits and inside the UGB that may be annexed to the city in the future.

This section of the plan does two things. First, it establishes guidelines that will guide land designation decisions, both in revising the zoning ordinance and in deciding the zoning for areas that exist in the city. Second, it establishes an Urban Growth Boundary (UGB), which defines the area the city will consider for extension of services and annexations by the year 2030. This area outside the current City Limits but inside the UGB is known as the "Urban Growth Area" or UGA. The supply of land for future development in Tillamook thus has three components: vacant land within current City Limits; vacant land within the Urban Growth Area; and "re-developable land" - land with old structures that may be removed or reused to make way for new development.

A vital step, after the needs projection for each prospective land use is determined, is the development of an inventory of the suitability of land within the UGB on which those activities are to take place and the maintenance of the needs assessment and inventory.

Suitability of available acreage, as mentioned above in the three components, is not just limited to a vacant or unused status. Land presently in agricultural use within the Urban Growth Area, and under City Zoning, is considered to be a source of urbanizable land and is therefore a part of this inventory.

The gross land area of any community contains numerous natural barriers (ie. Flood Hazard Areas and wetlands), which effectively preclude development. The criteria used in this analysis consisted in examination of flood hazard areas, river and slough buffers, buffers on all perennial streams, and problems in providing utility services to some areas. These considerations were applied to each respective land use designation with the following results in the tables in Appendix VI.

Other than those various areas containing numerous natural barriers, the remaining available acreage for development within the UGB is either free of negative development characteristics or, as in the case of the flood hazard area along North Highway 101, adequately protected from development.

In a number of cases however, applicants have resorted to techniques such as utilizing the mitigation recommendations of a "No-Rise" Analysis in Flood Hazard Areas or wetlands mitigation in wetland areas to diffuse any negative impacts development would have in these areas.

The area within the Flood Hazard Area in relationship to each zone district is shown on Map 5 in Chapter 18.

The area within the Local Wetland Inventory in relationship to each zone district is shown on Map 6.

Before the last step in determining the final comparison of needed acreage to available acreage for Tillamook can be made, an inventory of each land use designation, both within the incorporated City Limits and in the unincorporated Urban Growth Area (UGA), must be undertaken. This information is found in Appendix VI.

According to the tables in Appendix VI, the City has now fully utilized approximately 88% of its developable space for housing within the City Limits. Therefore approximately 12% of the residential land area within the City Limits remains buildable for residential development. Tables 9 and 10, in Appendix VI, also acknowledge the multiple uses (residential and commercial) are allowed in the Multiple Use Residential (R-0) Zone District (commercial conditionally), the Neighborhood Commercial (C-N) Zone District, the Central Commercial (C-C) Zone District, and the Highway Commercial (C-H) Zone District. This creates some flexibility with the numbers of acres available for residential development.

Lots within the Multiple Use Residential (R-0) Zone District can be used conditionally for small-scale commercial development as well as the permitted residential development. Lots within the Neighborhood Commercial (C-N) Zone District can be used conditionally for residential development as well as the permitted commercial development. Lots within the Central Commercial (C-C) Zone District can be used for secondary residential uses (secondary to a commercial use) as well as any commercial development. Lastly, lots within the Highway Commercial (C-H) Zone District can be used conditionally for apartments as well as the permitted commercial development.

With the vacant and developable lots within the R-0 Zone District considered, an additional 112 acres (41 acres within the City Limits, 71 acres within the UGA) are available for commercial development. An additional 5 acres within the City Limits and 3 acres within the UGA are available for residential development within the C-N Zone District. These numbers are reflected in the tables in Appendix VI. Additionally, the tables remove Public/Semi-Publicly zoned property, open space, and the amount of land consumed by streets and right-of-ways.

As shown in the tables in Appendix VI, residential development has consumed approximately 45% of the residentially developable area within the UGA. Therefore approximately 55% of residential land area outside of the City Limits but within the Urban Growth Boundary remains buildable. However, overall, with the density and mixed use opportunities, only 56% of the residentially zoned property has been developed to its full potential within the City Limits and Urban Growth Boundary. Approximately 44% of this land remains developable to its full potential.

If potential development on the buildable land within the Urban Growth Boundary reached its maximum size, the City could foster an additional residential population of

approximately 8,171 people (154% of the current population), according to the average family size and the Potential Development Column in Appendix VI. This means a total of approximately 13,471 residents could establish homes within the current Urban Growth Boundary and present zone district location if each of the zone districts were built out to its maximum potential. This will be discussed again in Chapter 11, Housing and Chapter 14, Urbanization.

According to tables in Appendix VI, approximately 30% of the property within the City Limits has been zoned for commercial and industrial usage, and approximately 24% of the property within the Urban Growth Area has been zoned for commercial and industrial usage. Within the City Limits in the area zoned for commercial and industrial uses, approximately 44% of the land zoned for commercial use remains buildable, and approximately 7% of the land zoned for industrial use remains buildable. Within the Urban Growth Area in the area zoned for commercial and industrial uses, approximately 85% of the land zoned for commercial use remains buildable; approximately 88% of the land zoned for industrial use remains buildable.

According to tables in Appendix VI, the Port of Tillamook Bay has developed approximately 37.5% of its property for industrial purposes. Therefore 62.5% of the Port Industrial Park property is still available for development.

In order to project office and industrial land demand, twenty-year employment forecasts were prepared at the County level. These projections were based on historic trends documented by the State of Oregon Employment Division.

Three growth scenarios were analyzed to project commercial and industrial land demand: a base case, low growth, and high growth scenario. Under the base case scenario, average annual employment growth was projected at 2.2%, reflecting a net gain of 170 jobs per year. The low growth scenario reflects average annual employment growth of 1.4%, while the high growth scenario is based on a 3.0% growth rate. In each of these cases, the bulk of new employment was projected in retail trade, services and government.

These three scenarios were presented and developed to summarize the projected demand for office, industrial and retail land in Tillamook County based on the supply within the City of Tillamook's Urban Growth Boundary, including the Port of Tillamook Bay's developable land. These scenarios and other methods of estimating the projected commercial and industrial demand will be discussed further in Chapter 10, Economy.

Because of the large supply of industrial land owned by the Port of Tillamook Bay, and the amount of commercial land available for development within the Urban Growth Boundary of the City of Tillamook, the greater Tillamook area has the capacity to accommodate all projected growth in the County, within a twenty (20) year period, without a revision of the Urban Growth Boundary (UGB). If a potential shortage of

commercial land appeared to be eminent, the shortfall could be taken care of by zone changes from the more than ample industrial land supply within the UGB.

All of the above may be modified in the near future upon adoption of the City updated Economic Opportunity Analysis.

In addition to commercial and industrial land, the City of Tillamook has over 500 acres of residentially zoned property within the City limits and Urban Growth Area that are available to be developed. Therefore, the current land supply is likely to be more than enough to accommodate residential growth over the next twenty years. This will be discussed further in Chapter 11, Housing.

The guidelines for land designation decisions are basically a list of characteristics that make land suitable for various purposes. For example, land with safe, easy access to schools, parks, and shopping often is well-suited for residential use.

Factors important in determining the suitability of land for various uses include the following: proximity to utility lines and public services such as water, storm drains, fire and police protection; access to public streets; land uses in the area; soil characteristics; slope; groundwater, flooding, and wetlands; and preferences of citizens.

Guidelines for Land Designation Decisions

The following criteria were adopted to be used as a guide for making decisions about land designations in the City. It is not necessary that a piece of land have all the characteristics listed as suitable for a particular purpose in order for it to be zoned for that purpose. For example, a site may not have all the characteristics that make land suitable for industrial use but still be well-suited for industrial development. Some of the Zone Districts in the City's Zoning Map do not meet these guidelines. However, the Planning Commission and City Council will use the characteristics listed below as a guide for making decisions about zoning and land use.

GUIDELINES

I. Land having the following characteristics should be considered suitable for commercial development.

A. It has visibility from major arterials and streets, as well as safe, easy access from residential areas of town.
B. As commercial land, it would result in minimal conflict with other land uses nearby, especially residential and agricultural uses.
C. It is located at an intersection with a major arterial.
D. Adequate parking is available or can be made available.
E. It has safe, easy access from residential areas but limited visibility from major arterials and is therefore suitable for professional office space.
F. Sewers, water, and other necessary services are available.

II. Land having the following characteristics should be considered suitable for industrial development.

A. It is vacant or occupied by buildings that could be converted to other uses or demolished.
B. It is adjacent and has access to the railroad.
C. It has fast, easy, and convenient highway access:
   1. Within two blocks of Highway 101 or Highway 6;
   2. Truck access without passing through residential areas.
D. It is adjacent to sewer and water lines with adequate capacity or at a location where these lines may be feasibly extended.
E. It is land that has not been divided into residential lots or lots less than one-half acre or can be consolidated into a larger aggregation.
F. It is in a location that minimizes conflicts with other land uses, especially residential uses.
G. It has an average slope of less than five percent.

III. Land having the following characteristics should be considered suitable for residential development:

A. Land considered most suitable for residential development:
   1. It is adjacent to or near existing sewer and water lines that have adequate capacity to support more development.
   2. It would have minimal conflict with other land uses.
      a. Not within sight or sound of industrial zone;
      b. Not within sight or sound of commercial zone;
      c. Farther than one block from Highways 101 and 6.
   3. It is vacant or redevelopable.
   4. It has access (without crossing a highway or railroad tracks) to public facilities such as schools, the municipal library, parks, and shopping.
   5. It is not in an area susceptible to natural hazards such flooding.
   6. It is not presently in agricultural production and is not economically suitable for agricultural use.
   7. It is not concentrated on a farm-to-market road.
   8. If developed, it would cause minimal problems with existing drainage ditches.
B. Land considered moderately suitable for residential development:
   1. Land having characteristics identified under the "most suitable" category above except for one or more of the following:
      a. It does not have access to public facilities and shopping without crossing a highway or railroad track.
      b. Sewer and water lines cannot be provided without extension or repair of main lines.
      c. It is agricultural land adjacent to the city but adjoined on three sides by other, nonagricultural land uses.

Goals, Objectives, and Implementing Policies for Land Use

Objective No. 1 for Land Use: To have a compact, efficient urban development pattern and to preserve good agricultural lands for agricultural uses.

Implementing Policies for Objective No. 1 for Land Use

Policy E-1: Services within the boundary will be phased as much as possible so that utility lines and transportation networks are extended compactly and efficiently.

Policy E-2: The City shall seek and preserve use compatibility objectives which recognize livability as the highest goal and the Planning Commission and City Council will use the characteristics listed in the Guidelines for Land Designation Decisions as a guide for making decisions about zoning and land use.

Policy E-3: The Urban Growth Boundary (U.G.B.) is established in order to preserve prime agricultural land as much as possible. Any future conversions of rural agricultural land to urbanizable land shall be based upon the seven factors as listed in State Goal 14.

Policy E-4: Urban services will not be extended to land outside the Urban Growth Boundary.

Objective No. 2 for Land Use: To provide for an orderly and efficient transition from rural to urban land use. An Urban Growth Boundary shall be established to identify and separate urbanizable land from rural land.

Implementing Policies for Objective No. 2 for Land Use

Policy E-5: The City will not annex or service land outside the designated Urban Growth Boundary. Urban level development and urban level services shall be limited to land within the Urban Growth Boundary (UGB).

Policy E-6: The City will establish agreements with the County to enforce development patterns desired by the city within the Urban Growth Boundary.

Policy E-7: Other elements of the plan and land use ordinances, such as the zoning and floodplain ordinances, will be consistent with the Urban Growth Boundary [and with the policies of this plan].

Policy E-8: The Urban Growth Boundary (U.G.B.) will be reviewed, and revised if necessary according to the following guidelines:

a. There shall be a demonstrated need for additional area due to economic or population growth or scarcity of available land.
b. There shall be no unnecessary developments on agricultural land.
c. If additional land is required, land shall be chosen that can be efficiently provided with all public services and facilities, including transportation routes.

Policy E-9: Urban level development will be limited to land within the Urban Growth Boundary.

Objective No. 3 for Land Use: To provide sufficient land for development to meet future needs and to preserve open space lands as much as possible.

Implementing Policies for Objective No. 3 for Land Use

Policy E-10: Land uses and densities shall be guided by the Land Use Plan so that the length of auto trip is minimized, and enforced through the Zoning Ordinance, as is stated and described further in the Regulatory Controls. Medium density living areas shall be located, when possible, near thoroughfares leading to shopping/service areas. Higher density, mixed uses, and pedestrian-oriented design should be focused in the Town Center area. Highway commercial areas shall accommodate those land uses which would primarily deal with the tourist and traveling public. Downtown shopping shall be designated for convenient shopper parking and then walking to a variety of shopping areas. These guidelines will in turn allow for lower fuel and energy consumption.

Policy E-11: The following is a list of each of the purposes for each of the zone districts:

Open Space (O District): To maintain, preserve, conserve and otherwise continue in existence desirable and appropriate uses of open space lands in the more undeveloped sections of the City in order to assure continued public health by counteracting pollutants and to assure the use and enjoyment of natural resources and scenic beauty for the economic and social well-being of the city and its citizens.

Single-Family Residential (R-7.5 District): To encourage, accommodate, maintain and protect a suitable environment for family living. The R-7.5 District is intended to provide for single-family residential homes at urban standards in areas with community services.

Single-Family and Duplex Residential (R-5.0 District): To encourage, accommodate, maintain and protect a suitable environment for family living at urban standards and an increased density in areas with community services.

Multiple Use Residential (R-0 District): To provide for high density multiple family developments in locations close to shopping and services, transportation or public open space, and in appropriate locations to provide a transitional use area between residential areas and other less restrictive districts. The allowance of small-scale commercial services and retail is intended to encourage compatible mixed use development that is transportation-efficient, and enhances the function of this district.

Neighborhood Commercial (C-N District): To provide for the location of small businesses and services in residential sections of the City for the convenience of nearby residents; also to recognize existing uses of this type within the City. New C-N districts have a maximum area of 40,000 square feet of contiguous land. The businesses are intended to fit into the residential pattern of development and not create either land use,

architectural or traffic conflicts. The above site sizes for new C-N districts and the following regulations are intended to protect the residential environment. Neighborhood Commercial development shall be limited in size and designed so they do not conflict with nearby and surrounding residential uses. Grocery stores. Barbershops, beauty shops and dry cleaning stores are the type of uses permitted in Neighborhood Commercial developments.

Highway Commercial (C-H District): To provide for those commercial uses which are appropriate to major thoroughfare or highway locations, and are dependent upon thoroughfare travel, and for those establishments that require large land areas. The types of uses appropriate in the highway commercial area include: Motels, restaurants, auto sales and repair, commercial recreation, service stations and retail establishments that require large land areas. This latter retail category include establishments selling garden supplies, nurseries, home furnishings and retail lumber.

Central Commercial (C-C District): To serve as the central trading area for the City and surrounding urbanized areas.

Light Industrial (I-L District): To provide for those heavier commercial and light industrial uses located in existing built-up areas of the City.

General Industrial (I-G District): To provide for the establishment of light and heavier industrial uses essential to the development of a balanced economic base in an industrial environment with a minimum conflict between industrial uses and residential and light commercial uses.

Public and Semi-Public (P & S-P District): To recognize areas for those uses which generate large public gatherings.

Policy E-12: The following is a list of each of the purposes for each of the overlay zone districts:

Town Center (TC District): To create a pedestrian-oriented, mixed-use downtown core and preserve and enhance the historic buildings and character of the Town Center;

Flood Hazard Overlay (FHO): To promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

1) To protect human life and health;
2) To minimize expenditure of public money and costly flood control projects;
3) To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
4) To minimize prolonged business interruptions;

5) To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard;
6) To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
7) To ensure that potential buyers are notified that property is in an area of special flood hazard; and,
8) To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions;

Airport Overlay (AO): To prevent the establishment of air space obstructions in airport approaches and surrounding areas through height restrictions and other land use controls as deemed essential to protect the health, safety and welfare of the people of the City of Tillamook and Tillamook County.

Hazard Overlay (HO): To avoid development hazards in the areas of the City and the urban growth boundary which have been mapped as inundation zones (limit construction of new essential facilities and special occupancy structures as defined in ORS 455.447 in tsunami inundation zones). The following special regulations apply to all properties which lie wholly or partially within one or more of these areas (refer to Tsunami Hazard Map of Tillamook Quadrangle.).

Water Resources Protection Overlay District: To implement the Significant Wetland and Riparian Corridor Resource policies of the City of Tillamook Comprehensive Plan and to guide development and conservation of significant wetlands, streams and riparian corridors identified in the City of Tillamook Significant Riparian/Wetlands Inventory. This section allows use of property while establishing clear and objective standards to protect and restore water bodies and their associated riparian areas, thereby protecting and restoring the hydrologic, ecological and land conservation functions these areas provide. Specifically, this ordinance is intended to protect habitat for fish and other aquatic life, protect habitat for wildlife, protect water quality for human uses and for aquatic life, control erosion and limit sedimentation, limit development in significant riparian corridors, and reduce the effects of flooding. This ordinance attempts to meet these goals by excluding structures from areas adjacent to fish bearing lakes and streams, and their associated wetlands, and by restricting vegetation removal or other alterations in those areas.

Policy E-13: Retail uses are encouraged to remain in the downtown area to maintain its vitality. Infill and redevelopment should be accommodated in the Town Center area. The classes and types of businesses and/or services permitted in the Town Center shall include: upper floor residential, housing for the elderly or disabled, upper floor clubs or lodges, cultural facilities, day care, governmental offices, libraries, parks, plazas, open space, postal services, hotels, office uses, retail services, restaurants, museums, theaters, galleries or studios for dance, art , and photography, personal services including but not

limited to medical or dental clinics, small animal veterinary clinics, or pharmacy. Infill and redevelopment shall keep with the original architectural character, scale, mass and materials.

Policy E-14: Ample buffers shall be maintained between industrial areas and activities and residential areas

Policy E-15: Any proposed public or semi-public use on a specified site in a residential, commercial, industrial or public area requires review through the conditional use procedures of the Zoning Ordinance. Institutions that propose to be located in a residential area should be situated so the impacts of their surroundings are minimized.

The exception to this policy shall be the Tillamook County Fairgrounds. This property contains multi-use facilities such as:

> Exhibit Halls and pavilions, indoor tennis courts, track and grandstands, areas for outside amusement activities, parking lots, buildings for assorted storage uses, buildings for the housing of animals, buildings for various meetings, social gatherings and community activities, public shops, and other public buildings.

This policy recognizes that these uses and activities have existed for a long period of time and are unique and complementary to the Tillamook Community. This Plan acknowledges that fairground existing public uses may continue and be expanded upon subject to the conditional use requirements of the City Zoning Ordinance.

Plans for expansion, improvement and relocation of public buildings shall include consideration of the magnitude of the population increase and the geographic direction of growth. Consideration shall also be given to consolidation of administration facilities for convenience and economy of operation. .

Policy E-16: A study shall be done on the availability and developability of land currently being used for Fairground purposes.

Policy E-17:

Policy E-18: Parks of all sizes shall be provided and maintained in the existing developed areas. Community involvement is strongly encouraged for the development of such parks.

Policy E-19: Increased use of existing recreational facilities at the schools is encouraged.

Policy E-20: Optimum use of all public recreational facilities is encouraged.

Policy E-21: A large park of 14 acres serving the needs of Tillamook residents and others shall be developed in the area to the south part of the Fairgrounds.

Policy E-22: The large marine park developed on the Trask River immediately south of the City Sewer Plant Facility, known as Carnahan Park shall be investigated as to

extension southward in the area zoned as Open Space. The park shall provide various recreational facilities, and shall include enhanced wetlands and open space.

Policy E-23: Future parks are encouraged to occupy other areas of land designated as open space within the City of Tillamook, such as the area at the confluence of the Hoquarton and Dougherty Sloughs, as shown on the Comprehensive Plan Map.

Policy E-24: Significant volumes of land are available for community parks and development in the Urban Growth Boundary. . Acquisition is encouraged on this park/open space land. The City shall study the development of said property for various purposes, and estuary guidelines shall apply in all cases of development.

Policy E-25: The Plan shall allocate acreage for open space.

Objective No. 4 for Land Use: To guide community development in such a way as to maximize the conservation of energy.

Implementing Policies for Objective No. 4 for Land Use

Policy E-26: Land designated for new development or redevelopment is allocated as shown in Table G. The proposed land use map is hereby adopted and made part of the general plan.

Policy E-27: Land uses developed on the land will be managed and controlled so as to maximize the conservation of all forms of energy, based on sound economic principles.

Policy E-28: The City shall review and implement various plans for ways this community can conserve energy. Informative literature and programs shall be developed to aid various identified energy conservation needs. As a municipality, Tillamook City shall take a strong role in recognizing the imminent need for energy conservation. Analysis of heating and fleet fuel consumption costs and electricity consumption shall be made and innovative programs implemented to conserve and reduce consumption.. With reference to local resources such as wind, solar, forest and farm wastes, the City shall consider viable renew- able energy programs that might lead to energy conservation.

Chapter 11: Economy (State Goal 9)

This chapter will be modified within the next couple of years based upon an updated Economic Opportunity Analysis process that is currently underway. The current element consists of four sections dealing with Tillamook's economy and the lands needed for economic development:

- "Background," a summary of current and historical economic conditions in Tillamook and Tillamook County;
- "Economic Opportunities," an analysis of key opportunities for and challenges to economic development;
- "Buildable Lands," an evaluation of the need for and supply of vacant buildable land for future commercial and industrial development;
- "Objective and Strategies," a listing of the goals, objectives and policies with which Tillamook will direct and encourage economic development;

Background

Tillamook's economy is part of a larger regional economy for central Tillamook County. Tillamook is the largest city in Tillamook County and the county's regional commercial, industrial and governmental hub. The regional economy is dominated not only by dairy (the Tillamook Creamery Association, for example) and timber production, but also by government services and tourism to major events.

Historically, large public works projects have strongly influenced the City's economy and the region's economy. In the 1940s, construction of the Naval Air Station and operation from the Blimp Hangars at the present Port of Tillamook Bay (POTB), for the U.S. Navy brought new capital and jobs to the area. In the 1960s construction of US Coast Highway 101 generated more jobs, and again brought new capital into the region, and enhanced tourism and freight hauling.

Today, the POTB, and US 101 continue to be vital factors in the local economy. But the initial infusion of capital and jobs sparked by their construction has ended.

As mentioned above, Tillamook is a regional center for government services. It is the county seat and the home of the Tillamook County government, headquartered at the County Courthouse. The City of Tillamook is the site for the Bureau of Land Management (BLM) District Office that manages millions of acres of public land in western Oregon, the Oregon Department of Forestry, the Oregon Department of Fish and Wildlife, Oregon State University Extension Services Office, the Northwest Education Service District, the State Senior Services Division, the County's main Post Office and State Adult and Family Services Division. It is also a regional center for a variety of recreational activities. It is the home for the Tillamook County Fairgrounds, the Pioneer

Museum, the main branch of the County Library, and the Tillamook Bay Community College. Tillamook Family YMCA located in the City serves the entire community with recreation programs and facilities for all ages. It is also a regional center for health care, housing the Tillamook County General Hospital (Adventist Health), the Tillamook Health Department, Bay Ocean Medical, the Tillamook Medical Group, Tillamook Family Counseling Center, Five Rivers Retirement and Assisted Living Community, and Kilchis House Assisted Living.

Just south of town is the Port of Tillamook Bay, as was discussed earlier this chapter, comprised of the Port of Tillamook Bay Industrial Park, Camp Tillamook, the Tillamook Municipal Airport, Camp Tillamook and the Port of Tillamook Bay Railroad. The Port of Tillamook Bay is also home to the Tillamook Air Museum.

Adjacent to the Port of Tillamook Bay is the Tillamook County Sheriff's Department and Jail and the Offices of the Oregon State Police.

Outside of town to the north is the Tillamook County Creamery Association's Cheese Factory, which attracts up to a million visitors a year from around the world, and distributes its cheeses made at the Creamery nationwide. Additionally to the north and east of town is Latimer Quilt Center, another popular tourist destination; and adjacent the Cheese Factory is the Tillamook County Chamber of Commerce. Inside the City Limits, popular tourist destinations are the Blue Heron French Cheese Restaurant, Second Street Public Market and La Tea Da.

In terms of industry and in addition to the Port's Industrial Park, and the Creamery, Werner Gourmet Meat Snacks, Hampton Lumber and a couple of trucking distribution facilities are located in the City of Tillamook.

Major events in the community each year that draw the tourists from the region, in-state and out-of-state (even out-of-country) include the Taste of Tillamook County in March, the June Dairy Parade and Rodeo at the County Fairgrounds in June, and the Tillamook County Fair in August.

Tillamook City serves as a service center for an approximate population of 25,000. This lends tremendous potential for commercial growth, which in turn will provide numerous economic opportunities. The importance of Tillamook as a commercial center to its in-county residents has a strong impact on the community's growth and development.

As the commercial center for the County, Tillamook is expected to retain its present relationship between employees in commercial activities and the associated acreage requirements to fulfill those activities. Any additional commercial expansion due solely to the tourist related activities, largely remains an unknown quantity at this time.

Table 11-1: Tourist Destination Attendance 1995 – 2010

	Tillamook Cheese Factory	Latimer Quilt Museum	Tillamook Naval Air Museum	Tillamook County Pioneer Museum	Cape Lookout State Park	Cape Meares State Park	Oceanside Beach
1996:	814,535	6,000	81,650	16,708	-	-	-
1997:	878,295	6,561	88,131	16,308	-	-	-
1998:	906,208	5,136	85,582	15,356	184,620	194,910	368,544
1999:	900,666	5,139	81,478	13,426	186,100	158,940	350,238
2000:	917,185	5,051	85,361	13,289	188,536	151,288	367,066
2001:	1,021,633	5,124	76,827	12,575	187,560	183,924	359,128
2002:	969,587	6,300	75,212	11,327	205,840	188,022	366,958
2003:	966,980	7,105		11,408			
2004:	976,748	-		10,784			
2005:	944,497	6,475		9,917			
2006:	943,668	6,630		10,332			
2007:	978,146	6,968		10,827			
2008:	916,395	5,826		10,736			
2009:	975,548	7,122		9,000			
2010:	995,534	8,128		10,645			

Source: Tillamook Cheese factory Visitors Count, Latimer Quilt Museum Visitors Count, Tillamook Naval Air Museum Visitors count, Tillamook County Pioneer Museum Visitors Count, State Parks Visitors Count, 2002

The statistics in Table 11-1 indicate modest growth in the tourist industry outside of the Urban Growth Boundary and a minor decrease in tourism within the City Limits. Because of the proximity of Tillamook to the Portland Metropolitan area, no overall significant decrease is anticipated because of future energy constraints.

The largest employers in Tillamook are listed in Table 11-2:

Table 11-2: Major Employers in the City of Tillamook

Employer	Location	Employees
Fred Meyer	North side of town, Hwy. 101	300
Tillamook County General Hospital	West side of town, Third Street	260
Tillamook County Personnel	Tillamook Downtown Town Center	250
Tillamook Lumber Company	East central in town	150
Tillamook Medical Group	West side of town, Third Street	150
TOTAL		1,110

The largest employers outside the City are listed in Table 11-3 below.

Table 11-3: Major Employers outside of the City of Tillamook

Employer	Location	Employees
Tillamook County Creamery Association	North of town, Hwy. 101	400
Tillamook County Smoker	North of town, Hwy 101	200
Trask River Wood Works	South of town, in POTB	101
Nestucca Ridge Storage	Southwest of town, in Pacific City	90

From Table 11-2, you can see that Tillamook County General Hospital and Tillamook Medical Association are two of the larger employers in the City. Many privately owned organizations outside of the City Limits, as shown in Table 11-3 are also some of the larger employers in the region.

Table 11-4: Countywide Non-Farm Payroll Employment												
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Non-Farm Employment	7,930	7,940	8,000	8,120	8,090	8,310	8,510	8,690	8,750	8,750	8,370	8,350

Source: Oregon Employment Department, U.S. Census Bureau

In Table 11-4, the number of Countywide non-farm jobs shown has gradually increased for the time period between 1999 and 2010.

Over the past twenty (20) years, a larger period, employment in the retail/wholesale trade and service sectors of the local economy has grown both in actual numbers and in the relative proportion of total employment. This includes small-scale commercial infill utilizing vacant space in the downtown commercial area, and multiple use residential/office areas.

The primary and secondary industries of lumber and dairy have in the past been sound bases for Tillamook employment. The Tillamook County Creamery Association continues to thrive with steady employment and consistently high production of the famous Tillamook Cheese. Hampton Lumber mill (inside the City Limits) has continued to have high amounts of productivity. Both, however, have shown through technology and consolidation, increased production without a significant increase in the labor force. Other food products important to this area are meat processing industries and those coming from the ocean. And they have both had a steady growth in recent years. However, overall industrial and manufacturing employment again has decreased from being 48% of the workforce in 1971 to only 19% in 1990; and has decreased further to approximately 10% of the workforce in 2010. This is a concern for a sound and fully developed economy that accommodates the increased employment demand for a projected increase in population by the year 2020.

INDUSTRIAL LAND PROJECTION

An analysis of the industries in the City reveals a wide range of activities with substantially differing land use needs. Only some of these industries are reliant on the land within the industrial sector of Tillamook. According to the 2010 U.S. Census, there are approximately 3,100 jobs within the City. As the table below indicates fifteen (15) major S.I.C. classifications represent approximately 90% of employment within Tillamook City with scales of operations ranging from a single employee on a standard city lot to two hundred employees on over 85 acres.

TABLE 11-5: 2005-2009 INDUSTRIAL & OCCUPATIONAL COMPOSITION OF TILLAMOOK

INDUSTRIES

S.I.C. Classification	# of employees	% of Total
Health Care and Social Assistance	563	17%
Educational Services	434	13%
Retail Trade	398	12%
Accommodations & Food Services	315	10%
Manufacturing	231	07%
Public Administration	173	05%
Admin, Support, Waste Mgmt., Remed	145	04%
Other Services	140	04%
Professional, Scientific, Tech Serv.	138	04%
Transportation and Warehouse	129	04%
Construction	103	03%
Wholesale Trade	93	03%
Finance and Insurance	91	03%
Utilities	80	02%
Information	60	02%
TOTAL	3,093	93%

Source: U.S. Census 2010

The distribution of these industrial activities throughout the City can be characterized as random at best. With the exception of Hampton Lumber, which owns over 87% of the industrial property within the City, the industrial operations are scattered throughout the City.

Most of the people who work within the City live outside of the City Limits and a small percent who work within the City live outside the County. Only approximately 31% of the City residents work within the City Limits. The majority of the City's workforce commutes outside the City Limits for work both within (62%) and beyond (7%) the County line. There are approximately 200 additional manufacturing positions employing Tillamook residents that are located outside the City Limits in relation to 231 manufacturing positions within the City Limits.

While the growth of supporting industrial operations has been expected and is actively encouraged, established operations foresee moderate expansion of their respective activities.

According to information collected in the Tillamook Community profile, there are 25 small manufacturing companies here in the City, and 49 manufacturing companies within the County. Additionally in 1999, there were 828 business units within the County. This total number of business units decreased to 808 in 2000, and has continued to decrease.

The tourism industry has continued to increase with an accompanying increase in trade and services employment. Perhaps the most notable recent phenomenon in the Tillamook area has been the growth of a year round tourist business. Formerly confined primarily to summer months, tourism has increased in other seasons as well.

Economic Opportunities

Tillamook's community spirit and enterprise are displayed in **2** murals, one (1) found in the City Hall and the other in the County Courthouse. The one located in City Hall is shown on the following page. The murals were painted by Lucia White.



These murals are one example of many factors that influence Tillamook's potential for economic development: the murals highlight Tillamook's prominence in the history of the Captain Cook landing, and draws tourists to the area. This particular factor is a positive force for economic development, but some factors limit the city's potential. By examining and comparing the main strengths and weaknesses, one can assess Tillamook's potential for economic development and then adopt policies and take actions to enhance community strengths and deal with weaknesses. This type of "economic opportunities analysis" is required by OAR 660, Division 19, a state administrative rule. **[Insert 2013 Regional EOA Results here]**

Buildable Lands

In planning and zoning the City of Tillamook's land, the land used for business and industry is classified in two main categories: *commercial* and *industrial*. Commercial uses are those involving retail sales and services: restaurants, grocery stores, motels, offices, and so on. Industrial uses are those involving the manufacture, processing, or distribution of products: factories, mills, food-processing plants, etc. The industrial classification also includes wholesale storage and distribution facilities such as warehouses and shipping centers.

The key task in planning for new commercial and industrial development is to ensure that adequate amounts and types of land are available for each category of development. Doing that involves three main steps:

1. Estimate need. That is, determine what amounts and types of land will be needed during the next 20 years.
2. Evaluate how much vacant, partially vacant, or redevelopable land currently is available to meet that demand. If that amount is too small to meet the projected need, more land should be planned and zoned so as to establish a twenty-year supply. ("Redevelopable land" is land with deteriorating or abandoned structures that could be razed or remodeled for new uses.)
3. Ensure that land planned and zoned for commercial and industrial uses is "buildable": that is, it has the physical features, location, access, and infrastructure needed to support such development.

A vital step, after the needs projection for each prospective land use is determined, is an inventory of the suitability of land within the UGB on which those activities are to take place.

Suitability of available acreage is not limited to a vacant or unused status. Land presently in agricultural use in the UGB is considered to be a source of urbanizable land and is therefore a part of the inventory.

The gross land area of any community contains numerous natural barriers (ie. floodplains, wetlands, poor soil conditions, etc), which effectively preclude development. The criteria used in this analysis consisted in examination of flood plain areas, river and slough buffers, and buffers on all perennial streams. These considerations were applied to each respective land use designation.

Other than those various buffer areas, the available acreage within the UGB is either free of negative development characteristics or, as in the case of the floodplain area along North Highway 101, adequately protected.

Before the final comparison of needed acreage to available acreage for Tillamook can be made, an inventory of each land use designation, both within the incorporated City Limits and in the unincorporated Urban Growth Area (UGA), must be undertaken.

Estimating a city's future needs for commercial and industrial lands can be done in several ways. The two methods include the most common method, based on the ratio of developed land to population and a special study, Tillamook Commercial and Industrial Land Demand Analysis, December 1992, done by consultants Hobson & Associates and David Evans and Associates, Inc., for the City of Tillamook.

The first method starts with two main variables, the city's current population and the land area currently developed in commercial or industrial uses. Here we divide acreage by population to determine the amount of developed land per person. Then multiply that ratio times the amount of population growth we are forecasting. That gives us an estimate of the amount of buildable land that will be needed for new development.

The second method, done by consultants Hobson & Associates and David Evans and Associates, Inc., includes the analysis of three growth scenarios. The three growth scenarios were analyzed to project commercial and industrial land demand: a base case, low growth, and high growth scenario. Under the base case scenario, average annual employment growth was projected at 2.2%, reflecting a net gain of 170 jobs per year. The low growth scenario reflects average annual employment growth of 1.4%, while the high growth scenario is based on a 3.0% growth rate. In each of these cases, the bulk of new employment was projected in retail trade, services and government.

These three scenarios presented in Table O, Appendix V, are developed to summarize the projected demand for office, industrial and retail land in Tillamook County based on the supply within the City of Tillamook's Urban Growth Boundary, including the Port of Tillamook Bay's developable land.

In order to project office and industrial land absorption, twenty year employment forecasts were prepared at the County level, and applied to the scenarios. For each scenario, projected employment growth by Standard Industrial Classification (S.I.C.) was translated into square footage of office and industrial space, which was then converted into acreage absorption based on assumed coverage ratios.

Estimating the Need for Commercial and Industrial Land

For Tillamook, the 2010 population is 4,920. The area now developed with commercial uses totals 122 acres (from Appendix VI). Dividing that acreage by the population produces a ratio: 0.024 acres of commercial land per person. As described in Chapter 9 of this plan, we forecast Tillamook's population in 2030 to be 6,038, an increase of 1,118 people. By multiplying 1,118 people by 0.024 acres, we can estimate that Tillamook will need an additional 27.72 net acres of land for the commercial development expected to occur over the next two decades.

The same method is used here to estimate future need for industrial lands. Appendix VI shows that Tillamook currently has 110 acres of land now developed in industrial uses. Dividing that number by the city's 2010 population (4,920) yields a ratio of 0.022 acres of industrial land per person. Multiplying that ratio times the expected increase in population (1,118) provides an estimate of 24.60 net acres of additional land needed for industrial development over the next 20 years. These are estimates of net acres. They do not include area needed for public rights of way.

The second way to estimate need for industrial land is by using the Tillamook Commercial and Industrial Land Demand Analysis, done by consultants Hobson & Associates and David Evans and Associates in 1992. In this study, the large supply of industrial land owned by the Port of Tillamook Bay was taken into account for supply of industrial land available for development for the City. The study concluded that for the City, "Because of the large supply of industrial land owned by the Port of Tillamook, and the large amount of commercial land available for development within the Urban Growth Boundary of the City of Tillamook, the greater Tillamook area has the capacity to accommodate all projected growth in the County, within a twenty (20) year period, without a revision of the Urban Growth Boundary (UGB). If a potential shortage of commercial land appeared to be eminent, the shortfall could be taken care of by zone changes from the more than ample industrial land supply within the UGB." With the demands recalculated to match the adjusted acreages, it appears that the City still has the capacity to accommodate all projected commercial and industrial growth. The lowest of all three scenarios will require approximately 64 acres necessary for commercial growth, and 51 acres necessary for industrial growth. The base scenario estimates approximately 141 acres needed for commercial growth and 76 acres for industrial growth. The highest of all three scenarios requires approximately 159 acres necessary for commercial growth, and 115 acres needed for industrial growth. We could use the highest scenario for an increased preparation for unanticipated future growth. But providing this large amount of land for commercial growth could lead to excessive cost of infrastructure and sprawl.

This will be discussed in more detail later in this chapter. Since the lowest scenario may seem the most appropriate in relationship to the other perspectives, for now we are going to utilize that scenarios for the comparison of estimates in Table 10-6.

A third approach to estimating commercial and industrial growth as described in Appendix VI was used in the 1982 Comprehensive Plan and reused with today's 2010 figures. Through this approach we examine the past and projected commercial and industrial employees to determine land demand. The commercial land demand will require 34 additional acres needed and the industrial land demand will require 31 additional acres needed by the year 2030.

Another collective perspective to estimate growth is simply multiplying Tillamook's percent of the total population of the County by the acreage demanded per year times 20 years. Here we assume that Tillamook would capture a proportional share of new industry. Table 9-7 shows Tillamook's 2000 population at 17.9% of the County's population. In Exhibit 4 from the Tillamook Commercial and Industrial Land Demand Analysis, a demand for 16 acres/year for commercial space is projected, and a demand for 14.5 acres/year for industrial space is projected. Therefore we can estimate Tillamook's need for commercial land and industrial land over the next 20 years with this formula:

Commercial Land Demand:

17.9% X 16 acres/year X 20 years = 57 acres

Industrial Land Demand:

17.9% X 14.5 acres/year X 20 years = 52 acres

These simple calculations produce only rough estimates of Tillamook's need for commercial and industrial land. Given the limitations of the methodology, the estimates for the need for commercial land, 64 acres, 57 acres, 34 acres and 20 acres, span a wide range. Additionally the estimates for the need for industrial land, 18 acres, 40 acres, 51 acres and 52 acres also seem to cover a large area from each other.

The above calculations indicate that Tillamook will need approximately 20 to 64 acres of commercial land and approximately 18 to 52 acres of industrial land during the next two decades. Does it have enough vacant buildable land to meet those needs? The answer to that question, based on data from the Analysis and general tax lot data in Tables 7, 8, and 9 of Appendix VI, is **yes**.

Tillamook's inventory of vacant and buildable land for commercial development totals approximately 225 net acres (Appendix VI, Land Needs and Supply Inventory, Tables 7 and 8): 70 acres inside the current City Limits, and 155 acres in the Urban Growth Area. These figures include the allowance of commercial uses in the Commercial Zone Districts, Multiple Use Residential Zone District and the Industrial Zone Districts.

Tables 7, 8 and 9 of Land Needs and Supply Inventory show Tillamook's inventory of vacant and buildable industrial land to be 68 net acres plus an additional 1,000 net acres on the Port of Tillamook Bay available for industrial development.

Results of the above calculations regarding need for and supply of commercial and industrial land are summarized in the following table. In the following table, it appears that even if the numbers from high growth scenario of the 1992 Tillamook Commercial and Industrial Land Demand Analysis, done by consultants Hobson & Associates and David Evans and Associates were applied here, the amount of land available for development and redevelopment in Tillamook would meet the high growth demand.

Table 11-6: Buildable Land for Commercial and Industrial Uses

Type of Land	Net Acres in Current City Limits	Net Acres in Urban Growth Area	Total Net Acres
Amount of commercial land needed (per commercial land/population method)			27.72
Amount of commercial land needed (per consultant analysis w/low growth)			64.00
Amount of commercial land needed (per employee projection)			34.00
Amount of commercial land needed (per city pop./commercial acreage method)			57.28
Amount of commercial land available	***70.00***	***155.00***	***225.00***
Amount of industrial land needed (per industrial land/population method)			24.60
Amount of industrial land needed (per consultant analysis w/low growth)			51.00
Amount of industrial land needed (per employee projection)			31.00
Amount of industrial land needed (per city pop./industrial acreage method)			51.91
Amount of industrial land available in City (Columns 1 & 2), and Amount of industrial land available at Port of Tillamook Bay (Column 3)	***6.18***	***62.32***	***1,068.50***

Business Relocation from 101 North Floodway

City staff conducted a citywide inventory identifying vacant lots, lots that potentially could be redeveloped from a non-conforming use to a conforming use or potentially could be redeveloped with greater intensity of use. City staff also identified parcels that have been 'for rent' for an extended period of time, and noted these areas as 'redevelopable'.

Tax assessor maps were used as a base for identifying the subject properties in the City for the study. A color coding system was used on the maps and each tax lot identified as vacant or redevelopable was denoted with a distinct color (green for vacant parcels, red for redevelopable parcels). The City Zoning Map was used to identify the location of commercial and industrial lands in the City and areas the businesses could relocate to.

Vacant and potentially redevelopable lands were identified by making observations from a vehicle on a block-by-block, parcel-by-parcel basis.

The area within the Floodway and City Limits was identified both in terms of total acreage for each of the properties that potentially could be relocated, and accumulated acreage combining each of the buildings that could be relocated. Parking requirements should be calculated on a case-by-case basis because of the different commercial uses on each of the properties and each of the parking districts located in the areas where the businesses could be relocated.

In 2009, JOHNSON REID, along with OTAK, INC., THE BENKENDORF ASSOCIATES, CORP., and VLG CONSULTING were retained by the City of Tillamook via the State of Oregon Community Solutions project funding program to study two key land need and (re)development issues facing the City as it works with local businesses and property owners located in flood-prone areas:

- The potential for locations within the City of Tillamook or nearby to adequately receive businesses and property owners who choose to relocate away from flood-prone areas; and
- The potential for the City of Tillamook and its community development partners to utilize vacated lands within flood-prone areas in such a manner that enhances the community.

In the course of the study the Project Team, with City coordination and support, identified four potential "receiving sites" that could reasonably accommodate candidate businesses seeking a new location out of flood-prone areas. The four sites were analyzed for feasible uses, commercial viability, (re)development suitability and feasibility, and likelihood for success. These sites are:

1. Highway 6 & Wilson River Loop Site (Receiving Site #1) – A 21-acre site along Highway 6 at Wilson River Loop Road that enables the largest aggregation of new and relocated commercial development within the UGB. We find the site, based on future market conditions and commercial broker input, affords the City the "lowest-hanging fruit" regarding a new node of commercial activity with significant commercial "gravity" for several different businesses.

2 Highway 6 & US Highway 101/Pacific Avenue Extension (Receiving Site #2) – A potential traffic reroute of Highway 101 at Highway 6 would create significant changes in commercial improvements should the alternative be selected. Right-of-way would replace the Mar Clair Inn and nearby commercial/restaurant improvements. The significant change in improvements near this key intersection would likely afford new potential for several different businesses at this key, highly traveled and visible intersection.

3. Downtown Tillamook (Receiving Site #3) – Downtown Tillamook West of Highway 101 between Front & 3rd Streets affords a number of redevelopment opportunities for

relocating businesses. The majority of sites, however, have highly varied improvement values, highly varied access and visibility qualities, and unknown owner intentions with sites largely confined to single city blocks.

4. Port of Tillamook Bay (Receiving Site #4) – The Port of Tillamook Bay undoubtedly has numerous Greenfield and business park sites zoned for general industrial uses that could host various businesses. Due to the industrial restriction in the current zoning at the POTB, the pool of candidate businesses in existing flood-prone areas along north 101 that would conform to zoning at the Port is limited.

Given completed analysis, two sites (Receiving Sites 1 & 2) were specifically identified as offering substantial relocation potential given location and site suitability such that preliminary concept plans were created to illustrate potential development and redevelopment capacity, orientation, and access on-site.

Existing Land Uses in the 101 North Floodway

There are approximately twenty-one (21) flood prone businesses and four (4) flood prone houses located in this 101 North area. Eight (8) of these businesses are restaurants (three (3) drive-thru restaurants and the remaining five (5) sit-down restaurants), and the other thirteen (13) are other commercial retail, such as automobile dealerships, auto parts stores, agricultural sales stores, fireplace/mechanical equipment stores, hardware stores, trade stores, and commercial services, such as repair shops, real estate offices, and auto services. Businesses and homes that have already relocated or elevated themselves, or properties and buildings that are vacant, were not included in this inventory.

The acreages of the properties used by existing businesses on North 101 that haven't relocated or elevated themselves two (2) feet or more above the Base Flood Elevation (BFE), breaks down to approximately 15 (14.97) acres for restaurants, and approximately 25 (25.31) acres for other commercial retail and commercial services. Additionally, approximately 2 (1.64) acres are used by the properties of non-conforming residential structures. This equals a total of approximately 42 (41.92) acres that have the potential to be relocated onto higher ground.

The actual size of the commercial buildings and uses on each of the properties identified is much smaller than the total acreage and breaks down further to a total of approximately 9 acres of commercial structures. This means approximately 22% of the properties in the floodway is consumed by commercial structures and uses.

Conclusion

The above analysis shows that Tillamook has an adequate amount of land planned and zoned for commercial and industrial development for the next twenty years. This includes future development as well as business relocation from certain areas of town (see Appendix Y). The total also could accommodate the necessary acreage needed to

relocate the twenty-one flood-prone properties identified, and far exceeds the necessary 9 acres needed to relocate business structures identified, as is reported in Appendix Y.

It is important to ensure that the right types of land, in terms of lot size, location, services, etc., are available. Generally, the vacant lands in Tillamook's inventory are well suited for commercial and industrial development, but several key parcels have some problems. For example, the large commercial parcel in the Urban Growth Area east of town has good exposure to Highway 6 but access to the highway is limited. The large industrial parcel in the Urban Growth Area east-southeast of town has ample room for large developments, but limited access to roadways, limited exposure to the major transportation routes, and challenges for infrastructure availability.

Several older commercial buildings in Tillamook's downtown are vacant, for sale, and there are a number of existing storefronts in the downtown area available for rent. Their location makes them highly desirable for many types of retail, office, or other commercial uses. Most of them, however, need some remodeling or repair, and bringing these older structures (especially those with masonry construction) "up to code" may be expensive. The extent to which the downtown buildings are redeveloped will have a significant effect on the community's need for commercial land – and on its economy.

This presents the city with a choice: compensate for the weaknesses of some commercial and industrial sites by adding additional parcels to the inventory, or enhance the existing inventory by improving access, developing infrastructure, and, especially, enhancing and redeveloping the downtown. This is essentially a choice between quantity and quality of buildable land.

To put it another way, do planning and zoning a large quantity of sites for commercial and industrial use, or by focusing the City's attention on the quality of key sites for development better serve Tillamook's economy? It may seem that "quantity" is the obvious answer, but in fact there are several not-so-obvious problems in planning and zoning much more land for development than is likely to be needed.

The main problem is cost of infrastructure – public facilities, services, and utilities. If "raw land" were all that commerce and industry needed, infrastructure would not be a big issue. But today, commercial and industrial developments need quite an array of services. Most developers will seek developed sites that have suitable water, streets, sewage disposal, storm drains, fire protection, electricity, and so on. If the city plans and zones an excess of land for development, it winds up paying for excess capacity in its service systems.

A second problem is often referred to as "sprawl" – the spreading of a city over an unnecessarily large area. For every acre the city plans and zones for commercial and industrial development, an acre of farmland or an acre that could have been used for parks or housing is displaced. Planning an excess of land for development thus may have unforeseen costs.

For such reasons, the "quality" option may be preferable: the city should concentrate its efforts on making the existing commercial and industrial zoned lands market-ready. Focusing development in and around already existing centers of development may be more suitable for quality economic growth and development.

Goal, Objectives, Policies, and Implementing Procedures for Economic Development

Goal for Economic Development

To diversify and improve the economy.

Objective No. 1 for Economic Development: To improve the economic vitality of the Tillamook area, and Revitalize the Tillamook City Downtown.

Policies for Objective No. 1 for Economic Development

Policy E-29: The City will promote a revitalized City Center that serves as a Gateway to Commerce supporting residents and tourists in a viable economic and cultural manner.

Implementing Procedures for Policy E-29

- Develop a marketing program to promote tourism and to advertise Tillamook's historical significance.
- Develop a marketing program to make businesses aware of Tillamook's potential for economic development.

Policy E-30: The Town Center Plan shall include design review standards and criteria and be a commercial overlay district in the City Development Codes. The Plan may compliment early efforts and provide continuity of purpose in terms of color schemes, architectural and design elements and public open space.

Implementing Procedures for Policy E-30

- The City shall develop and preserve the City Center to retain a small, friendly, relaxed and welcoming environment, and maintain a small town center atmosphere.

Policy E-31: The City shall explore the desirability ard feasibility to providing in the core area, public restrooms, covered walkways and sidewalk amenities, such as trees/shrubs, benches and a public fountain.

Policy E-32: Programs to enhance the Central Business District, such as improving the outward appearance of the existing structures and an overall downtown development plan are desirable to help maintain the economic viability of this area. A special emphasis should be placed on the Town Center development and traffic and parking patterns and problems in the CBD.

Implementing Procedures for Policy E-32

- A Downtown Master Plan for the built environment will include a staging plan for restoring key structures and a remodeling plan for upgrading structures by defined development standards.
- The Downtown Master Plan will include the creation of restoration and remodeling standards to guide a staging plan.
- The Downtown Master Plan for the built environment will include the development of an era design program to provide guidance during the restorative and remodeling effort.
-
- There shall be design consistency (standards) in design review of the Commercial District.
- Develop an incentive program for meeting standards (Tillamook City Economic Development Loan Fund).

Policy E-33: Parking in the downtown area is essential. Surface lots shall be focused internally and designed to reinforce a pedestrian oriented streetscape. Perimeter landscape screening will be required for surface parking lots.

Policy E-34: New development and conversions in the central commercial district are encouraged and may be required to provide off-street parking. Generally, elimination of off-street parking requirements shall not take place unless adequate uncommitted parking spaces exist within one block walking distance, or when established off-hour shared arrangements allow double use of available spaces.

Policy E-35: The City shall continue to monitor new commercial development to assure that available parking spaces equal customer demand. The City shall encourage private investors to fund needed parking (by L.I.D., revenue bonds, etc.).

Policy E-36: Expansion of the Central Business District (CBD) shall be monitored to identify when it is needed.

Policy E-37: The City shall monitor increased growth and projected future growth of Highway Commercial uses and the need for expansion. Specified Highway Commercial areas at the northern, southern and eastern borders of the City, would provide economic opportunities of:

a. Increased employment sources, investment and tax revenues of existing and new business activities.

b. Eliminate the problems of conflicting uses by providing adequate space for highway related uses not suitable for location in other areas of the City.

c. Maintaining and increasing tourist trade revenues.

d. Providing a social focal point such as a highway rest/wayside in conjunction with Chamber of Commerce informational activities.

e. Providing additional land area for location and expansion of new and existing businesses.

f. Centralized Highway Commercial uses to maximize energy conservation techniques and minimize travel time.

g. Provide for possible location of a Retreat Center complex.

Policy E-38: The classes and types of businesses and/or services that require large land areas are to be encouraged to locate in the Highway Commercial area, and shall include motels, restaurants, auto sales and repair, commercial recreation, service stations, garden/farm supply stores, nurseries, home furnishings, retail lumber, and other retail and wholesale establishments.

Policy E-39: Tillamook City must have a distinctive identity heralded by its well-recognized five Gateways, and shall provide "City Gateways" at the five (**5**) major street entrances to the City of Tillamook: Trask River Bridge, Wilson River Bridge, Port of Tillamook Bay RR Bridge on Highway 6, South Highway 101 Divider Island at Main & Pacific, the Hoquarton Crossing on 101, and enhance the Gateways image by distinctive signage, lighting & landscaping. Each "Gateway" and City entrance shall include current City population. The City additionally shall develop and include appropriate commerce signage for each Gateway that identifies the Downtown Commercial District.

Policy E-40: The City shall encourage the development of a tourist wayside-rest area along Highway 101 North and Highway 6, and shall coordinate with Tillamook City service clubs to acquire and develop such facilities.

Objective No. 2 for Economic Development: To create more and better jobs in Tillamook, to raise per capita income, and to have the resulting wealth be retained and reinvested in the community so as to create a better quality of life for all.

Policies for Objective No. 2 for Economic Development

Policy E-41: The City will encourage a downtown development plan with implementation strategy to guide the creation of a viable business organization, a restructured economic market mix of commerce in the City Center and a design initiative which refreshes and underscores the pedestrian-friendly, livable aspects of the City Center.

Implementing Procedures for Policy E-41

- Work with civic and business leaders to create a redevelopment master plan for Tillamook's central commercial district and Town Center to make the downtown more attractive to shoppers and businesses. This master plan should address matters

such as street furniture, street trees, lighting, pedestrian circulation, parking, public art, refurbishing of storefronts, and restoration of older buildings. The Town Center Plan, shows how the downtown could look if such a plan were developed and implemented.

- The Downtown (Central Commercial Core) business mix should effectively support residential markets first and tourism markets second and be the backbone of a business and service center for the City and the area.

Policy E-42: The Community and the government shall encourage the retention of the downtown business district as the primary shopping, service and financial center for the City of Tillamook area.

Implementing Procedures for Policy E-42

- Support the downtown revitalization effort.

Policy E-43: The City shall investigate municipal means as well as encourage downtown business attempts, to form improvement districts or other financial means of enhancing the vitality of the central commercial area. Such attempts shall not be limited to parking improvements, but shall also focus on use of second story buildings, attractive shops and public attraction areas and the providing of adequate downtown apartment housing.

Implementing Procedures for Policy E-43

- Downtown stakeholders shall strive to build a better revitalization network. Stakeholders include, but are not limited to: the Resident Shopper, the Resident Non-Shopper, City Service Organizations, Tillamook Chamber of Commerce, Tillamook City Council, Tillamook City Administration, Tillamook County Commissioners, Tillamook County Administration, Tillamook Revitalization Association, utility providers, and others.
- Blend and coordinate stakeholders who are involved with the Downtown's future to include, but not be limited to: the Resident Shopper, the Resident Non-Shopper, City Service Organizations, Tillamook Chamber of Commerce, Tillamook City Council, Tillamook City Administration, Tillamook County Commissioners, Tillamook County Administration, Tillamook Revitalization Association, utility providers, and others.
- Promote partnerships between civic local and business groups and local government that will enhance a welcoming environment and a more visual pleasing downtown through a recognition / reward program and nuisance ordinances.
- The City of Tillamook is to provide leadership and coordination in developing public use, focal-point areas within the City Center.

Policy E-44: The leadership focusing on the downtown development will place ongoing emphasis on restoration and remodeling where appropriate.

Implementing Procedures for Policy E-44

- Foster a climate, which promotes a physically safe environment that is pedestrian-friendly.
- The City government and utility providers shall actively support and participate in the creation of a viable business mix and a pedestrian-friendly and livable City Center ().
- The City government shall encourage economic diversity through business recruitment that is specific and value-driven by quality and service.

Policy E-45: The City shall recognize and preserve community heritage. Historic buildings and other features shall be preserved and renovated, and a touring program to visit sites of community heritage shall be pursued.

Implementing Procedures for Policy E-45

- Develop and conduct a touring program to visit sites of community heritage.
- Identify and inventory the community heritage sites.
- Identify and preserve, with legal language, the City's historic buildings.

Policy E-46: The City shall support an active Economic Development Advisory Committee and shall work with that committee, the Port of Tillamook Bay, the County and Chamber of Commerce to:

- interest tourists in year round visits to Tillamook;
- use existing timber resources in local wood products manufacturing;
- increase local marine food processing;
- attract appropriate manufacturing concerns to the Tillamook area;
- support public facilities including water, sewer and parking to handle the planned growth;
- monitor changes in employment, population, retail sales, etc., in order to bring information up to date and be able to make adequate choices as development alternatives become available;
- focus key civic uses in the Town Center Area.

Policy E-47: The City shall encourage effective business diversity to be in place.

Policy E-48: The City shall maintain an adequate supply of buildable commercial and industrial lands suitable for businesses and industries likely to locate in Tillamook.

Policy E-49: The City shall protect designated commercial and industrial lands from conflicting uses by applying appropriate zoning and land development ordinances.

Policy E-50: The City shall work to ensure that buildable commercial and industrial lands are market-ready, with access, infrastructure, and permit needs capable of being met at key sites within six months of receiving a proposal for development.

Policy E-51: Realizing the importance of industry to the economic stability of the community, it is desirable to encourage and aid in the improvement and well-located industrial development.

Implementing Procedures for E-51

- Existing industry is encouraged to expand in the Tillamook City area.
- Additional light and heavy industries are needed to help diversify and balance the fiscal effects of the Community's growth in the Tillamook City area.
- Suitable locations for heavy industry exist at the Port of Tillamook Bay industrial park and in several light industrial sites lying to the east and north in the Urban Growth Boundary area.
- New industry would provide increased employment source, investment and tax revenues in the Tillamook City area.

Policy E-52: The City shall promote and encourage greater use of Port of Tillamook Bay for industrial uses.

Policy E-53: The City shall participate in a countywide economic development program to recruit industry appropriate for the area.

Policy E-54: The City shall work with key state and federal agencies to promote local economic objectives and to seek financing for economic development programs and projects.

Policy E-55: The City shall work with Tillamook County to protect and support the agricultural lands that surround Tillamook for commercial agricultural production.

Implementing Procedures for E-55

- Encourage cultural events related to the rural, agricultural heritage and traditions of this community.

Policy E-56: The economic vitality of the Tillamook area should be encouraged by attracting new, diverse employers, and the City shall work closely with the County Economic Development Council in attracting new industry to the area and new commercial, residential and civic uses to the Town Center area.

Chapter 12: Housing (State Goal 10)

This chapter has five sections, dealing with these aspects of housing in Tillamook:

- The current supply of housing;
- The current supply of vacant, buildable land for new housing;
- The number and types of new dwelling units that will be needed by 2030;
- The amount of buildable land needed to meet Tillamook's needs for new housing;
- Strategies for Tillamook to ensure an adequate supply of buildable land and housing.

Tillamook's Current Supply of Housing

This chapter's information on current housing stock comes from reports from the Portland State University (PSU) Center for Population Research and Census for the years 1990, 2000 and 2010.

Key tables from the 2000 PSU census are reproduced in Appendix W. They provide considerable detail on Tillamook's housing stock and household characteristics.

Tillamook's 2010 housing stock consists of some 2,248 dwelling units inside the City Limits. A majority of these units - approximately 64% - are detached single-family dwellings (site-built homes and manufactured homes) on individual lots. 8% are duplex and attached dwellings. Twenty-six percent (approximately 26%) are multifamily (attached single-family, apartments, duplexes, etc.). The rest are mobile homes in parks. Outside of the City Limits, but inside the Urban Growth Boundary, the Urban Growth Area, the residential mix is 53% single-family, 37% multi-family, and 10% mobile home.

Reviewing past trends, in 1980 the residential mix within the City limits included 70% single-family, 3% duplex, 26% multi-family dwelling units, and 1% mobile homes. Outside the City limits but within the Urban Growth Boundary, in 1980, the residential mix included 75% single-family, 12% multi-family and 13% mobile home dwelling units. Additionally, in 1970 the residential mix within the City Limits included 77% single-family, 3% duplex, 19% multi-family, and 1% mobile homes. It appears that there has been a slight shift in the overall composition of housing type over the past 30 years between the number of single-family dwellings, and the number of multi-family dwellings and mobile homes. This is especially apparent in the UGA.

The split between owner-occupied and renter-occupied today is about 47/53. About 53% of the occupied dwelling units are owner-occupied. The other 47 % are renter-occupied. Again looking at figures from 1980, the number of renter-occupied houses has decreased from 60% while the owner-occupied housing has slightly increased from 40%.

Another factor to examine is that in 2000 just over seven percent (7.7%) of Tillamook's renter-occupied dwelling units were vacant and 2.5% of Tillamook's owner-occupied

dwelling units were vacant. When these percentages are compared to the 1980 figures, of 2.4% and 3.3% respectively, the vacancy rates have increased.

Tillamook's Housing Characteristics and Quality of Homes

A large percentage of the housing stock, particularly those within or near to the center of town, is 50 years old or older. This situation combined with the relatively slow growth of new housing has contributed to a less than desirable housing situation. In 1988 a study presented the percentage of housing that is standard and that that is substandard within the City Limits. According to this study, approximately 43% of the housing stock within the City remains standard, and approximately 57% of the housing within the City Limits is substandard. Approximately 78% of the substandard houses have the potential to be rehabilitated. The remaining 22% appear to be beyond rehabilitation and require demolition for reuse.

TABLE 11-1: CITY OF TILLAMOOK CONDITION OF HOUSING SUMMARY

Classification	No. of Units	% of Total
A	137	11.6
B	360	30.48
C	525	44.46
D	146	12.36

In general "A" and "B" structures are essentially standard with "B" structures having some minor deficiencies. "C" and "D" structures are sub-standard, however, rehabilitation of many "C" structures may be possible. "A" housing represents most new homes and "B" homes have only minor problems associated with updated building or electrical codes.

Every community must insure that adequate housing at appropriate costs is available to those desiring to live within the City. This section addresses the provision of such housing and delineates policies affecting single and multi-family dwellings, mobile homes and housing programs.

Tillamook's Income Characteristics

From the 2010 Census, a clear picture of the population of Tillamook City has emerged to provide further detail for the local housing needs. The state of the economy, both locally and nationally, has a direct impact on the options available to the Tillamook consumer.

These constraints on the local consumer are made manifest through the median household income of $29,575.00 for City residents. The Department of Housing and Urban Development has established a standard for measuring a household incomes ability to provide shelter. This standard generally states that households with less than 80% of median income are in need of housing assistance. Eighty percent of $29,575.00 is $23,660.00 per month. In 2010 approximately 44% of the households in Tillamook fell below $23,900.00 per month income, thus, according to the Federal criterion, a large number of City households would qualify for housing assistance.

Therefore it has becomes apparent that the role of rental housing needs to be assessed as a possible alternative to the housing needs of the local consumer faced with a limited income. The forms of rental housing considered most important here are duplex and multi-family units. This form of housing will likely continue to remain an important component of the Tillamook housing stock, while financing for owner-occupied units remains high, especially for young couples and single households.

Further confirmation of this trend is provided by US Census information, which shows a 37.2% rise in renter-occupied housing from 1970 - 1980, a 12.2% rise from 1980 to 1990, and a 4% rise from 1990 to 2000 (approximately17.8% overall); and a decline of 5.7% in owner-occupied units from 1970 - 1980, 9% from 1980 to 1990, 3% from 1990 to 2000, (approximately 5.9% overall).

Density Standards

Density standards are critical in relating the number of dwelling units to an acre of land. These standards will vary according to the housing type (i.e. single-family, duplex, multiple-family) and are a function of the safety, public health and aesthetic values adopted by the local community.

Minimum lot area has proven to be the major criterion in arriving at density standards in the housing projection for Tillamook, particularly for single-family and duplexes. This method provides for adequate control of setback, lot depth, width and area and the percent coverage of the lot by the building. For multiple family developments, the City deviated slightly from the minimum lot area method. Tillamook's average density is 7.05 units per acre.

Data from the census are summarized in the tables in Appendix XXIX, and support the following conclusions about Tillamook's housing stock and households:

- The predominant type of housing is low-density, single-family residential.
- During the last decade, that general pattern of low-density residential development changed little. But the mix of housing types changed significantly: the number of manufactured homes almost doubled, while the number of site-built homes remained about the same.
- Tillamook's housing stock is older than the housing in many communities. The 2000 Census reports that approximately 62 percent of Tillamook's housing stock was built before 1960. The comparable statewide figure is 30.8 percent. However, the number of units rated as "substandard" in Tillamook by the census is small.
- A majority (approximately 68 percent) of Tillamook householders moved into housing units in the 1990's, with a greater share of this percentage moving in the late 1990's (1995 –1999).

- Tillamook's occupied dwelling units have a median value of $167,384 (up from the 2000 figure of $98,300). Nationwide, the median value is $257,400.
- Construction of new dwellings in Tillamook has outpaced population growth. From 1990 to 2000, the number of dwelling units increased by about 9 percent, and 2000 to 2010 by about 3 percent, while the city's population increased by about half that much. The vacancy rate has increased from 3 percent to approximately 6 percent to around 7 percent (a dramatic increase). These changes tend to (in theory) make housing more affordable.
- A small fraction of Tillamook's homeowners (13.3 percent) pay more than a third of their income for housing. However a larger fraction of renters (35.7 percent) pay 35 percent or more of their household income for shelter. Statewide, 17.5 percent of homeowners and 32.2 percent of renters pay 35 percent or more of their household income for housing.
- Tillamook's population has a small proportion of elderly persons (15 percent over 62 years or older), however that proportion is likely to increase in the next 10 years. In Tillamook, only 13.7 percent of household residents are 65 years or older. Statewide, the comparable figure is 20.9 percent.

Tillamook's Current Supply of Buildable Lands

Oregon's Statewide Planning Goal 10, *Housing*, requires each city to plan and zone enough vacant *buildable lands* to meet its needs for new residential development. The goal defines buildable lands as "lands in urban and urbanizable areas that are suitable, available and necessary for residential use." The basic idea underlying the concept of buildable lands is that the **quality** of vacant lands planned for residential development is just as important as the **quantity**. Cities must ensure that land planned for housing has the topographic features, location, access, and public services necessary for housing to actually be built there.

Planners call the detailed description of a city's vacant land planned for residential development a "buildable lands inventory." The City completed such an inventory for the City of Tillamook in 2008. It is attached to this plan as Appendix XXX, an element of the plan.

In analyzing vacant lands that might be suitable for residential development, a city must consider environmental constraints such as wetlands and slopes. Lots that are too wet or too steep for development are excluded from the inventory. Likewise, "landlocked" parcels with no access to public streets, and lots that cannot be readily served with essential public facilities and services are not counted as buildable. By subtracting the acreage not suitable for development from the total area of vacant land planned for residential development, we reach a "bottom line" figure: total acres of "net buildable land."

Tillamook's net buildable land supply for new residential development totals approximately 145 acres. The buildable lands inventory, Table 7 and 8, Appendix V, indicates that the city has about 51 acres of net buildable land for residential development within the current city limits, while the Urban Growth Area contains an additional 94 acres. Potentially additional residential growth could also locate in the commercial zone districts. If this commercially zoned land was utilized for residential uses that are secondary to the commercial uses, the City has an additional 45 acres of buildable land for residential development in a mixed use environment.

This buildable land is planned and zoned for both low-density and medium-density residential development. This includes the R-7.5, Single-Family Residential, R-5.0, Single-Family and Duplex Residential, and R-0, Multiple Use Residential zone districts. Residential growth in the commercially zoned districts could include the C-C, Central Commercial, C-N, Neighborhood Commercial, and C-H, Highway Commercial zone districts. The R-7.5 zoning specifies a minimum lot size of 7,500 square feet, which yields a maximum gross density of **5.8** units per acre. The minimum lot size in the R-5.0 zone district is 5,000 square feet, which yields a maximum gross density of **8.7** units per acre. The R-0, C-C, C-N, and C-H zone districts specify a minimum lot size of 1,452 square feet, which yields a maximum gross density of **30** units per acre.

There are approximately 30 acres of land adjacent to the downtown area (east and west) that are planned and zoned R-5.0, for low-density residential development (single-family, duplexes, triplexes, and fourplexes). However, these R-5.0 lands are almost entirely developed and thus can be developed with infill development and are difficult to consider in general vacant or buildable except on a lot-by-lot basis.

Amounts and Types of Housing Tillamook Will Need to 2030 (Housing Needs Analysis)

Another important concept from the statewide planning goal on housing (Goal 10) is that of *needed housing*. The goal defines that as "housing types determined to meet the need shown for housing within an urban growth boundary at particular price ranges and rent levels."

The idea underlying this important definition is that a community must plan and zone for the proper mix of housing types needed there. For example, a rapidly growing university town is likely to need many multifamily units. A "bedroom community" with a high proportion of elderly people might need to plan and zone a large proportion of its buildable lands for manufactured home parks. Most cities, including Tillamook, need buildable land for four main types of needed housing: detached single-family dwellings, multifamily housing, manufactured homes, and government-assisted housing.

To estimate how many units of each housing type will be needed, each city in Oregon conducts a "housing needs analysis." For its analysis, the City of Tillamook used as its guide the procedures set forth in ORS 197.296 and the Department of Land Conservation and Development's handbook on that law, *Planning for Residential Growth* (June 1997).

ORS 197.296 authorizes DLCD to waive most provisions of that statute for small cities. Tillamook is among the cities granted such a waiver. The city thus is not obligated to comply with the statute but did use it as a guide for this analysis.

A city's need for housing derives from a variety of factors, such as population growth and current supply of housing. Those factors are evaluated below. The evaluation provides a basis for forecasting Tillamook's housing needs to the year 2030.

Projected Growth: As noted in Chapter 9, the city forecasts a population of 6,038 people in 2030, an increase of 1,103 persons over the city's population in 2010. We forecast that all these additional persons will live in households, and that the number of persons living in group quarters will remain the same. The number living in group quarters is not likely to change unless an existing group facility such as the Kilchis House, Five Rivers, or Sheridan Square is expanded or a new group facility is built. The last plans and construction of a group facility for senior living were made in 2003. The City is not aware of further plans for expansion of these existing facilities or construction of additional facilities.

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Conventional Housing Programs: As the cost of land and housing continues to rise and building materials and energy supplies become relatively scarce, the existing housing stock represents greater resource to the City and the people of Tillamook. Preservation of current housing is essential if decent, affordable housing is to be available in the future.

Subsidized Housing Programs: Currently several subsidized housing programs are in operation in the Tillamook area.

A housing study conducted in 1978 indicates that approximately one-third of the households in Tillamook County pay more than twenty-five percent of their income on housing.

It is a generally accepted standard that households paying more than twenty-five percent of their income on housing are paying more than they can afford.

Household Size: Based on the data cited earlier in this chapter, we forecast an average household size of 3 persons per unit. In the year 2000, the statewide average was nearly identical: 2.51 persons. The City of Tillamook's was 2.46 in 2000, having declined from 2.89 in 1990.

This general statewide trend towards a smaller household size is also to be found in Tillamook. Smaller families, more single parent households, and a growing percentage of seniors within the general population will lead to an increased demand for housing without necessarily increasing population. One-person households have grown from 23% of the average household size in 1970 to 31% in 1980, with an accompanying decline in the four plus person households of 30% to 22% for the same respective period.

The State Housing Division estimates a stabilization of household size of approximately 2.45 and believes this trend will hold for the duration of the planning period. This phenomenon also has ramifications for the types of dwelling units that will be in demand for the next twenty years. Smaller single-family attached and detached dwellings, multiple-family, duplex and mobile homes will diminish the predominance previously enjoyed by the larger single-family detached dwelling designed for large families.

In the near future Tillamook's average household size will decline as the community's population ages, household size generally decreases, and Tillamook's population continues to age. Indeed, a significant part of the community's growth in recent years seems to be retirees moving from rural farms to retirement homes in the city.

Housing Mix: It is apparent from the above information that Tillamook needs more housing of all types. In particular, it needs affordable units suitable for an aging population, and one person households. This suggests that demand for manufactured homes, on individual lots or in parks, will continue to increase, as it did from 1990 to 2000.

The mix in 2000 was 60.5 percent site-built single-family dwellings; 16.6 percent multifamily dwellings; and 22.5 percent manufactured homes. By the year 2030, we estimate that the city's mix of housing types will come to be 55 percent site-built single-family dwellings, 15 percent multifamily, and 30 percent manufactured homes. We estimate that one-third of the manufactured homes will be sited in parks and two-thirds will be placed on individual lots (approximately the same distribution that exists now).

The rationale for the ratio of land allocated for single family and multi-family development is based on analysis of housing costs, a housing survey conducted in 1978, overall population growth needs, suitability of land areas for the housing types, and balancing these issues with other community goals. Buildable lands for residential use are those lands that are undeveloped and given low-density residential or medium density residential land use designations in the plan.

Redevelopment and Demolitions: Not all new housing is built on vacant land. Older homes sometimes are remodeled or replaced to create more or better dwelling units. This is "redevelopment." It often is an important factor in planning for needed housing types in larger, fast-growing cities. Large, older homes on valuable land in inner cities may be replaced by multifamily housing with higher densities, thereby increasing the number of dwelling units. Conversely, demolitions may be significant in older cities with declining populations and stagnant economies. In Tillamook, however, neither redevelopment nor demolitions are likely to be significant in planning for needed housing, for **a couple of** reason**(s)**.

First, Tillamook's housing is predominantly single-family detached homes on individual lots. A big shift to multifamily housing is unlikely. As a result, much of the redevelopment is likely to consist of dilapidated individual older houses being razed and

replaced by a newer site-built dwelling or manufactured home. The number of dwelling units thus would remain unchanged: redevelopments and demolitions will cancel each other out.

Second, the City lacks objective data on redevelopment and demolitions that might be used to predict the future. Right now, any forecasts on these topics would be little more than guesswork.

Areas in the older portions of the City that consist of large amounts of deteriorating homes might be considered an exception to the above reasoning. Such areas exist adjacent to the downtown. These sites are generally level, close to all the shopping amenities, and fully served with water, sewers, and other infrastructure. Many of these properties are currently planned and zoned for low-density residential use. It is, however, a likely place for redevelopment that could be beneficial to the community in the future, perhaps as a site(s) for a large number of units of multifamily housing. An evaluation for redevelopment and to rezone the properties for medium-density residential use therefore should be considered.

Housing rehabilitation can be accomplished best by the institution of an active housing rehabilitation program. Recently, the greatest deterrents to home rehabilitation have been the lack of adequate financing and the lack of knowledge about the financing that is available. Special efforts will have to be made to insure that families with low to moderate incomes can take advantage of the available rehabilitation resources.

Vacancy Rate: At any particular point in time a certain number of dwelling units will be available for purchase or rent within the community. This is a desirable situation from the standpoint of insuring a range of housing opportunities for those consumers who desire to avail themselves to a home or rental purchase. The U.S. Census shows a vacancy rate in the City of approximately 9 percent (up from 6% in 2000).

Using the above forecasts and assumptions, we calculate Tillamook's need for additional units of housing to the year 2030 as follows:

Total New Housing Units Needed: 83

To identify this number of new housing units needed by the year 2030, the City has utilized the Housing Needs Analysis Equation presented in the State Department of Land Conservation and Development workbook publication, "Planning for Residential Growth"

For 2030, the Total projected population is 6,038, an increase of 1,103 persons. The total projected population then is divided by the average household size of 2.46. This amount equals 2,455 housing units needed by 2030 for 6,038 people. From this amount the current number of housing units, according to the 2010 U.S. Census is 2,248 housing units, is subtracted from the 2,455 housing units needed, leaving 207 units needed. To examine the amount of units needed in 20 years further, we can look at the U.S. Census 9.4% vacancy rate of the 2,248 units existing today. This vacancy rate increases the units

available by approximately 211 units and therefore creates a surplus in the number of units available.

Understand that these numbers only reflect the housing inside the City Limits and do not reflect the approximately 240 housing units in the Urban Growth Area.

Estimating Tillamook's Need for Buildable Land

The city, of course, cannot create the **83** housing units it expects to be needed over the next 20 years: the private market will determine just how many units get built. But the city can strongly encourage the development of new housing stock by planning and zoning an adequate supply of buildable land.

The amount of land needed will depend on density of development. For example, if all **83** of units needed were built at a low density of 6 units per acre, they would use around **14** acres of buildable land. In contrast, if all the new units were in townhouses, apartments or condominiums at 30 units per acre, they would use only **3** acres.

Those hypothetical examples show why it is more costly to provide public services and utilities to low-density development: it would be much more expensive for Tillamook to extend public streets, sewers, police, fire protection, and other services to **83** dwellings spread over **14** acres than to serve the same number of units on **3** acres. Private costs of development and maintenance also are affected by density. The general rule is this: the lower the density, the higher the costs of developing and maintaining the dwellings there.

But costs are not the only factor in determining density of development. Consumer preferences greatly influence density, and in the smaller communities and rural areas of the west, there is strong demand for large lots and low densities. We predict that such demand will continue in Tillamook but that it will be moderated by two factors: an aging population seeking smaller housing units, and significant increases in the costs of public services such as water.

In Tillamook today, average density of development within the current city limits is about 7.05 units per acre. That's "net density": it doesn't include land needed for public facilities such as streets and sidewalks. Typically, such facilities take about 25 percent of the land in a conventional subdivision. Tillamook's gross density thus is about 5.3 units per acre. That density varies from a high of about twenty units per acre in areas with multifamily housing complexes to a low of four or five units per acre on very large lots.

In the Urban Growth Area (UGA) (land between current city limits and the Urban Growth Boundary), densities are much lower because the area currently lacks urban services. There are about 240 dwelling units in the Urban Growth Area. We assume that areas annexed to the city in the future will receive urban services and develop at densities like those now found within Tillamook's city limits.

Density of development varies, of course, with type of housing unit, and the zoning designation of the property. Based on the data presented earlier in this chapter, we

forecast densities as shown in Appendix V and we calculate Tillamook's need for buildable land accordingly.

It would appear that Tillamook has plenty of land to meet the overall needs described in Tables 4, 7 and 8 in Appendix VI: the city's supply of net buildable land for new residential development totals approximately 190 acres: 96 acres within the current City Limits (including commercially zoned properties) and 94 acres in the Urban Growth Area. Of these available acres, 157 acres are allocated for medium-density residential development and 33 acres are allocated for low-density residential development. At these densities, Tillamook has ample buildable land for housing in general and this includes sufficient land to meet its needs for multifamily development. So if the projected rate for the amount of single-family detached dwellings is around 70% of the total new households needed and the amount of multiple-family dwellings is around 30% of the total new households needed, the amount of land needed for the projected 83 dwellings would be 58 single-family units occupying between 9 and 10 acres, and 25 multiple family units occupying approximately 1 - 2 acres, which again, is well within the amount of land the City has allocated and zoned for residential development.

The ratios and acreages of residential dwellings complete with the open space, transportation alternatives, public facilities, and immediate recreation opportunities provide livability in Tillamook that surpasses that of many other areas in the State. Much of this could be discounted, if adequate economic opportunities are not provided within the Tillamook area.

Planning for Future Residential Development

It appears that with the current amount of land there is an adequate supply of land in the City of Tillamook for housing the expected increase in population for the next twenty years. In this brief overview of the new housing units needed for future residential development, the City has not looked closely at infill and redevelopable land. A formal housing needs assessment will be required to identify all aspects of the need for buildable land. Tillamook will employ the following goal, objectives, policies, and implementing procedures for housing.

Goal, Objectives, Policies, and Implementing Strategies for Housing

Goal for Housing:

"To provide for the housing needs of all citizens of the City."

Objective No.1 for Housing: To establish residential areas that are safe, convenient, healthful and attractive places to live.

Policies for Objective No.1 for Housing

Policy E-57: The City shall protect residential areas from encroachment of incompatible uses.

Policy E-58: The primary areas for new low-density residential development are east of the POTB Railroad Right-of-way.

Policy E-59: The primary areas for new multiple-use residential development are as follows:

East of the railroad tracks and,

(a) In the 'vicinity of Evergreen Drive and Third Street,

(b) In an area north of Fairview Road and east of Olson Road,

(c) Between Evergreen Drive and Marolf Loop Road running along the south U.G.B. line north of Marolf Loop Road (12th Street).

(d) In an area south of Brookfield Avenue, east of Marolf Loop Road,

(e) In the area on Third Street in the vicinity of the Tillamook County General Hospital,

(f) In the areas near parks and playgrounds, multi-residential development should be considered,

(g) In the residential areas surrounding the Downtown Commercial Zone, multi-residential development should be considered,

Objective No.2 for Housing: To plan for, provide and maintain an adequate supply of sound, affordable housing within the income level of the community, with a variety of dwelling types, such as single and multi-family dwellings, mobile homes, modular homes, in desirable locations, and a variety of densities, including compact residential development, adequate to insure meeting the housing need for a population increase within the City of Tillamook.

Policies for Objective No.2 for Housing

Policy E-60: The City encourages a wide range of housing types varying in size and price ranges so that all who desire to live in Tillamook will be accommodated, including adequate housing and care for special needs citizens.

Implementing Procedures for Policy E-60

- Provide special housing needs which may involve medical treatment.
- Inventory and redefine special-need housing for the next decade.

Policy E-61: The City shall support the efficient use of lands within the residential zones.

Policy E-62: Development on existing small lots (infill) is encouraged.

Implementing Procedures for Policies E-62 and 11-6

- Establish Land Use Zone to permit higher densities and smaller square foot ratios (smaller houses).
- Zone for compact development near parks and playgrounds.

Policy E-63: In low-density residential areas, developments on a mixture of 3,750, 5,000, and 7,500 square foot lots are encouraged. In the lowest density zone, an average minimum lot size of 7,500 feet is expected.

Policy E-64: In the lowest density zone, single new subdivision lot sizes may be as small as 3,750 square feet.

Policy E-65: Duplexes and single-family attached dwellings are permitted outright in low-density residential areas.

Policy E-66: Multi-family residential structures are permitted in medium density residential areas.

Policy E-67: The medium density residential designation shall include offices as a conditional use.

Policy E-68: Lot sizes smaller than 3,750 square feet are allowed in the medium density residential zone.

Policy E-69: Plan and zone a supply of vacant buildable land adequate to meet the community's needs for housing to 2030 as described in this chapter.

Policy E-70: Ensure that all ordinance standards and procedures for reviewing applications for permits for needed housing types are clear and objective.

Policy E-71: The City shall provide for and encourage development of apartments, duplexes, and other forms of multifamily housing in areas of the city planned and zoned for medium-density residential development.

Policy E-72: The City shall provide for and encourage development of manufactured home parks and manufactured homes on individual sites in areas planned and zoned for such residential development.

Policy E-73: The City shall provide for and maintain public facilities, services, and access necessary for residential development of vacant buildable land.

Policy E-74: The City shall ensure that all costs of providing public facilities and services to new residential development are borne by those who will build or buy the new dwellings.

Policy E-75: The City shall encourage development of new housing in areas where public facilities and services can be provided in the most cost-effective way.

Policy E-76: The City will implement quality elements of compact residential development.

Policy E-77: Garages are set back to the rear of residential lot or alley side of the property.

Policy E-78: The City encourages houses that occupy small lots clustered around public spaces such as parks or playgrounds. Innovative design and development techniques are also encouraged.

Policy E-79: Planned unit developments are encouraged to afford a degree of flexibility not permitted by traditional site planning.

Policy E-80: Flexibility in access and lot size and configuration is encouraged to allow full development potentials for land areas.

Policy E-81: New housing construction, especially multi-family, shall include outdoor landscaping and other amenities.

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Objective No.3 for Housing: To rehabilitate and improve existing sub-standard housing, including unimproved streets.

Policies for Objective No.2 for Housing

Policy E-83: Manufactured Homes are permitted to locate on individual lots in all zones that permit single-family housing (according to ORS 197.307).

Policy E-84: Programs for the maintenance, conservation and rehabilitation of existing residential areas and housing stock within the community are encouraged. The City shall support the Northwest Oregon Housing Authority in its work with low-income people.

Implementing Procedures for Policy E-84

- Promote rehabilitation and weatherization programs to help preserve Tillamook's current housing stock.

Policy E-85: Tillamook encourages the use of the following programs in order to meet the needs of its citizens.

-Department of Housing and Urban Development
1. Subsidy to homeowners
2. Subsidy to renters
3. Rent supplement program
4. Housing rehabilitation and weatherization funds

-Farmers Home Administration
1. Homeowners and renters programs

Policy E-86: The City discourages the concentration of low-income housing in any one area of the city.

Policy E-87: The City allows for the conversion of older homes into apartments where larger homes can no longer be reasonably maintained as single-family residences.

Policy E-88: The City promotes energy-efficient housing.

Policy E-89: The City encourages redevelopment of the deteriorated properties adjacent to downtown for multifamily housing by changing the current plan and zoning map designations for that property from Low-Density Residential use to Medium-Density (R-0) Residential.

Implementing Procedures for Policy E-89

- Develop ordinance provisions to facilitate redevelopment in the residential zones immediately east and west of the downtown commercial zone.
- Create Compact Residential Development Overlay in a manner that provides for multiple housing types (square footages) available for different markets (e.g., low-income, special needs).

SECTION F: REVISIONS AND IMPLEMENTATION



Chapter 13: Revising the Plan

The Tillamook City Comprehensive Plan is not a static document – not a one-time guide for the development of the community. Nor should it be perceived as filler of shelf space. It is, rather, a dynamic instrument capable of change to meet the needs of the community. The Comprehensive Plan and implementation measures (Objectives, Policies and Implementing Procedures) will be reviewed and revised when public needs, community needs and desires change and when development occurs at a different rate than contemplated by the plan.

This current version of the Comprehensive Plan presents a more understandable version to the reader covering a wide variety of topics that share one thing in common: they are forces and factors that determine how our community will grow and develop. It is also intended to facilitate subsequent amendments in the near future by providing a segmented format that can be addressed piece by piece.

Changes in population, state law, land use, and other areas are inevitable. As a result, the City of Tillamook will have to revise its plan from time to time. There are two types of revisions that can be made: **minor** revisions, or **major** revisions. For this plan, **minor revisions** include changes in the Plan that do not have significant effect beyond the immediate area of the change, such as Plan amendments that usually involve only a few properties or one or two strategies in the Plan, updated inventory, and changes to other factual base information in the Plan. **Major revisions** include an overhaul of the entire Plan resulting in widespread and significant impact beyond an immediate local area, isolated property and minor changes to the Comprehensive Plan. Major revisions include zone changes and the Periodic Review.

The purpose of this section is to ensure that the City of Tillamook Comprehensive Plan is responsive to changing conditions and trends, that opportunities for citizen and agency involvement in the planning process are provided, and that there is adequate factual information for all land use decisions and actions.

It is difficult to accurately project growth, land use need, and changing economic conditions for any period of time. While continuity is a strength of comprehensive planning, the ability to adapt to changing needs and conditions is a necessity. The City of Tillamook Comprehensive Plan must achieve a balance between offering flexibility and maintaining a degree of permanence and reliability.

The following policies will be followed when making revisions to the Comprehensive Plan.

Policies for Revising the Plan

Policy F-1: The Comprehensive Plan shall be reviewed and any necessary **minor** revisions made at least every two years, after a report from the Planning Commission public statement is issued on whether any **minor** revisions are needed. The review will begin with re-examination of the base data, and problem areas and continue through the same basic phases as the initial preparation of the plan and implementation measures. A report from the Planning Commission for the minor revisions should include, at a minimum the following items:

a. A general review of the factual base (Inventory);
b. An evaluation of the effectiveness of plan policies and implementing measures in meeting community goals and objectives; and
c. Recommended amendments, if any, to the Plan and/or implementing measures.

Following approval of the minor revisions, ordinances, the capital improvements program, and other plan implementation measures will be revised to support changes in the Plan.

Policy F-2: **Major** revision to the Comprehensive Plan, resulting in widespread and significant impact beyond an immediate local area, isolated property and minor changes to the Comprehensive Plan, may be made at any time. Such revisions may be initiated by the City Council, Planning Commission, or by any individual, agency, or firm. Special studies or other information will be required as the factual basis to support the change. The public need and justification for change must be established by the applicant.

Policy F-3: The Plan may be reopened at appropriate times in response to completion of plans by other jurisdictions and agencies. Further, the City shall acquire and consider additional inventory information that was not available during plan development in its evaluation of future plan revisions. The City may consider such a revision either major or minor.

Policy F-4: Plan amendments may be initiated by:

a. City Council or Planning Commission.
b. An individual or organization by application.

All Comprehensive Plan amendments shall be considered at public hearings before the Planning Commission and City Council in accordance with state law, City Charter, and appropriate City ordinances.

Policy F-5: Proposed revisions, either major or minor, or otherwise initiated, shall be reviewed in public hearings held by the Planning Commission and City Council and shall have adequate notice to meet State requirements. Comprehensive Plan amendment hearings shall be conducted under the following procedures:

a. The Planning Commission shall conduct a public hearing on the proposed amendment at its earliest practical meeting time after the amendment is proposed.

b. Prior to the Planning Commission hearing, the City Planning staff shall review the proposed amendment and prepare a report to the Planning Commission.
c. Within 45 days of the hearing, the Planning Commission shall recommend to the City Council approval or rejection of the proposed amendment. It shall take a majority vote of the Planning Commission in favor of the proposal to recommend to the City Council that the Comprehensive Plan be amended.
d. The Planning Commission shall consider amendment requests to the Comprehensive Plan at regularly advertised meetings.
e. After receiving the recommendation of the Planning Commission, submitted as written findings regarding the proposed revision which consider public hearing(s) and response of affected governmental agencies, the City Council shall hold a public hearing on the proposed amendment.
f. The City Recorder shall maintain records of all plan amendment hearings and adopted amendments of the Comprehensive Plan.
g. Consideration by Planning Commission and Council of Plan amendments should be based on:
    1. Meeting the overall intent of the Comprehensive Plan. All Plan Policies shall be reviewed when revising the City Comprehensive Plan to make sure no portion of the Comprehensive Plan is overlooked.
    2. Citizen review and comment. The citizens of Tillamook will be encouraged to take part in all stages of the planning process.
    3. Input from affected governmental units and other agencies. All affected government agencies shall be informed of proposed revisions and allowed reasonable time to respond before making a recommendation on the plan revision to the City Council.
    4. Short- and long-term impacts of the proposed revision.
    5. Additional information as required by the Planning Commission or City Council.

Policy F-6: All appendices may be amended by Resolution.

Chapter 14: Plan Implementation

Implementation

The Comprehensive Plan revision is only an initial step in implementing a planning process in Tillamook. Specific actions must be undertaken to realize the plan. The Comprehensive Plan and associated technical background information set forth goals, policies, proposals and recommendations to guide the physical development of the community. This section describes ways in which the Comprehensive Plan may be implemented.

The means by which community plans are implemented are many and varied, but they almost always involve the combined efforts of private citizens, business enterprise and local, state and federal governments. The private sector implements the plan by giving it their support and continuous input to the planning process, by developing their businesses and homes in conformance with the plans, or by clean-up, fix-up or paint-up campaigns. Government implements the Comprehensive Plan through regulatory controls such as zoning and subdivision ordinances, through the timely placement of public facilities and establishment of public programs, through inducements such as low-interest loans, tax exemptions and direct subsidies, by joint cooperative agreements between one another and by providing for financing through special grants-in-aid or other financial aides.

Regulatory Controls

Zoning:

Zoning has been for many years in America the cornerstone of plan effectuation. It is intended to implement that part of the Comprehensive Plan concerned with land use. Zoning divides the community into residential, commercial, industrial and other use types and zoning designations for land in conformance with the Comprehensive Plan, and shown on the City Comprehensive Plan and Zoning Map. The location and boundaries of each of the areas designated for each land use are described in Chapter 4 of this Plan.

State laws and recent Oregon Supreme Court decisions have given better definition to the role of zoning and comprehensive plans. Oregon Law (ORS Chapter 197) not only requires cities and counties to adopt comprehensive plans, it also requires that their zoning ordinance conform to the comprehensive plan. This requirement is further amplified by the "Baker vs. City of Milwaukie" court decision. In this decision, the court ruled that in the event of a conflict between a City's zoning ordinance and comprehensive plan, the comprehensive plan shall be the guiding document. Therefore, once the City has adopted its comprehensive plan it must provide, within a reasonable time, to amend its zoning ordinance to conform to the comprehensive plan. Furthermore, another court decision, "Fasano vs. Washington County", has ruled among other things that all zone

changes must conform to the comprehensive plan. Thus, once the City has amended its zoning ordinance to conform to the adopted City Comprehensive Plan, any subsequent zone change in non-conformity with the General Plan/Comprehensive Plan Map must first be preceded by a change to the City Comprehensive Plan. Changes to the City Comprehensive Plan should be based on special studies or other factual information, which establish public, need and justify the particular change.

The City Zoning Ordinance establishes uniform regulations within each zone as to use, maximum building height and bulk, lot size, building setback from street and property lines, landscaping, population density and other similar requirements. The Zoning Ordinance also establishes the criteria and requirements for the City's overlay districts, site and general development, partitioning, signs, off-street parking and loading, conditional uses, special uses, non-conforming uses, and variances to the criteria. The City's zoning requirements that conform to the City Comprehensive Plan can be found in the City Development Codes.

Subdivision Ordinance and Streets Standards Ordinance:

The subdivision ordinance provides standards for the development of vacant land. It establishes minimum standards for street, block and lot size and lists improvements to be provided by the land developer. It enables the City to insure the provision of adequate rights-of-way, street improvements and water and sewer facilities. Close coordination between the City and Tillamook County is necessary to insure the extension of logical street and utility systems when subdivision occurs outside city limits. The subdivision requirements and development standards are listed in the City Development Codes.

Building Codes:

Building construction codes establish minimum standards for new buildings, additions, rehabilitation and changes of use. These codes include fire and life safety, plumbing, mechanical, electrical and sign codes and with the exception of the sign code, are extensions of national or state uniform standards. These codes help to insure the safety and welfare of the public, but have little effect in preventing or reversing blight in built-up older neighborhoods. The City's sign codes can be found in the City's Development Codes.

Housing Codes:

The Housing Code establishes minimum standards of sanitation, safety and welfare for residential property. The code can be used to remove or improve housing, which has become unsafe or to improve situations involving overcrowded conditions and lack of proper maintenance.

Non-Regulatory Programs

Associated with housing programs and the development of standards for a safer community, it is recommended that several programs be kept viable and expanded upon.

(a) Expansion of Fire Volunteer and Police Reserve programs is encouraged.
(b) Fire Inspections, Fire Prevention, Crime Prevention and Crime Apprehension programs should be encouraged.

Grants-In-Aid

Many of the policies and proposals of the comprehensive plan can be carried out with financial assistance from the state and federal government. In addition to federal revenue sharing, grants-in-aid are available through the Department of Housing and Urban Development, the Federal Highway Administration, the Department of Health, Education and Welfare, the Department of Agriculture and the Environmental Protection Agency. Funds are available for such important projects as streets, water and sewer facilities, parks and open space and public buildings. In addition to direct grants-in-aid, several low interest loan programs are available to the private as well as public sector. Housing needs are a critical issue in Tillamook and throughout the state and nation. Several housing programs are now active in Tillamook and others are available. These are described briefly in the Housing Section.

Intergovernmental Cooperation

One method of implementing the policies of the plan is through intergovernmental cooperative agreements between the city and other public agencies. Many of the functions, which the plan encourages the City to perform, can best be met through joint arrangements with other agencies. In many cases the burden of solving a problem does rest entirely with the City. Therefore the City must join the other agencies in implementing the policies and recommendations of the plan. In other situations it may be to the City's advantage financially to join with other governmental entities or agencies in an effort to solve a problem.

Projects that cannot be implemented economically by one community may be initiated by sharing the cost between different cities or other agencies.

Advice and consultation on the part of the Planning Commission, City staff and other City officials can be a very effective tool of implementation. In the course of conducting day-to-day business, individuals can be made aware of the importance of the comprehensive plan and a number of alternatives presented to guide development.

Urban Growth Management and Urban Service Area Policies and Implementation Guidelines

The unincorporated land within the Urban Growth Boundary requires a coordinated set of policies between the City and the County. These policies relate primarily to urbanization. In an effort to coordinate growth within the Boundary, a set of policies, implementation guidelines and an Urban Growth Management Agreement (UGMA) are adopted as part of this plan, and included as Appendix H. These policies have also been adopted by Tillamook County by ordinance.

Capital Improvement Program Planning

Each year the City of Tillamook makes capital expenditures with tax money secured from the local citizenry. Investments can be made in public buildings, streets, water and sanitary facilities and other important areas. These expenditures provide one of the most effective means by which a comprehensive plan is put into action. Capital improvement programs (CIP) for water, sewer, streets, storm drains, and public buildings, provides the necessary link between the comprehensive plan and the operational budget of the City.

A CIP consists of a list of needed and desirable projects for community development, a prioritization of those projects based on the adopted goals and policies of the comprehensive plan, and a scheduling of projects through a certain time period. This time span provides for the current operating year plus a 5-year projection. The program is reviewed annually and a year is added to the top end, thus keeping the program five years ahead of the current operating year.

The completion of a CIP provides numerous benefits to the community, including the following:

a) It presents to the public a profile of the capital needs of the community.

b) It provides for coordination of the expenditure of city funds.

c) It provides the private citizen with some indication as to the timing and priorities of a particular project or concern.

d) It provides a guide to the private investor.

e) It presents an opportunity to key improvement projects with federal aid programs enabling the city to obtain the maximum benefit of matching funds for each locally provided dollar.

f) It fosters the programmed acquisition of land in advance of improvements resulting in savings to the taxpayer.

g) It contributes to a more balanced program of bonded indebtedness.

Community Program Planning

As the capital improvement program addresses the future capital needs of the City, the community program addresses the program needs of the community. While it is important to plan for capital items on a short and long range basis it is also important to plan for the needed community programs. For example, a need in the police department for more patrolmen, etc. should be planned for the community program.

Thus, the community program will involve setting anticipated future program needs, setting the program in priority using as a guide the policies of the comprehensive plan, and setting a time frame for implementing the program.

Please refer to the appendixes for ordinances, by-laws and programs outlining organizational functions and responsibilities of City Advisory Committee and City Planning and Zoning Commission.

Objectives and Policies for Plan Implementation

Objective No. 1 for Plan Implementation: To implement the City Comprehensive Plan and its objectives, policies and implementing procedure.

Policies for Objective No. 1 for Plan Implementation

Policy F-7: The City shall institute regulatory and non-regulatory controls for the implementation of the Comprehensive Plan. These regulatory controls shall include the City's Zoning Ordinance.

Policy F-8: The City shall develop intergovernmental agreements with the County and other governmental entities and agencies to assist in the implementation of City policies.

Objective No. 2 for Plan Implementation: To provide for cooperation between the City and the County in the unincorporated land within the Urban Growth Boundary and establish and maintain an Urban Growth Management Agreement and Urban Service Agreement between the City and County.

Policies for Objective No. 2 for Plan Implementation

Policy F-9: The City shall develop an Urban Growth Management Agreement (UGMA) and other intergovernmental agreements with the County. The UGMA shall include an Urban Service Agreement (USA) between the City and County. Additional Intergovernmental Agreements between the City and County may also be made to coordinate services between the two levels of government.

Objective No. 3 for Plan Implementation: To establish and maintain grants-in-aid and a capital improvements program

Policies for Objective No. 3 for Plan Implementation

Policy F-10: The City shall coordinate a capital improvement projects list for the community.

Policy F-11: The City shall strive to identify grants available to continue to better the community in implementing its policies listed in the Comprehensive Plan.

Chapter 15: List of Plan Policies

The following is a list of the Objectives, Policies and Implementing Procedures listed in this Comprehensive Plan.

Section B Goals, Objectives, and Implementing Policies for Citizen Involvement

Goal

"To support citizen involvement at all stages of the decision-making process."

Objective No. 1 for Citizen Participation and Involvement: To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process and ensures cooperation among citizens, technical personnel and public officials in planning for the City.

Implementing Policies for Objective No.1 for Citizen Participation and Involvement

Policy B-1: The Planning Commission shall give reasonable public notice for meetings concerning revisions of the adopted public plan and implementing measures. Such notice shall be provided in a manner consistent with all applicable state statutes and city ordinances. When feasible, the city will use various media to encourage citizen participation. Wide and continuing exchange of information with notification to citizens about available programs and issues will be insured. The City shall ensure that adequate funding and technical information is made available to citizen participation groups as an ongoing process.

Policy B-2: Decisions by both planning and advisory bodies will be made after appropriate open planning processes and public hearings. The City shall ensure that citizens receive a response to all recommendations resulting from citizen involvement.

Policy B-3: All plans, reports, and ordinances shall be written so as to be easily read and understood by interested citizens.

Policy B-4: The Comprehensive Plan shall be used as a basic reference and guideline by those who must make decisions affecting the people of Tillamook.

Objective No. 2 for Citizen Participation and Involvement: To have a broad base of citizen involvement in planning studies, decision making, and plan implementation.

Implementing Policies for Objective No. 2 for Citizen Participation and Involvement

Policy B-5: The City Planning Commission is the group involved in review of development and implementation of a Citizen Participation and Involvement Plan. The governing body shall continue to solicit citizen membership for vacancies on any advisory body.

Policy B-6: The Planning Commission is the permanent Citizen Involvement Committee. As such, the commission shall be responsible for insuring a broad base of citizen involvement in all phases of the planning process.

Policy B-7: The Tillamook City 2020 Vision Statement shall be adopted and endorsed by the Planning Commission and the City Council as the 20-year vision for Tillamook City. The Vision Statement shall serve as a catalyst for community residential, business owners and the government(s) in crafting the future of Tillamook City. The Vision Statement shall be considered a long-range, "umbrella" vision for the Comprehensive Plan, and will be integrated into the Comprehensive Plan. The Vision Statement is the starting point for the creation and implementation of action plans. Given the Vision Statement's age, an update on visioning shall be considered.

Goal, Objectives, Implementing Policies for Community Development

Goal:

"To better integrate citizen involvement with the community, and support outreach into the community and community development."

Objective No. 1 for Community Development: To develop a community development program that insures support for citizens to be involved in the community and better integrate citizen involvement with the community.

Implementing Policies for Objective No. 1 for Community Development

Policy B-8: The City shall provide a diverse set of community programs, activities and facilities that enhance community values.

Policy B-9: The Tillamook City 2020 Vision Statement shall serve as a catalyst for community residential, business owners and the government(s) in crafting the future of Tillamook City. Given the Vision Statement's age, an update on visioning shall be

considered. The Vision Statement is the starting point for the creation and implementation of action plans.

Objective No. 2 for Community Development: To have a broad base of community outreach and support programs in the community and support outreach into the community and community development.

Implementing Policies for Objective No. 2 for Community Development

Policy B-10: The City shall support adequate housing and care for special-need citizens, and strive to remain a safe and secure community.

Policy B-11: The City shall encourage healthy lifestyles, and focus on wellness in the community.

Section C Goals for Natural Resources (wetlands, estuaries, shorelands)

To conserve, protect the unique environmental, economic and social values of local estuarine resources, where appropriate, develop and restore the resources of all coastal shorelands, recognizing their value for the protection and maintenance of water quality, fish and wildlife habitat, and water dependent uses.

Objective No. 1 for Wetlands: To reduce the hazard to human life and property and minimize adverse effects on water quality and wildlife habitats for the shoreland planning area within the Tillamook Urban Growth Boundary.

Policies for Wetlands Objective No. 1

Policy C-1: The City shall encourage Cluster development as a method of minimizing development impacts in areas with sensitive significant natural resources documented on the significant riparian corridor and wetlands list.

Policy C-2: New development shall be conducted in a manner that does not adversely affect significant riparian corridors and significant wetlands as per the water resources overlay district.

Policy C-3: Drainage from proposed developments shall be directed in a manner that does not harm significant wetland and riparian corridors.

Objective No. 2 for Wetlands: To protect, maintain, where appropriate, develop, and where appropriate restore the long-term environmental, economic and social values of estuarine resources with the Tillamook Urban Growth Boundary.

Policies for Wetlands Objective No. 2

Policy C-4: The following wetland areas, the Meadow Avenue Wetland (south of Meadow Avenue, containing approximately 14 acres), the Fairlane Drive Wetland (immediately parallel to Fairlane Drive containing approximately two acres), the South Highway 101 Wetland (immediately adjacent to Highway 101 upon entering the southern entrance to the City), and the Fifth Street Wetland (at the west end of Fifth Street, south of Carnahan Park containing approximately 1.5 acres) shall be protected by the City.

Policy C-5: All locally significant wetlands and riparian corridors as designated in the City of Tillamook Local Wetlands Inventory shown in Table V shall be protected, and shall not be modified except as provided for in the Water Resources Protection Overlay District. Significant riparian corridors and significant wetlands are hereby adopted and are regulated subject to the water resources protection overlay district (21.1).

Policy C-6: Land uses shall be guided, and enforced through the Zoning Ordinance, to minimize impact on the City's Natural Resources, as is stated and described further in the Regulatory Controls. For those projects involving development within designated estuaries, in an effort to recognize, protect, maintain, and where appropriate, restore the unique environmental, economic and social values of said estuaries, estuary standards and requirements shall be brought under special review.

Objective No. 3 for Estuaries: To recognize, protect maintain and restore where appropriate, the unique environmental, economic and social values of the designated estuaries.

Policies for Objective No. 3 for Estuaries

Policy C-7: The designated estuaries and shoreland area shall be managed in such fashion as to be consistent with the stated estuary and shoreland objectives. The City shall recognize the estuary management unit segments described in this section of the Plan. Prime importance shall be given to management and restoration of estuaries as it might relate to the economic protection of the area. Reconstruction of estuaries to be a point where they provide protection of lives and property in the surrounding area is paramount. The protection of locally significant riparian corridors and wetlands associated with estuaries and shoreland habitat is a goal in the restoration of these resources.

Policy C-8: The City recognizes that to have effective protection, maintenance and restoration of designated estuaries with the City UGB, all policies must be coordinated with all appropriate agencies. This is particularly important for estuary areas adjacent but outside the City's UGB. A thorough review of Tillamook county estuary and shoreland policies, standards and definitions which are appropriate to the City's stated objectives and the County's overall plan shall be adopted.

Policy C-9: The City will work with the County Estuary Planning Staff for the preparation of impact assessments, resource capability determinations, review of State and Federal permit applications and necessary revision of policies and standards within the estuarine area of the City.

Policy C-10: The estuarine and coastal shoreland habitat resources designated as locally significant shall be protected as per the Water Resource Protection Overlay District, Tillamook City Land Development Code.

Policy C-11: Estuary Management Units have been identified and inventoried by Tillamook County. Map illustrates these management units. The following five estuary management unit segments are found within the Tillamook Urban Growth Boundary.

Policy C-12: The City of Tillamook hereby adopts Exhibit H of the November 30, 1983 amendments to the Tillamook County Ordinance No. 32, which is the Goal 16 Element of the Tillamook County Comprehensive Plan.

Objective No. 4 for Shorelands: To reduce the hazard to human life and property and minimize adverse effects on water quality in order to maintain the live ability for the Tillamook community.

Policies for Objective No. 4 for Shorelands

Policy C-13: New shoreland development, expansion, maintenance or restoration of existing development shall conform to the following general priorities for the overall use of coastal shorelands (in order of priority):

1. Uses which maintain the integrity of the estuary;
2. Water-dependent uses;
3. Water-related uses;
4. Non-dependent, non-related uses which retain flexibility of future use and don or prematurely or inalterably commit shorelands to more intensive use;
5. Development, including non-dependent, non-related uses, in urban areas (compatible with existing or committed uses);
6. Non-dependent, non-related uses which cause a permanent or long-term change in the features of coastal shorelands only upon a demonstration of public need.

Policy C-14: New shore land development, expansion, maintenance or restoration of existing development shall be sited, designed, constructed and maintained to minimize adverse impacts on riparian vegetation, water quality and aquatic life and habitats in adjacent aquatic areas, and to be consistent with existing hazards to life and property posed by eroding areas and flood hazard areas. To accomplish this:

A. The requirements of the National Insurance Program shall be used to regulate development in flood hazard areas within coastal shore lands.

B. Shoreland setbacks shall be established to protect riparian vegetation and to recognize eroding areas.

C. Priority shall be given to nonstructural rather than structural solution to problems of erosion or flooding.

D. The following state and federal authorities shall be utilized for maintaining water quality and minimizing man-induced sedimentation in aquatic areas:

1. The Oregon Forest Practices Act and Administrative Rules, for forestlands are defined in ORS 527.610 - 527.730 and 527.990 and the Forest Lands Goal;
2. The programs of the Soil and Water Conservation Commission and local districts and the Soil Conservation Service, for Agricultural Lands Goal;
3. The non-profit source discharge water quality program administered by the Department of Environmental Quality under section 208 of the Federal Water Quality Act as amended in 1972 (PL 92-500); and
4. The fill and Removal Permit Program administered by the Division of State Lands under ORS 541.605 - 541.665.

Policy C-15: Shoreland development shall be sited and designed to be consistent with the protection of the natural values of identified major marshes and significant wildlife habitat, within the shore lands planning boundary identified in the Tillamook City Comprehensive Plan.

Policy C-16: Forestry operations within coastal shorelands shall be consistent with the protection of the natural values of major marshes, significant wildlife habitat and riparian vegetation. The State Forest Practices Act and Forest Practice Rules administered by the Department of Forestry shall be used to protect the natural values of these resources on commercial forestlands and other lands under the jurisdiction of the Forest Practices Act within coastal shore lands.

Policy C-17: Shorelands of Tillamook City shall be managed through implementation of the Tillamook City Comprehensive Plan by means of the zoning ordinance, which shall contain the zoning and shoreland planning area maps.

Policy C-18: Tillamook City shall review the following for consistency with the Tillamook City Comprehensive Plan, zoning map, and zoning ordinances:

A. State or federal permit applications for uses and activities within shore lands;

B. Applications for Tillamook County Development Permits;

C. Building and mobile home placement permits for flood hazard areas, preliminary subdivision plat applications and planned developments with coastal shore lands;

D. A-95 project pre-application notifications, by means of referral from and comment to the Clatsop-Tillamook Intergovernmental Council.

Policy C-19: The City shall consider the following significant wildlife habitats within the Shorelands Planning Area: the West Hoquarten Slough Forested Freshwater Wetland (approximately 59 acres within the U.G.B immediately west of State Highway 101 North), and the East Hoquarten Slough Forested Freshwater Wetland (approximately 26 acres within the U.G.B. immediately east of State Highway 101 North).

Policy for Forestlands

Policy C-20: State Goal No. 4 is applicable for Tillamook City. Small stands of trees in future park locations shall remain in their natural settings. The City will protect the forested areas listed in this section.

Policy C-21: The City watershed is located southeast of the U.G.B. area and shall be guided by County land use policies, as well as managed under Oregon State Forestry Best Management Practices. Future logging operations within the City watershed may be reviewed by the City Council, with comments forwarded to Oregon State Forestry.

Agricultural Lands

Goal for Agricultural Lands

"To preserve and maintain agricultural lands. Agricultural lands shall be preserved and maintained for farm use, consistent with existing and future needs for agricultural products, forest and open space."

Objective No. 5 for Agricultural Lands: To retain the agricultural use of land in those areas where it is deemed the highest and best use, given the soil conditions of the area, and the suitability of competing uses.

Policies for Agricultural Lands

Policy C-22: The UGB is established in order to preserve prime agricultural land as much as possible. Any future conversions of rural agricultural land to urbanizable land shall be based upon the seven factors as listed in Goal 14.

Policy C-23: The City shall urge the County to designate portions of prime agricultural lands adjacent to the U.G.B. for exclusive farm use to support the City's intention to preserve and retain as much surrounding agricultural land as possible.

Policy C-24: The development Ordinance as provided for under Economic Development Policy No. 34, part of which addresses compatibility between Highway Commercial and agricultural uses, shall be periodically reviewed and updated to reflect current farming practices and needs. The City shall uses buffers such as fences, vegetative plantings, and building setbacks to insure a more adequate buffer between uses.

Policy C-25: The City shall protect agricultural operations from potential conflicts arising from Highway Commercial activities. Accepted agricultural practices, adjacent to or within the City may create noise, dust, odors or other such inconveniences for the

owners or users of the commercials properties. This includes but is not limited to, the spreading of liquid manure on fields in the area when frequent strong winds are likely to carry the resultant odor into areas designated for non-farm development. However, the City does not consider it to be the agricultural operators' responsibility to modify accepted practices to accommodate Highway Commercial areas. The owners of the Highway Commercial property shall not allow activities on their properties which create management difficulties, fire hazards or increased costs for adjacent agricultural operations, and shall not hold agricultural operators or the City, or the County, responsible for noise, dust, odors or other such inconveniences resulting from those agricultural practices that are not more offensive than what is customarily required to maintain profitable farm operation.

Open Space and Scenic Areas (State Goal 5)

Significant open space and scenic areas exist in and surround the City of Tillamook. Where possible these areas were excluded from the Urban Growth Boundary. Some areas now within the City are subject to flooding and have a high water table. Other areas within the city have been identified as significant riparian corridor reaches and or significant wetlands.

Objective No. 6 for Open Space and Scenic Areas: To conserve open space and protect natural and scenic resources and maximize the use of existing resources in the provision of open space.

Policies for Open Space and Scenic Areas

Policy C-26: Banks of watercourses, drainage basins, areas subject to extreme natural hazards and otherwise unbuildable sites will be utilized to provide open space and recreational opportunities. Riparian vegetation shall be protected inside all designated significant riparian resources, as identified in the Tillamook Land Development Code.

Policy C-27: Tree preservation and planting to separate conflicting uses and provide scenic and recreational opportunities will be encouraged wherever feasible.

Policy C-28: Scenic views and scenic sites that generally include all the land within view of the Tillamook urbanized area and outside the Urban Growth Boundary, shall be preserved. This shall be achieved by coordination with Tillamook County and by encouraging a minimum of development in these areas.

Historic Resources

Goal for Historic Resources

"To preserve the history of the City of Tillamook."

Objective for Historic Resources: To protect the historic buildings of Tillamook and to encourage the rehabilitation of these buildings and accessibility to buildings and encourage the community to take part in this process.

Policies for Historic Resources Objective No. 1

Policy C-29: The City shall encourage the preservation and rehabilitation of sites and structures that represent significant aspects of Tillamook's historical and architectural heritage.

Policy C-30: The City shall strengthen the economy of Tillamook by protecting and enhancing the City's historic attraction to residents and visitors.

Policy C-31: The City shall enforce the Town Center Zone ordinance preserving the historic character of the downtown.

Policy C-32: The City shall consider exploring National Register designations and the benefits of developing historic preservation districts.

Policy C-33: The City will coordinate with state and county agencies and organizations to preserve current and future historic sites, buildings, and archeological sites that exist now or may be discovered at a later date, in the Tillamook Area. Future discovery or determination of historical sites and/or archeological sites shall be listed as inclusions to this plan.

Goal for Air and Water Quality

"To maintain and improve the quality of air, water and land resources."

Objective for Air and Water Quality: To insure the continued quality of air, water and land resources within the City.

Policies for Air and Water Quality

Policy C-34: All future development will be compatible with the air quality maintenance plan of the Department of Environmental Quality. Through all land use planning and development stages, the City shall coordinate their actions with State and Federal environmental statutes, programs and policies. The City shall also assist and coordinate, as necessary, with current planning activities.

Policy C-35: All waste and process discharges from future development will not violate applicable state or federal environmental quality statutes, rules and standards.

Policy C-36: The City shall encourage elimination of faulty septic tanks within the Urban Growth Boundary areas. The Urban Service Area Policies and Implementing Guidelines shall address the implementation of this goal. (Appendix H)

Policy C-37: The water resources of the City of Tillamook shall be protected in part by guiding future development in a manner that will not impact or alter the significant wetlands and riparian corridors within the City of Tillamook Urban Growth Boundary (UGB).

Policy C-38: All development and activities in the City of Tillamook shall comply with the state and federal air and water quality and noise-control rules, regulations, and standards.

Goals for Natural Disasters and Hazards and Flood Mitigation

"To protect life and property from natural disasters and hazards."

"Preserve Natural Areas Related to Flooding."

"Coordinate and Enhance Emergency Services."

"Improve Structural Projects."

"Enhance and Promote Public Education."

"Improve and Promote Partnerships, Coordination, and Implementation."

Objective for Natural Disasters and Hazards and Flood Mitigation: To maintain damage or loss of life and property caused by natural hazards in the Tillamook area by carefully managing development and redevelopment in areas subject to natural hazards.

Policies for Natural Disasters and Hazards and Flood Mitigation

Policy C-39: Development may take place within areas of natural hazards only if appropriate safeguards are provided to protect the property in question as well as adjacent properties, from damage. A developer shall assume the burden of proof that a development project is appropriate in this regard.

Policy C-40: In all areas of flood hazard the requirements of the National Flood Insurance Program will be adhered to.

Policy C-41: Flood plain and Floodway overlay zoning for all hazard areas will be applied by the City in terms of the Flood Hazard Overlay (FHO District) in the City Zoning Ordinance; building permits will be reviewed to insure that necessary requirements of structures are met. The purpose shall be to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas The legislature of the State of Oregon has in ORS Chapter 227 delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry.

Policy C-42: Natural hazards that could result from new developments, such as runoff from new buildings, paving projects and/or soil slippage due to weak foundation soils, that has the potential to have adverse impacts and a cumulative effect on property owners downstream, will be considered and evaluated. Measures that prevent or minimize the extent of the natural hazard, adverse impacts and cumulative effects on property owners downstream shall be provided for. Such natural hazards, adverse impacts and cumulative effects on property owners downstream shall be considered in evaluating zone changes, conditional uses, site plans, variances, and in issuing building permits.

Policy C-43: All estuaries in Tillamook City shall be maintained so as to not restrict water flows. Tillamook City shall develop and help coordinate a plan to clean and maintain all estuaries in the Tillamook area with Tillamook County, the Port of Tillamook Bay, the Port of Bay City, and any other affected agencies. These activities shall be centered around the task of minimizing flood conditions for areas adjacent to the estuarine areas.

Policy C-44: All water bodies within the City of Tillamook shall be maintained free and clear of all obstructions by the appropriate landowner with coordination between the property owner and DSL, ACE, and ODFW.

Policy C-45: The city will discourage residential, commercial and industrial development in the identified floodway, but will consider the fiscal ramifications of "takings" issues.

Policy C-46: Any new development within the floodplains shall be designed to avoid damage from flooding and to minimize the damage potential to other developments or properties.

Policy C-47: The city will promote increased public awareness of flood hazards and how to deal with them.

Policy C-48: The City shall enforce the Flood Hazard Development Ordinance (Ordinance No. 971), and the Flood Hazard Overlay District as listed in Ordinance #979, and promote flood control measures that help minimize flood hazards and are environmentally sound.

Policy C-49: The city will cooperate with the Tillamook County Office of Emergency Management Office and other agencies working to protect life and property from natural disasters and hazards.

Policy C-50: The city will promote flood control measures that help minimize flood hazards and are environmentally sound and encourage the continued practice of feasibility studies conducted by the County Sanitarians on proposed sites for septic system installation outside the City Limits but inside the Urban Growth Area where city services are not available.

Section D Objectives and Policies for Public Infrastructure

Objective No. 1 for Public Facilities and Services: Provide efficient, reliable public facilities and services adequate to maintain the health, safety and welfare of Tillamook's citizens, and meet the needs of residential, commercial and industrial land uses throughout the City.

Policies for Objective No. 1 for Public Facilities and Services

General Policies

Policy D-1: The City shall control costs of public facilities and services by maintaining a compact community free of sprawl or leapfrog development where feasible.

Policy D-2: The City shall limit the extension of sanitary sewers and municipal water to areas inside the city limits of Tillamook, except for the extension of urban services to the south to the Port of Tillamook Bay and to the north to the County Creamery in accord with Tillamook County's Goal 11 and 14 exceptions contained in County OA-02-12B that permit urban services at the Port and the Creamery. Any other provisions of urban services shall occur beyond the Urban Growth Boundary only after a determination by affected agencies that a "danger to public health exists " as defined by Oregon Revised Statutes Chapter 431.705 (5) or a moratorium to construct new and repair existing septic systems has been declared by the Department of Environmental Quality as mandated by Oregon Revised Statutes, Chapter 454.685.

Policy D-3: The City shall coordinate the provision of public facilities and services: Do not extend one service into a new area unless provision has been made for timely extension of the other services necessary to serve development in that area.

Policy D-4: The City shall ensure that new residential, commercial, and industrial development pays the full costs of whatever public facilities and services are installed for or extended to the new development.

Policy D-5: All City services shall be provided and maintained to City standards and shall remain under the supervision of the City, unless some other arrangement acceptable to the City has been made for the supervision and maintenance of these services.

Policy D-6: The City and the County shall coordinate the preparation and maintenance of utility extension plans. These plans shall provide a basis for the extension of services within the Urban Area as mandated by Oregon Revised Statutes, Chapter 195.065.

Policy D-7: Adequate public facilities and services should be provided, as economically as possible, in order to sustain and maintain a well-ordered community life, enhance the health, safety, educational, and recreational aspects of urban living.

Policy D-8: Existing facilities and services should be upgraded to service the residential and economic needs of the area. This must be done in an orderly manner in conjunction with planning and citizen involvement processes as provided by this plan.

Water Policies

Policy D-9: The City shall find and develop additional sources of water for Tillamook's community water system to meet future demand for water, and increase water storage capacity and encourage upgrading of water facilities and water quality to ensure compliance with appropriate Federal and State Guidelines.

Policy D-10: Detailed plans for increased uses of water will take into consideration the effect on reduced stream flow and aquatic life.

Policy D-11: A regional water system should be considered which would reach from the Bay City system, to the most southern water system now being served by the City. Should a new regional water authority be formed, Tillamook City shall retain title of City land, buildings and equipment assets and lease them as necessary. This regional system may be under City authority or a new regional water authority. If an authority is formed, the City shall also adopt certain relationship controls between District and City in order to adequately serve users within its boundaries. Such controls may include Council authorization of main extensions within the City and review of user rate schedules.

Policy D-12: Prior to implementation of a regional district, Tillamook City shall consider it acceptable if mergers or consolidations take place with Water Districts and the City, provided that the City retains its chartered name and function.

Policy D-13: The City of Tillamook Urban Growth Boundary contains a large percentage of land currently served by various water districts. At the present time, the City Charter grants exclusive water service rights to the City of Tillamook. In the light of equitableness, maintenance and administration considerations in delivery of water to users, the governing body of the City feels that it is in the City's best interest to not have water served within its boundaries from more than one agency. Prior to annexation of land within any water district the City shall hold a public hearing specifically on the issue of annexing a water district, or part thereof, and shall pass a resolution addressing:

a) The expected user revenues and assets of the District being absorbed and forms of compensation thereof to the District for loss of such assets.

b) The right of the District to maintain its service to the remainder of the District, including authority to cross City boundaries with its mains.

c) The reason why consolidation or merger with the City Water Department is unacceptable or unfeasible to both parties.

Sanitary Sewer Policies

Policy D-14: The City shall develop a capital improvements program (CIP) to implement this plan's strategies for public facilities and services and to ensure cost-effective provision of city services. There is a high priority for reconstruction and maintenance of deteriorating sanitary sewer lines and extending the lines eastward.

Policy D-15: Adequate manpower and services shall be maintained to give continued assurance that current NPDES (National Pollutant Discharge Elimination System) standards are met and that the ecological concerns are protected. Tillamook City shall monitor and charge on a quarterly basis the increasing loads on the sewer treatment plant as seen through future development. The City is committed to upgrade and expand the sewer collection and treatment facilities as needed to accommodate expected growth within the Urban Growth Boundary.

Policy D-16: Adequate public services and facilities should be provided, as economically as possible, in order to sustain and maintain a well-ordered community life, enhance the health, safety, educational and recreational aspects of urban living.

Policy D-17: Existing services and facilities should be upgraded to service the residential and economic needs of the area. This must be done in an orderly manner in conjunction with planning and citizen involvement processes as provided by this plan.

Policy D-18: The governing body shall allow connection to the City's sewer collection system only after annexation. Exception to this will be only on a case-by-case basis or when it is determined in the best interest of the City to contract the service following receipt of a consent to annex form from the affected property owner or it is the extension of urban services to the Port of Tillamook Bay or the Creamery in accord with Tillamook County's Goal 11 and 14 exceptions contained in County OA-02-12B that permit urban services at the Port. Should sewer become available and within 200 feet of the connection point of any development within the City, hook-up to that line shall be mandatory. Should a financial burden, unforeseen hardship, or the configuration of certain property make such connection costly and difficult, the City Council may address alternative solutions on a case-by-case basis. Mention should be made that the Tillamook Care Center has received previous Council authorization to hook-up to the Sewer system when the Center feels it necessary and at their expense.

Policy D-19: Sanitary sewer services shall be provided following annexation. Sewer main extensions shall be accomplished in a logical **manner**, taking into consideration the following factors:

a) Housing and economic needs concerning property which requires sewer service.

b) Serving properties nearest to City limits first, taking into consideration geographic limitations and the availability of other public facilities.

c)A method of financing through an equitable manner those benefited properties.

Policy D-20: Septic systems are allowable within the Urban Growth Area.

Storm Sewer Policies

Policy D-21: The City shall cooperate with the County in addressing the problems of inadequate tide gates for drainage into the Trask River.

Policy D-22: The City shall continue to provide a public works program to keep catch basins and storm drain lines open. New developments, including improvement of substandard streets through a Local Improvement District are required to accommodate storm drainage. Consideration shall be taken of the Storm Drainage Master Plan and drainage in the Highway North 101 area. Local Improvement Districts should also be considered to improve and maintain rural storm ditches that carry City storm water to natural water systems.

Solid Waste Policies

Policy D-23: The City shall strengthen city ordinances that regulate the appearance of buildings and yards and solid waste accumulation, and seek the cooperation of Tillamook County regarding unsightly areas within and adjacent to the city limits.

Policy D-24: The City shall strengthen city ordinances that deal with garbage collection and curbside recycling and will continue to rely on solid waste collection within the Urban Growth Boundary to be handled by a private contractor with a franchise.

Policy D-25: The City shall strengthen city ordinances that deal with garbage disposal and will rely on the solid waste disposal needs being accommodated through implementation of the County's solid waste program, and as required by the Department of Environmental Quality.

Transportation Policies:

Policy D-26: Tillamook shall take full advantage of its present investment in street improvements and also take actions to insure future developments are in the best interest of the local residents, which includes facilitating the flow of goods and services for the local economy.

Policy D-27: The City should pursue funds from the State for implementing transportation programs. Emphasis shall be placed on programs which minimize adverse social, economic and environmental impacts and costs, and enhancement of funded projects such as future phases of the Third Street conversion and augmentation of the Highway 101/OR 6 project.

Policy D-28: Carpooling for work trips is encouraged.

Policy D-29: All new commercial developments and all new residential developments larger than a duplex shall be located on fully improved streets.

Policy D-30: The streets in new subdivisions will be designed to improve traffic circulation in nearby existing subdivisions.

Policy D-31: Street grids shall be the preferred street pattern over isolated cul-de-sacs and the broader roads that connect them.

Policy D-32: New subdivisions shall provide sidewalks and are encouraged to provide bike paths.

Policy D-33: A pedestrian/bikeway shall be encouraged in the following locations:

1. Along Holden Creek and Twelfth Street..
2. Along the Trask River on the west.
3. Adjacent to Third Street from the Southern Pacific Railroad tracks from the Trask River Road.
4. Linking all park and recreation areas in the City to one another as a Pedestrian Loop System.

Policy D-34: Walking is encouraged by sidewalks with street trees, narrow roads that slow down traffic and most importantly, commercial and recreational areas are located a short walk from most residential areas. The City will encourage walking as a means of transportation by addressing the following:

- Connectivity. The City will work to develop a connected network of pedestrian facilities. Connected networks are important to provide continuity between communities and to improve safety.
- Safety. The City will work to provide a secure walking environment. For residents to use the pedestrian system, it must be perceived as safe.
- Design. The City can ensure pedestrian-oriented design by adopting policies and development standards that integrate pedestrian scale, facilities, access and circulation into the design of residential, commercial and industrial projects.

Policy D-35: Various state programs available for development of pedestrian and bike path systems will be pursued by the City. The Oregon Coast Bike Trail travels through Tillamook. The City shall coordinate with the Department of Transportation on the particular needs of bikers using that trail.

Policy D-36: The City recognizes the important of transportation systems in the City and encourages the continuation and, where appropriate, the expansion of the following networks in addition to streets and pedestrian/bikeway systems.

Railroads:	Port of Tillamook Bay
Barge:	At Garibaldi, 9 miles north
Motor Carriers:	One common carrier
Air:	Tillamook Municipal Airport
Intercity bus:	TCTD,
Local bus:	TCTD, Senior Citizen's Group
Taxi:	Tillamook Taxi (private company)

Policy D-37: Development and maintenance of public transportation is encouraged. Bus system such as TCTD should be maintained for all age groups. The City shall support the provision of enhanced bus facilities that are in TCTD plan and pay particular attention to the transportation disadvantaged when developing alternatives to meet growing transportation needs.

Policy D-38: The City TSP shall be included in the City's Comprehensive Plan as Appendix XXI. The City Transportation Refinement Plan shall be included in the City Comprehensive Plan as Appendix XXII.

Policy D-39: The City of Tillamook shall protect the function of existing and planned roadways, railways, waterways and airways as identified in the TSP, and as a result the Rails and Trails feasibility study.

Policy D-40: The City of Tillamook shall include a consideration of land use impacts on existing or planned transportation facilities in all land use decisions.

Policy D-41: The City shall identify and support the transportation goals, objectives and implementing strategies listed in the City TSP.

Goal, Objectives, Policies, and Implementing Procedures for Recreation

Objectives for Recreation: To encourage the growth of and maximization of the use of all recreational activities provided in the parks, recreational facilities and open space, within the Tillamook UGB.

- Provide, develop, and maintain quality park and recreation areas and special use areas that are readily accessible to visitors and residents throughout the City and within its existing service area over the next ten years;
- Create additional playing fields and/or replace existing fields to prolong their life and expand their capacity, and provide quality sports and recreation facilities and programs for City residents of all ages, cultural backgrounds, abilities and income levels;
- Create a strong connection of trails segments throughout the City, and develop and maintain a core and an interconnected system of trails, to provide a variety of recreational opportunities, such as walking, bicycling and jogging;
- Create/enhance public spaces to learn and play, to create and imagine, promote health and wellness, and increase cultural awareness;
- Effectively communicate information about City goals, policies, programs and facilities among City residents, City staff, City advisory committees, City Council, Planning Commission, City Urban Renewal Agency, partnering agencies and other groups;
- Protect environmental resources, by acquiring, conserving and enhancing natural areas and open spaces within the City;

- Operate and maintain parks in an efficient, safe and cost-effective manner by incorporating principles of environmental and financial sustainability into the design, operation, improvement, maintenance and funding of City programs and facilities.

School Policies

Policy D-42: The City will coordinate with School District #9 in implementing its plan for school facilities, will consider an amendment to the City TSP for the additional Junior High Right-of-Way, and foster improved educational facilities.

Policy D-43: The City will become a community that supports education and will develop community connections/promote community service interaction and involvement in schools through coordination with the School District.

Policy D-44: The City shall enhance the living environment of the community for and through education, encouraging an educational understanding and appreciation of the natural environment, and provide an environment for innovation and intellectual pursuits.

Policy D-45: The City will foster a collaborative effort in the educational community, and foster life-long learning to acquire knowledge and life-skills to effectively participate in the workforce, community and society at large through all the levels of education.

Policy D-46: The City shall make the community a living classroom by encouraging school-to-work opportunities for our students, and provide leadership in the economic, cultural and intellectual evolution of our community through education.

Policy D-47: The City shall ensure that school facility planning is incorporated in land use planning in coordination with the School District.

Policy D-48: The City shall foster educational and cultural diversity, focusing on statewide educational goals, knowledge and information to shape a changing society, and educating people for anticipated jobs.

Policy D-49: The City will encourage activity-involved schools, and special events, which include school, church and cultural programs.

Policies for Recreation

Policy D-50: The City shall conserve open space and protect natural and scenic resources for recreational facilities. Efforts must be taken to maintain and preserve the existing and future environment in and around the community.

Policy D-51: Recreational facilities shall be provided to serve both the Tillamook Community and those who visit the area. Existing parks should be upgraded and development of neighborhood parks is encouraged.

Policy D-52: The City shall encourage the promotion of the Tillamook June Dairy Parade and Rodeo, the County Fair and other annual events.

Policy D-53: The park and recreation areas in the City shall be developed to accommodate the growing need for recreational areas in natural settings, and shall be identified on the Comprehensive Plan Map.

Policy D-54: The City shall continue to monitor the long-term recreational needs of the people of Tillamook and the need to maximize use of all public recreational facilities.

Policy D-55: Use of the Oregon Coast bicycling trail as shown on the Transportation System Plan Pedestrian Bicycle Map is encouraged.

Policy D-56: The Oregon Coast hiking trail, is recognized as a regional recreational facility. Its extension southward is encouraged by the City, along with the Rails and Trails program.

Policy D-57: The City shall continue to explore the feasibility of waterfront parks along the Hoquarton, the abandoned railroad right-of-way and extending the park trails.

Policy D-58: Tillamook City shall cooperate with appropriate agencies in maintaining its recreational vitality.

Policy D-59: Inventory data of all recreation areas within the City limits and Urban Growth Boundary shall be reviewed and where necessary supplemented. This recreation inventory shall provide the basis for a City recreation plan, which will detail the recreation needs and desires of residents, and the design of each park.

Policy D-60: The City of Tillamook Park and Recreation Master Plan shall be coordinated with the Tillamook County Plan to provide overall analysis and coordinated effort for recreation facilities within the U.G.B.

Policy D-61: The City shall develop and maintain a Park and Recreation Master Plan in the City that will describe the maintenance and use of each of the parks and properties in the City designated as open space.

Section E Policies for Land Use

Objective No. 1 for Land Use: To have a compact, efficient urban development pattern and to preserve good agricultural lands for agricultural uses.

Implementing Policies for Objective No. 1 for Land Use

Policy E-1: Services within the boundary will be phased as much as possible so that utility lines and transportation networks are extended compactly and efficiently.

Policy E-2: The City shall seek and preserve use compatibility objectives which recognize livability as the highest goal and the Planning Commission and City Council will use the characteristics listed in the Guidelines for Land Designation Decisions as a guide for making decisions about zoning and land use.

Policy E-3: The Urban Growth Boundary (U.G.B.) is established in order to preserve prime agricultural land as much as possible. Any future conversions of rural agricultural land to urbanizable land shall be based upon the seven factors as listed in State Goal 14.

Policy E-4: Urban services will not be extended to land outside the Urban Growth Boundary.

Objective No. 2 for Land Use: To provide for an orderly and efficient transition from rural to urban land us. An Urban Growth Boundary shall be established to identify and separate urbanizable land from rural land.

Implementing Policies for Objective No. 2 for Land Use

Policy E-5: The City will not annex or service land outside the designated Urban Growth Boundary. Urban level development and urban level services shall be limited to land within the Urban Growth Boundary (UGB).

Policy E-6: The City will establish agreements with the County to enforce development patterns desired by the city within the Urban Growth Boundary.

Policy E-7: Other elements of the plan and land use ordinances, such as the zoning and floodplain ordinances, will be consistent with the Urban Growth Boundary [and with the policies of this plan].

Policy E-8: The Urban Growth Boundary (U.G.B.) will be reviewed and revised if necessary according to the following guidelines:

a. There shall be a demonstrated need for additional area due to economic or population growth or scarcity of available land.
b. There shall be no unnecessary developments on agricultural land.
c. If additional land is required, land shall be chosen that can be efficiently provided with all public services and facilities, including transportation routes.

Policy E-9: Urban level development will be limited to land within the Urban Growth Boundary.

Objective No. 3 for Land Use: To provide sufficient land for development to meet future needs and to preserve open space lands as much as possible.

Implementing Policies for Objective No. 3 for Land Use

Policy E-10: Land uses and densities shall be guided by the Land Use Plan so that the length of auto trip is minimized, and enforced through the Zoning Ordinance, as is stated and described further in the Regulatory Controls. Medium density living areas shall be located, when possible, near thoroughfares leading to shopping/service areas. Higher density, mixed uses, and pedestrian-oriented design should be focused in the Town Center area. Highway commercial areas shall accommodate those land uses which would primarily deal with the tourist and traveling public. Downtown shopping shall be designated for convenient shopper parking and then walking to a variety of shopping areas. These guidelines will in turn allow for lower fuel and energy consumption.

Policy E-11: The following is a list of each of the purposes for each of the zone districts:

Open Space (O District): To maintain, preserve, conserve and otherwise continue in existence desirable and appropriate uses of open space lands in the more undeveloped sections of the City in order to assure continued public health by counteracting pollutants and to assure the use and enjoyment of natural resources and scenic beauty for the economic and social well-being of the city and its citizens.

Single-Family Residential (R-7.5 District): To encourage, accommodate, maintain and protect a suitable environment for family living. The R-7.5 District is intended to provide for single-family residential homes at urban standards in areas with community services.

Single-Family and Duplex Residential (R-5.0 District): To encourage, accommodate, maintain and protect a suitable environment for family living at urban standards and an increased density in areas with community services.

Multiple Use Residential (R-0 District): To provide for high density multiple family developments in locations close to shopping and services, transportation or public open space, and in appropriate locations to provide a transitional use area between residential areas and other less restrictive districts. The allowance of small-scale commercial services and retail is intended to encourage compatible mixed use development that is transportation-efficient, and enhances the function of this district.

Neighborhood Commercial (C-N District): To provide for the location of small businesses and services in residential sections of the City for the convenience of nearby residents; also to recognize existing uses of this type within the City. New C-N districts have a maximum area of 40,000 square feet of contiguous land. The businesses are intended to fit into the residential pattern of development and not create either land use,

architectural or traffic conflicts. The above site sizes for new C-N districts and the following regulations are intended to protect the residential environment. Neighborhood Commercial development shall be limited in size and designed so they do not conflict with nearby and surrounding residential uses. Grocery stores. Barbershops, beauty shops and dry cleaning stores are the type of uses permitted in Neighborhood Commercial developments.

Highway Commercial (C-H District): To provide for those commercial uses which are appropriate to major thoroughfare or highway locations, and are dependent upon thoroughfare travel, and for those establishments that require large land areas. The types of uses appropriate in the highway commercial area include: Motels, restaurants, auto sales and repair, commercial recreation, service stations and retail establishments that require large land areas. This latter retail category include establishments selling garden supplies, nurseries, home furnishings and retail lumber.

Central Commercial (C-C District): To serve as the central trading area for the City and surrounding urbanized areas.

Light Industrial (I-L District): To provide for those heavier commercial and light industrial uses located in existing built-up areas of the City.

General Industrial (I-G District): To provide for the establishment of light and heavier industrial uses essential to the development of a balanced economic base in an industrial environment with a minimum conflict between industrial uses and residential and light commercial uses.

Public and Semi-Public (P & S-P District): To recognize areas for those uses which generate large public gatherings.

Policy E-12: The following is a list of each of the purposes for each of the overlay zone districts:

Town Center (TC District): To create a pedestrian-oriented, mixed-use downtown core and preserve and enhance the historic buildings and character of the Town Center;

Flood Hazard Overlay (FHO): To promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

1) To protect human life and health;
2) To minimize expenditure of public money and costly flood control projects;
3) To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
4) To minimize prolonged business interruptions;

5) To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard;
6) To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
7) To ensure that potential buyers are notified that property is in an area of special flood hazard; and,
8) To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions;

Airport Overlay (AO): To prevent the establishment of air space obstructions in airport approaches and surrounding areas through height restrictions and other land use controls as deemed essential to protect the health, safety and welfare of the people of the City of Tillamook and Tillamook County.

Hazard Overlay (HO): To avoid development hazards in the areas of the City and the urban growth boundary which have been mapped as inundation zones (limit construction of new essential facilities and special occupancy structures as defined in ORS 455.447 in tsunami inundation zones). The following special regulations apply to all properties which lie wholly or partially within one or more of these areas (refer to Tsunami Hazard Map of Tillamook Quadrangle.).

Water Resources Protection Overlay District: To implement the Significant Wetland and Riparian Corridor Resource policies of the City of Tillamook Comprehensive Plan and to guide development and conservation of significant wetlands, streams and riparian corridors identified in the City of Tillamook Significant Riparian/Wetlands Inventory. This section allows use of property while establishing clear and objective standards to protect and restore water bodies and their associated riparian areas, thereby protecting and restoring the hydrologic, ecological and land conservation functions these areas provide. Specifically, this ordinance is intended to protect habitat for fish and other aquatic life, protect habitat for wildlife, protect water quality for human uses and for aquatic life, control erosion and limit sedimentation, limit development in significant riparian corridors, and reduce the effects of flooding. This ordinance attempts to meet these goals by excluding structures from areas adjacent to fish bearing lakes and streams, and their associated wetlands, and by restricting vegetation removal or other alterations in those areas.

Policy E-13: Retail uses are encouraged to remain in the downtown area to maintain its vitality. Infill and redevelopment should be accommodated in the Town Center area. The classes and types of businesses and/or services permitted in the Town Center shall include: upper floor residential, housing for the elderly or disabled, upper floor clubs or lodges, cultural facilities, day care, governmental offices, libraries, parks, plazas, open space, postal services, hotels, office uses, retail services, restaurants, museums, theaters, galleries or studios for dance, art , and photography, personal services including but not

limited to medical or dental clinics, small animal veterinary clinics, or pharmacy. Infill and redevelopment shall keep with the original architectural character, scale, mass and materials.

Policy E-14: Ample buffers shall be maintained between industrial areas and activities and residential areas

Policy E-15: Any proposed public or semi-public use on a specified site in a residential, commercial, industrial or public area requires review through the conditional use procedures of the Zoning Ordinance. Institutions that propose to be located in a residential area should be situated so the impacts of their surroundings are minimized.

The exception to this policy shall be the Tillamook County Fairgrounds. This property contains multi-use facilities such as:

> Exhibit Halls and pavilions, indoor tennis courts, track and grandstands, areas for outside amusement activities, parking lots, buildings for assorted storage uses, buildings for the housing of animals, buildings for various meetings, social gatherings and community activities, public shops, and other public buildings.

This policy recognizes that these uses and activities have existed for a long period of time and are unique and complementary to the Tillamook Community. This Plan acknowledges that fairground existing public uses may continue and be expanded upon subject to the conditional use requirements of the City Zoning Ordinance.

Plans for expansion, improvement and relocation of public buildings shall include consideration of the magnitude of the population increase and the geographic direction of growth. Consideration shall also be given to consolidation of administration facilities for convenience and economy of operation.

Policy E-16: A study shall be done on the availability and developability of land currently being used for Fairground purposes.

Policy E-18: Parks of all sizes shall be provided and maintained in the existing developed areas. Community involvement is strongly encouraged for the development of such parks.

Policy E-19: Increased use of existing recreational facilities at the schools is encouraged.

Policy E-20: Optimum use of all public recreational facilities is encouraged.

Policy E-21: A large park of 14 acres serving the needs of Tillamook residents and others shall be developed in the area to the south part of the Fairgrounds.

Policy E-22: The large marine park developed on the Trask River immediately south of the City Sewer Plant Facility, known as Carnahan Park shall be investigated as to

extension southward in the area zoned as Open Space. The park shall provide various recreational facilities, and shall include enhanced wetlands and open space.

Policy E-23: Future parks are encouraged to occupy other areas of land designated as open space within the City of Tillamook, such as the area at the confluence of the Hoquarton and Dougherty Sloughs, as shown on the Comprehensive Plan Map.

Policy E-24: Significant volumes of land are available for community parks and development in the Urban Growth Boundary. Acquisition is encouraged on this park/open space land. The City shall study the development of said property for various purposes, and estuary guidelines shall apply in all cases of development.

Policy E-25: The Plan shall allocate acreage for open space.

Objective No. 4 for Land Use: To guide community development in such a way as to maximize the conservation of energy.

Implementing Policies for Objective No. 4 for Land Use

Policy E-26: Land designated for new development or redevelopment is allocated as shown in Table G. The proposed land use map is hereby adopted and made part of the general plan.

Policy E-27: Land uses developed on the land will be managed and controlled so as to maximize the conservation of all forms of energy, based on sound economic principles.

Policy E-28: The City shall review and implement various plans for ways this community can conserve energy. Informative literature and programs shall be developed to aid various identified energy conservation needs. As a municipality, Tillamook City shall take a strong role in recognizing the imminent need for energy conservation. Analysis of heating and fleet fuel consumption costs and electricity consumption shall be made and innovative programs implemented to conserve and reduce consumption. With reference to local resources such as wind, solar, forest and farm wastes, the City shall consider viable renew- able energy programs that might lead to energy conservation.

Goal, Objectives, Policies, and Implementing Procedures for Economic Development

Goal for Economic Development

To diversify and improve the economy.

Objective No. 1 for Economic Development: To improve the economic vitality of the Tillamook area, and Revitalize the Tillamook City Downtown.

Policies for Objective No. 1 for Economic Development

Policy E-29: The City will promote a revitalized City Center that serves as a Gateway to Commerce supporting residents and tourists in a viable economic and cultural manner.

Implementing Procedures for Policy E-29

- Develop a marketing program to promote tourism and to advertise Tillamook's historical significance.
- Develop a marketing program to make businesses aware of Tillamook's potential for economic development.

Policy E-30: The Town Center Plan shall include design review standards and criteria and be a commercial overlay district in the City Development Codes. The Plan may compliment early efforts and provide continuity of purpose in terms of color schemes, architectural and design elements and public open space.

Implementing Procedures for Policy E-30

- The City shall develop and preserve the City Center to retain a small, friendly, relaxed and welcoming environment, and maintain a small town center atmosphere.

Policy E-31: The City shall explore the desirability and feasibility to providing in the core area, public restrooms, covered walkways and sidewalk amenities, such as trees/shrubs, benches and a public fountain.

Policy E-32: Programs to enhance the Central Business District, such as improving the outward appearance of the existing structures and an overall downtown development plan are desirable to help maintain the economic viability of this area. A special emphasis should be placed on the Town Center development and traffic and parking patterns and problems in the CBD.

Implementing Procedures for Policy E-32

- A Downtown Master Plan for the built environment will include a staging plan for restoring key structures and a remodeling plan for upgrading structures by defined development standards.
- The Downtown Master Plan will include the creation of restoration and remodeling standards to guide a staging plan.
- The Downtown Master Plan for the built environment will include the development of an era design program to provide guidance during the restorative and remodeling effort.
- There shall be design consistency (standards) in design review of the Commercial District.
- Develop an incentive program for meeting standards (Tillamook City Economic Development Loan Fund).

Policy E-33: Parking in the downtown area is essential. Surface lots shall be focused internally and designed to reinforce a pedestrian oriented streetscape. Perimeter landscape screening will be required for surface parking lots.

Policy E-34: New development and conversions in the central commercial district are encouraged and may be required to provide off-street parking. Generally, elimination of off-street parking requirements shall not take place unless adequate uncommitted parking spaces exist within one block walking distance, or when established off-hour shared arrangements allow double use of available spaces.

Policy E-35: The City shall continue to monitor new commercial development to assure that available parking spaces equal customer demand. The City shall encourage private investors to fund needed parking (by L.I.D., revenue bonds, etc.).

Policy E-36: Expansion of the Central Business District (CBD) shall be monitored to identify when it is needed.

Policy E-37: The City shall monitor increased growth and projected future growth of Highway Commercial uses and the need for expansion. Specified Highway Commercial areas at the northern, southern and eastern borders of the City, would provide economic opportunities of:

a. Increased employment sources, investment and tax revenues of existing and new business activities.

b. Eliminate the problems of conflicting uses by providing adequate space for highway related uses not suitable for location in other areas of the City.

c. Maintaining and increasing tourist trade revenues.

d. Providing a social focal point such as a highway rest/wayside in conjunction with Chamber of Commerce informational activities.

e. Providing additional land area for location and expansion of new and existing businesses.

f. Centralized Highway Commercial uses to maximize energy conservation techniques and minimize travel time.

g. Provide for possible location of a Retreat Center complex.

Policy E-38: The classes and types of businesses and/or services that require large land areas are to be encouraged to locate in the Highway Commercial area, and shall include motels, restaurants, auto sales and repair, commercial recreation, service stations, garden/farm supply stores, nurseries, home furnishings, retail lumber, and other retail and wholesale establishments.

Policy E-39: Tillamook City must have a distinctive identity heralded by its well-recognized five Gateways, and shall provide "City Gateways" at the five (5) major street entrances to the City of Tillamook: Trask River Bridge, Wilson River Bridge, Port of Tillamook Bay RR Bridge on Highway 6, South Highway 101 Divider Island at Main &

Pacific, the Hoquarton Crossing on 101, and enhance the Gateways image by distinctive signage, lighting & landscaping. Each "Gateway" and City entrance shall include current City population. The City additionally shall develop and include appropriate commerce signage for each Gateway that identifies the Downtown Commercial District.

Policy E-40: The City shall encourage the development of a tourist wayside-rest area along Highway 101 North and Highway 6, and shall coordinate with Tillamook City service clubs to acquire and develop such facilities.

Objective No. 2 for Economic Development: To create more and better jobs in Tillamook, to raise per capita income, and to have the resulting wealth be retained and reinvested in the community so as to create a better quality of life for all.

Policies for Objective No. 2 for Economic Development

Policy E-41: The City will encourage a downtown development plan with implementation strategy to guide the creation of a viable business organization, a restructured economic market mix of commerce in the City Center and a design initiative which refreshes and underscores the pedestrian-friendly, livable aspects of the City Center.

Implementing Procedures for Policy E-41

- Work with civic and business leaders to create a redevelopment master plan for Tillamook's central commercial district and Town Center to make the downtown more attractive to shoppers and businesses. This master plan should address matters such as street furniture, street trees, lighting, pedestrian circulation, parking, public art, refurbishing of storefronts, and restoration of older buildings. The Town Center Plan, shows how the downtown could look if such a plan were developed and implemented.
- The Downtown (Central Commercial Core) business mix should effectively support residential markets first and tourism markets second and be the backbone of a business and service center for the City and the area.

Policy E-42: The Community and the government shall encourage the retention of the downtown business district as the primary shopping, service and financial center for the City of Tillamook area.

Implementing Procedures for Policy E-42

- Support the downtown revitalization effort.

Policy E-43: The City shall investigate municipal means as well as encourage downtown business attempts, to form improvement districts or other financial means of enhancing the vitality of the central commercial area. Such attempts shall not be limited to parking improvements, but shall also focus on use of second story buildings, attractive shops and public attraction areas and the providing of adequate downtown apartment housing.

Implementing Procedures for Policy E-43

- Downtown stakeholders shall strive to build a better revitalization network. Stakeholders include, but are not limited to: the Resident Shopper, the Resident Non-Shopper, City Service Organizations, Tillamook Chamber of Commerce, Tillamook City Council, Tillamook City Administration, Tillamook County Commissioners, Tillamook County Administration, Tillamook Revitalization Association, utility providers, and others.
- Blend and coordinate stakeholders who are involved with the Downtown's future to include, but not be limited to: the Resident Shopper, the Resident Non-Shopper, City Service Organizations, Tillamook Chamber of Commerce, Tillamook City Council, Tillamook City Administration, Tillamook County Commissioners, Tillamook County Administration, Tillamook Revitalization Association, utility providers, and others.
- Promote partnerships between civic local and business groups and local government that will enhance a welcoming environment and a more visual pleasing downtown through a recognition / reward program and nuisance ordinances.
- The City of Tillamook is to provide leadership and coordination in developing public use, focal-point areas within the City Center.

Policy E-44: The leadership focusing on the downtown development will place ongoing emphasis on restoration and remodeling where appropriate.

Implementing Procedures for Policy E-44

- Foster a climate, which promotes a physically safe environment that is pedestrian-friendly.
- The City government and utility providers shall actively support and participate in the creation of a viable business mix and a pedestrian-friendly and livable City Center.
- The City government shall encourage economic diversity through business recruitment that is specific and value-driven by quality and service.

Policy E-45: The City shall recognize and preserve community heritage. Historic buildings and other features shall be preserved and renovated, and a touring program to visit sites of community heritage shall be pursued.

Implementing Procedures for Policy E-45

- Develop and conduct a touring program to visit sites of community heritage.
- Identify and inventory the community heritage sites.
- Identify and preserve, with legal language, the City's historic buildings.

Policy E-46: The City shall support an active Economic Development Advisory Committee and shall work with that committee, the Port of Tillamook Bay, the County and Chamber of Commerce to:

- interest tourists in year round visits to Tillamook;

- use existing timber resources in local wood products manufacturing;
- increase local marine food processing;
- attract appropriate manufacturing concerns to the Tillamook area;
- support public facilities including water, sewer and parking to handle the planned growth;
- monitor changes in employment, population, retail sales, etc., in order to bring information up to date and be able to make adequate choices as development alternatives become available;
- focus key civic uses in the Town Center Area.

Policy E-47: The City shall encourage effective business diversity to be in place.

Policy E-48: The City shall maintain an adequate supply of buildable commercial and industrial lands suitable for businesses and industries likely to locate in Tillamook.

Policy E-49: The City shall protect designated commercial and industrial lands from conflicting uses by applying appropriate zoning and land development ordinances.

Policy E-50: The City shall work to ensure that buildable commercial and industrial lands are market-ready, with access, infrastructure, and permit needs capable of being met at key sites within six months of receiving a proposal for development.

Policy E-51: Realizing the importance of industry to the economic stability of the community, it is desirable to encourage and aid in the improvement and well-located industrial development.

Implementing Procedures for E-51

- Existing industry is encouraged to expand in the Tillamook City area.
- Additional light and heavy industries are needed to help diversify and balance the fiscal effects of the Community's growth in the Tillamook City area.
- Suitable locations for heavy industry exist at the Port of Tillamook Bay industrial park and in several light industrial sites lying to the east and north in the Urban Growth Boundary area.
- New industry would provide increased employment source, investment and tax revenues in the Tillamook City area.

Policy E-52: The City shall promote and encourage greater use of Port of Tillamook Bay for industrial uses.

Policy E-53: The City shall participate in a countywide economic development program to recruit industry appropriate for the area.

Policy E-54: The City shall work with key state and federal agencies to promote local economic objectives and to seek financing for economic development programs and projects.

Policy E-55: The City shall work with Tillamook County to protect and support the agricultural lands that surround Tillamook for commercial agricultural production.

Implementing Procedures for E-55

- Encourage cultural events related to the rural, agricultural heritage and traditions of this community.

Policy E-56: The economic vitality of the Tillamook area should be encouraged by attracting new, diverse employers, and the City shall work closely with the County Economic Development Council in attracting new industry to the area and new commercial, residential and civic uses to the Town Center area.

Goal, Objectives, Policies, and Implementing Strategies for Housing

Goal for Housing:

"To provide for the housing needs of all citizens of the City."

Objective No.1 for Housing: To establish residential areas that are safe, convenient, healthful and attractive places to live.

Policies for Objective No.1 for Housing

Policy E-57: The City shall protect residential areas from encroachment of incompatible uses.

Policy E-58: The primary areas for new low-density residential development are east of the POTB Railroad Right-of-way.

Policy E-59: The primary areas for new multiple-use residential development are as follows:

East of the railroad tracks and,

(a) In the 'vicinity of Evergreen Drive and Third Street,

(b) In an area north of Fairview Road and east of Olson Road,

(c) Between Evergreen Drive and Marolf Loop Road running along the south U.G.B. line north of Marolf Loop Road (12th Street).

(d) In an area south of Brookfield Avenue, east of Marolf Loop Road,

(e) In the area on Third Street in the vicinity of the Tillamook County General Hospital,

(f) In the areas near parks and playgrounds, multi-residential development should be considered,

(g) In the residential areas surrounding the Downtown Commercial Zone, multi-residential development should be considered,

Objective No.2 for Housing: To plan for, provide and maintain an adequate supply of sound, affordable housing within the income level of the community, with a variety of dwelling types, such as single and multi-family dwellings, mobile homes, modular homes, in desirable locations, and a variety of densities, including compact residential development, adequate to insure meeting the housing need for a population increase within the City of Tillamook.

Policies for Objective No.2 for Housing

Policy E-60: The City encourages a wide range of housing types varying in size and price ranges so that all who desire to live in Tillamook will be accommodated, including adequate housing and care for special needs citizens.

Implementing Procedures for Policy E-60

- Provide special housing needs which may involve medical treatment.
- Inventory and redefine special-need housing for the next decade.

Policy E-61: The City shall support the efficient use of lands within the residential zones.

Policy E-62: Development on existing small lots (infill) is encouraged.

Implementing Procedures for Policies E-62 and 11-6

- Establish Land Use Zone to permit higher densities and smaller square foot ratios (smaller houses).
- Zone for compact development near parks and playgrounds.

Policy E-63: In low-density residential areas, developments on a mixture of 3,750, 5,000, and 7,500 square foot lots are encouraged. In the lowest density zone, an average minimum lot size of 7,500 feet is expected.

Policy E-64: In the lowest density zone, single new subdivision lot sizes may be as small as 3,750 square feet.

Policy E-65: Duplexes and single-family attached dwellings are permitted outright in low-density residential areas.

Policy E-66: Multi-family residential structures are permitted in medium density residential areas.

Policy E-67: The medium density residential designation shall include offices as a conditional use.

Policy E-68: Lot sizes smaller than 3,750 square feet are allowed in the medium density residential zone.

Policy E-69: Plan and zone a supply of vacant buildable land adequate to meet the community's needs for housing to 2030 as described in this chapter.

Policy E-70: Ensure that all ordinance standards and procedures for reviewing applications for permits for needed housing types are clear and objective.

Policy E-71: The City shall provide for and encourage development of apartments, duplexes, and other forms of multifamily housing in areas of the city planned and zoned for medium-density residential development.

Policy E-72: The City shall provide for and encourage development of manufactured home parks and manufactured homes on individual sites in areas planned and zoned for such residential development.

Policy E-73: The City shall provide for and maintain public facilities, services, and access necessary for residential development of vacant buildable land.

Policy E-74: The City shall ensure that all costs of providing public facilities and services to new residential development are borne by those who will build or buy the new dwellings.

Policy E-75: The City shall encourage development of new housing in areas where public facilities and services can be provided in the most cost-effective way.

Policy E-76: The City will implement quality elements of compact residential development.

Policy E-77: Garages are set back to the rear of residential lot or alley side of the property.

Policy E-78: The City encourages houses that occupy small lots clustered around public spaces such as parks or playgrounds. Innovative design and development techniques are also encouraged.

Policy E-79: Planned unit developments are encouraged to afford a degree of flexibility not permitted by traditional site planning.

Policy E-80: Flexibility in access and lot size and configuration is encouraged to allow full development potentials for land areas.

Policy E-81: New housing construction, especially multi-family, shall include outdoor landscaping and other amenities.

Objective No.3 for Housing: To rehabilitate and improve existing sub-standard housing, including unimproved streets.

Policies for Objective No.2 for Housing

Policy E-83: Manufactured Homes are permitted to locate on individual lots in all zones that permit single-family housing (according to ORS 197.307).

Policy E-84: Programs for the maintenance, conservation and rehabilitation of existing residential areas and housing stock within the community are encouraged. The City shall support the Northwest Oregon Housing Authority in its work with low-income people.

Implementing Procedures for Policy E-84

- Promote rehabilitation and weatherization programs to help preserve Tillamook's current housing stock.

Policy E-85: Tillamook encourages the use of the following programs in order to meet the needs of its citizens.

-Department of Housing and Urban Development
1. Subsidy to homeowners
2. Subsidy to renters
3. Rent supplement program
4. Housing rehabilitation and weatherization funds

-Farmers Home Administration
1 Homeowners and renters programs

Policy E-86: The City discourages the concentration of low-income housing in any one area of the city.

Policy E-87: The City allows for the conversion of older homes into apartments where larger homes can no longer be reasonably maintained as single-family residences.

Policy E-88: The City promotes energy-efficient housing.

Policy E-89: The City encourages redevelopment of the deteriorated properties adjacent to downtown for multifamily housing by changing the current plan and zoning map designations for that property from Low-Density Residential use to Medium-Density (R-0) Residential.

Implementing Procedures for Policy E-89

- Develop ordinance provisions to facilitate redevelopment in the residential zones immediately east and west of the downtown commercial zone.

- Create Compact Residential Development Overlay in a manner that provides for multiple housing types (square footages) available for different markets (e.g., low-income, special needs).

Section F Policies for Revising the Plan

Policy F-1: The Comprehensive Plan shall be reviewed and any necessary **minor** revisions made at least every two years, after a report from the Planning Commission public statement is issued on whether any **minor** revisions are needed. The review will begin with re-examination of the base data, and problem areas and continue through the same basic phases as the initial preparation of the plan and implementation measures. A report from the Planning Commission for the minor revisions should include, at a minimum the following items:

a. A general review of the factual base (Inventory);
b. An evaluation of the effectiveness of plan policies and implementing measures in meeting community goals and objectives; and
c. Recommended amendments, if any, to the Plan and/or implementing measures.

Following approval of the minor revisions, ordinances, the capital improvements program, and other plan implementation measures will be revised to support changes in the Plan.

Policy F-2: **Major** revision to the Comprehensive Plan, resulting in widespread and significant impact beyond an immediate local area, isolated property and minor changes to the Comprehensive Plan, may be made at any time. Such revisions may be initiated by the City Council, Planning Commission, or by any individual, agency, or firm. Special studies or other information will be required as the factual basis to support the change. The public need and justification for change must be established by the applicant.

Policy F-3: The Plan may be reopened at appropriate times in response to completion of plans by other jurisdictions and agencies. Further, the City shall acquire and consider additional inventory information that was not available during plan development in its evaluation of future plan revisions. The City may consider such a revision either major or minor.

Policy F-4: Plan amendments may be initiated by:

a. City Council or Planning Commission.
b. An individual or organization by application.

All Comprehensive Plan amendments shall be considered at public hearings before the Planning Commission and City Council in accordance with state law, City Charter, and appropriate City ordinances.

Policy F-5: Proposed revisions, either major or minor, or otherwise initiated, shall be reviewed in public hearings held by the Planning Commission and City Council and shall have adequate notice to meet State requirements. Comprehensive Plan amendment hearings shall be conducted under the following procedures:

a. The Planning Commission shall conduct a public hearing on the proposed amendment at its earliest practical meeting time after the amendment is proposed.
b. Prior to the Planning Commission hearing, the City Planning staff shall review the proposed amendment and prepare a report to the Planning Commission.
c. Within 45 days of the hearing, the Planning Commission shall recommend to the City Council approval or rejection of the proposed amendment. It shall take a majority vote of the Planning Commission in favor of the proposal to recommend to the City Council that the Comprehensive Plan be amended.
d. The Planning Commission shall consider amendment requests to the Comprehensive Plan at regularly advertised meetings.
e. After receiving the recommendation of the Planning Commission, submitted as written findings regarding the proposed revision which consider public hearing(s) and response of affected governmental agencies, the City Council shall hold a public hearing on the proposed amendment.
f. The City Recorder shall maintain records of all plan amendment hearings and adopted amendments of the Comprehensive Plan.
g. Consideration by Planning Commission and Council of Plan amendments should be based on:
    1. Meeting the overall intent of the Comprehensive Plan. All Plan Policies shall be reviewed when revising the City Comprehensive Plan to make sure no portion of the Comprehensive Plan is overlooked.
    2. Citizen review and comment. The citizens of Tillamook will be encouraged to take part in all stages of the planning process.
    3. Input from affected governmental units and other agencies. All affected government agencies shall be informed of proposed revisions and allowed reasonable time to respond before making a recommendation on the plan revision to the City Council.
    4. Short- and long-term impacts of the proposed revision.
    5. Additional information as required by the Planning Commission or City Council.

Policy F-6: All appendices may be amended by Resolution.

Objectives and Policies for Plan Implementation

Objective No. 1 for Plan Implementation: To implement the City Comprehensive Plan and its objectives, policies and implementing procedure.

Policies for Objective No. 1 for Plan Implementation

Policy F-7: The City shall institute regulatory and non-regulatory controls for the implementation of the Comprehensive Plan. These regulatory controls shall include the City's Zoning Ordinance.

Policy F-8: The City shall develop intergovernmental agreements with the County and other governmental entities and agencies to assist in the implementation of City policies.

Objective No. 2 for Plan Implementation: To provide for cooperation between the City and the County in the unincorporated land within the Urban Growth Boundary and establish and maintain an Urban Growth Management Agreement and Urban Service Agreement between the City and County.

Policies for Objective No. 2 for Plan Implementation

Policy F-9: The City shall develop an Urban Growth Management Agreement (UGMA) and other intergovernmental agreements with the County. The UGMA shall include an Urban Service Agreement (USA) between the City and County. Additional Intergovernmental Agreements between the City and County may also be made to coordinate services between the two levels of government.

Objective No. 3 for Plan Implementation: To establish and maintain grants-in-aid and a capital improvements program

Policies for Objective No. 3 for Plan Implementation

Policy F-10: The City shall coordinate a capital improvement projects list for the community.

Policy F-11: The City shall strive to identify grants available to continue to better the community in implementing its policies listed in the Comprehensive Plan.

-- END --

Chapter 16: Maps

Map 1: The Comprehensive Plan Map (1A) and Zoning Map (1B)

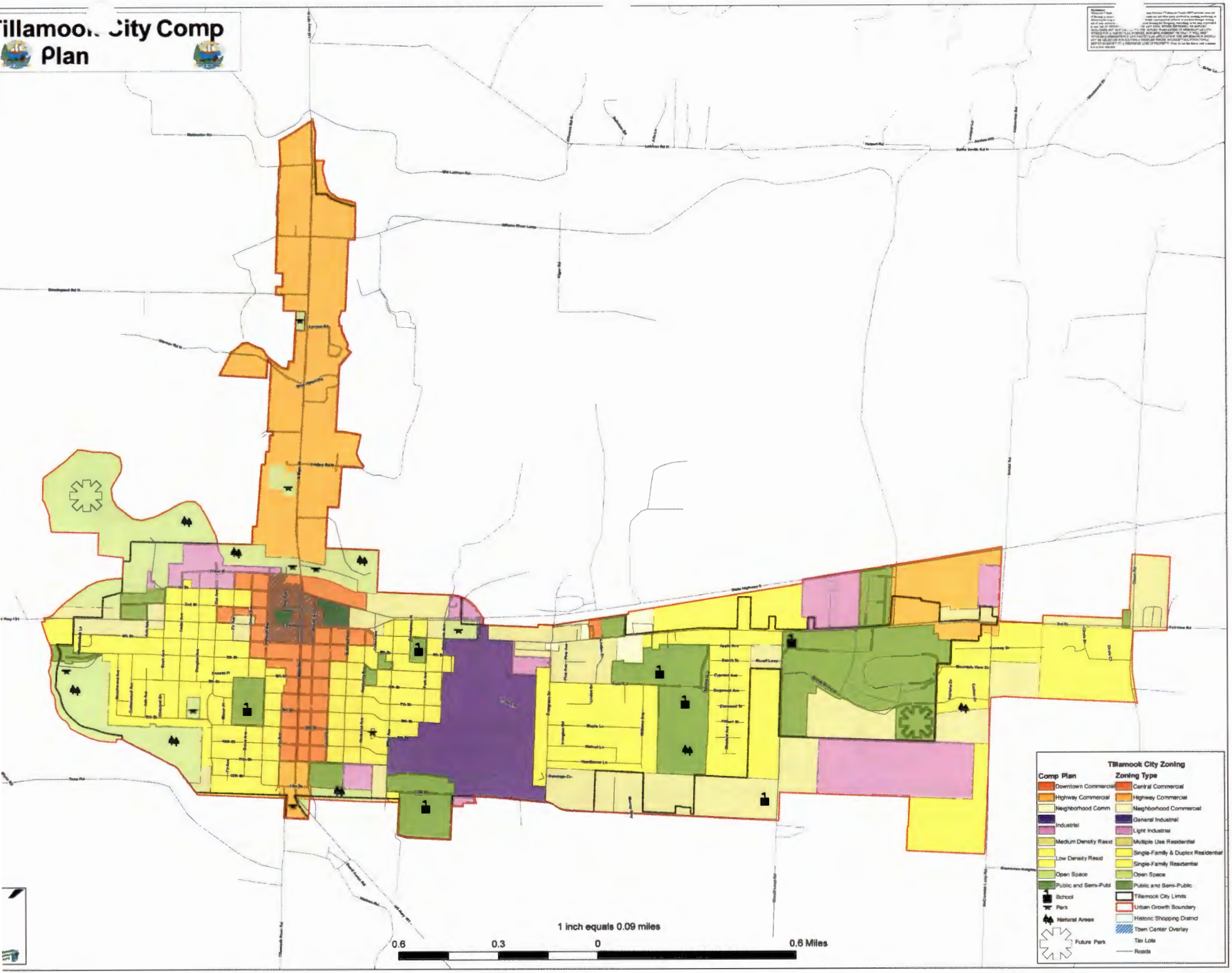
Map 2: Existing Land Use (which includes Non-Conforming Uses) Map

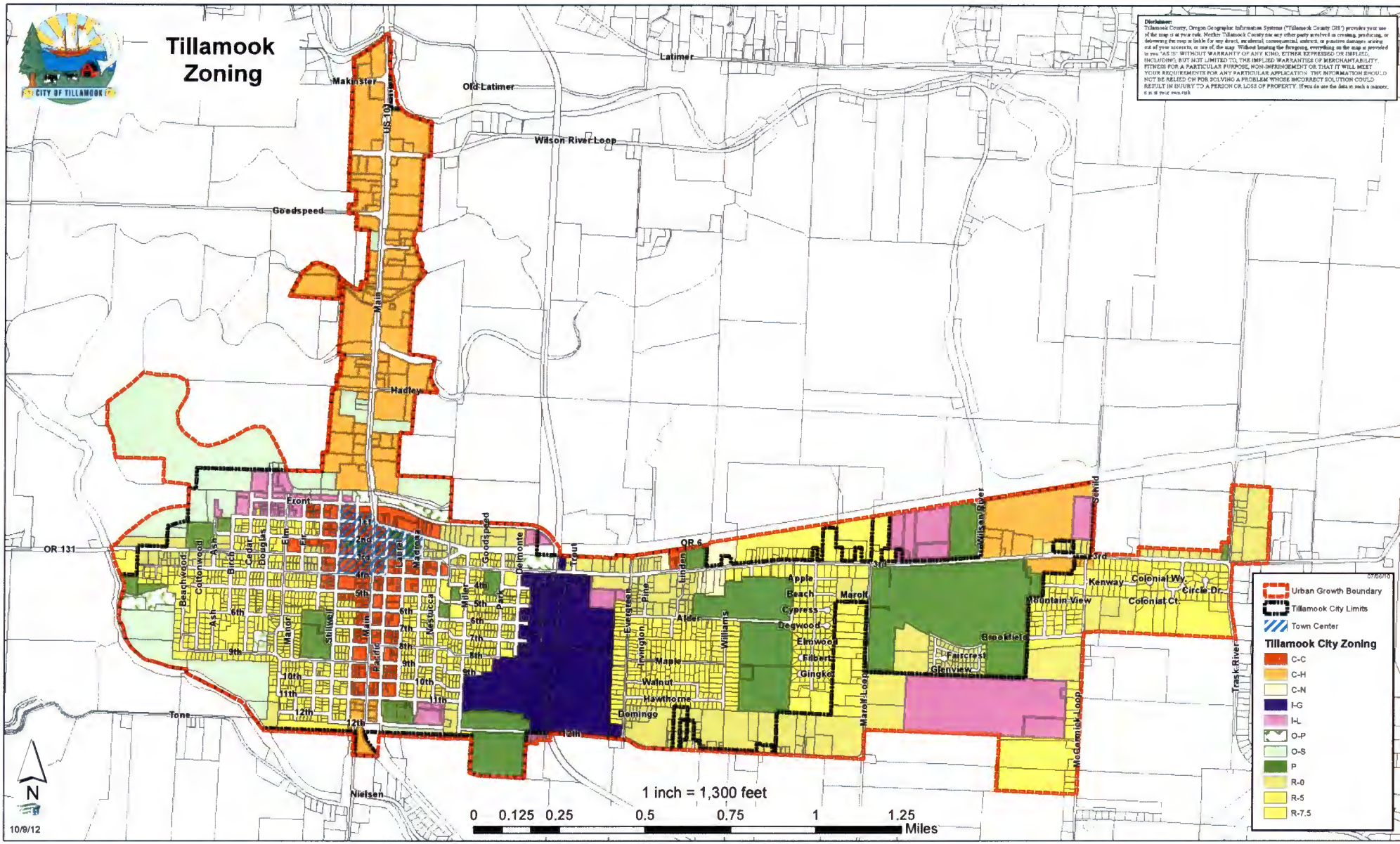
- Areas within City Limits (2A)
- Areas outside of City Limits (2B)

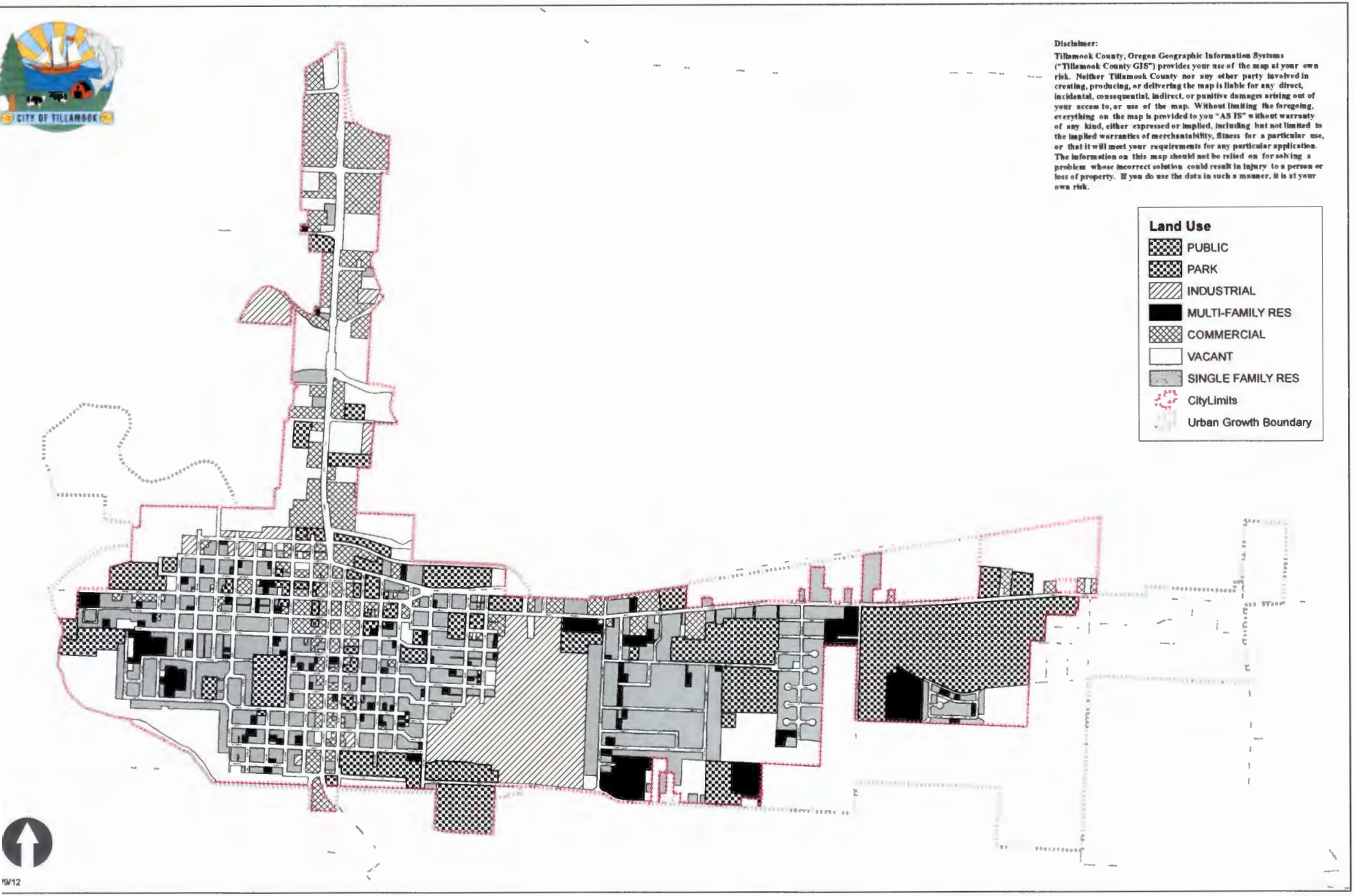
Map 3: The Vacant and Re-developable Lands (Potential Development) Map

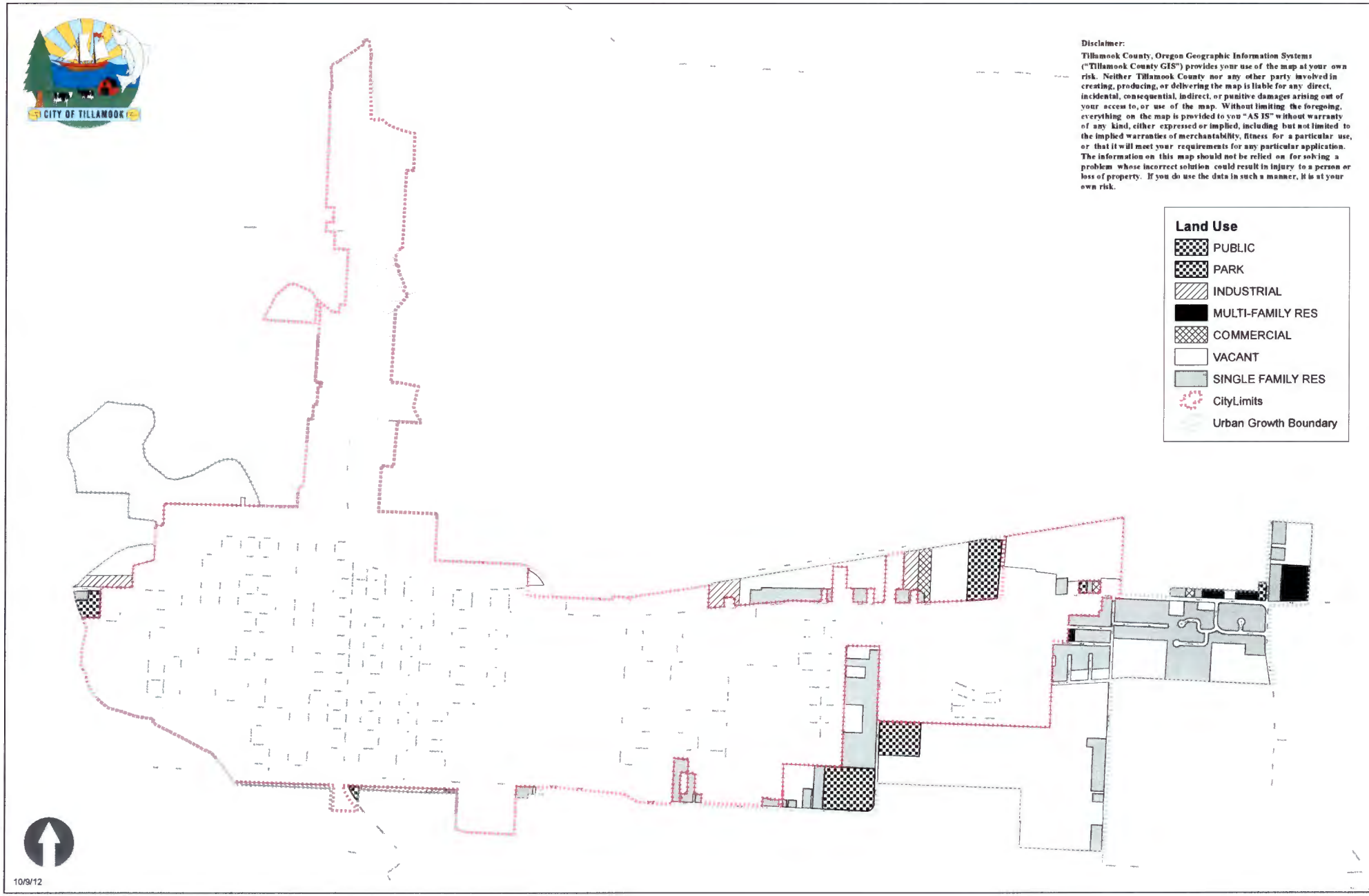
Map 4: Significant Wetlands/Flood Hazard Overlay Map

Map 5: Sanitary Sewer Map

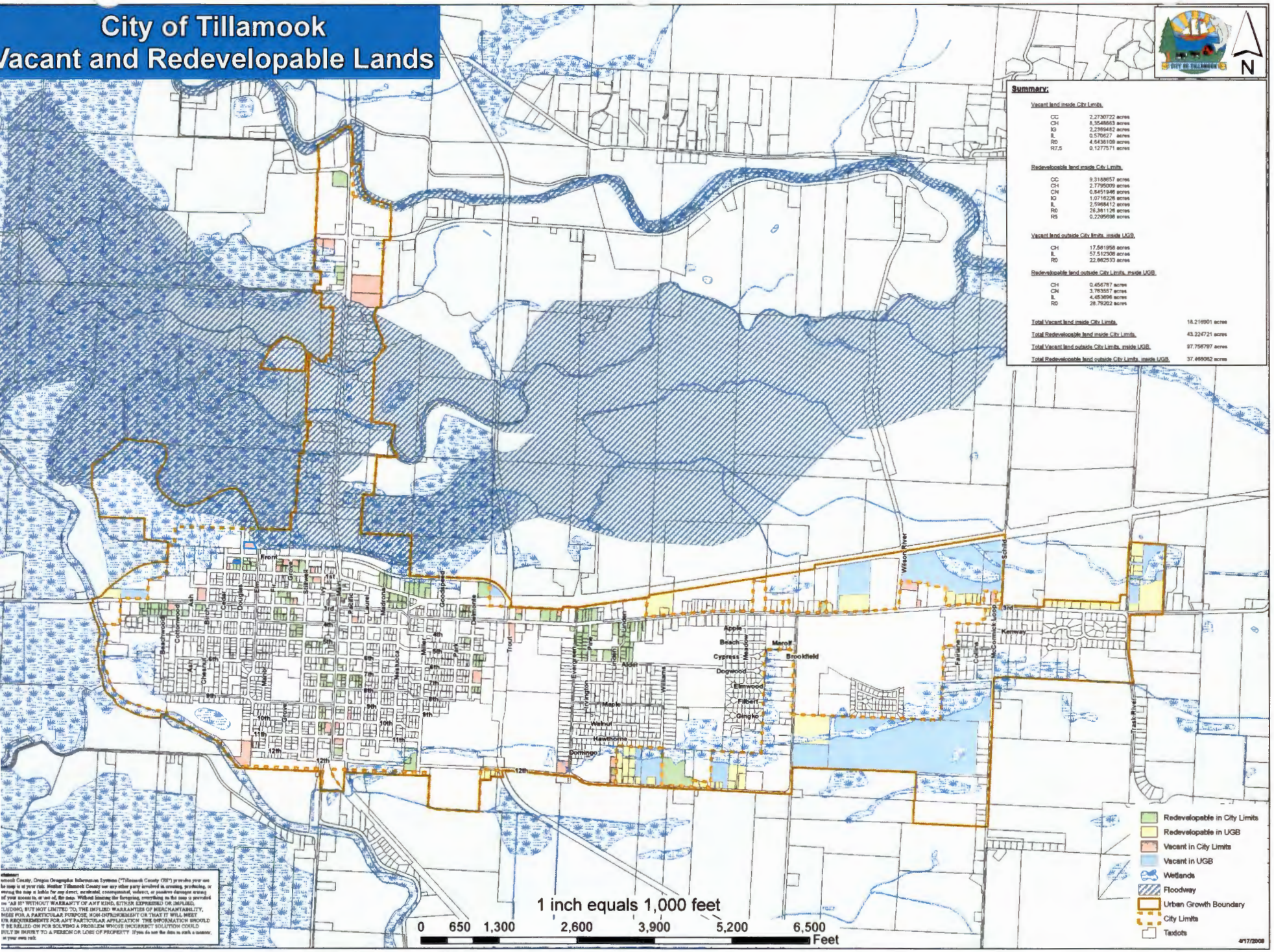

Tillamook City Comp Plan
1 inch equals 0.09 miles
0.6
0.3
0
0.6 Miles
Tillamook City Zoning
Comp Plan
Downtown Commercial
Highway Commercial
Neighborhood Comm
Industrial
Medium Density Resid
Low Density Resid
Open Space
Public and Semi-Publ
School
Park
Natural Areas
Future Park
Zoning Type
Central Commercial
Highway Commercial
Neighborhood Commercial
General Industrial
Light Industrial
Multiple Use Residential
Single-Family & Duplex Residential
Single-Family Residential
Open Space
Public and Semi-Public
Tillamook City Limits
Urban Growth Boundary
Historic Shopping District
Town Center Overlay
Tax Lots
Roads


Tillamook Zoning
CITY OF TILLAMOOK
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Makinster
Old Latimer
Latimer
US-101
Wilson River Loop
Goodspeed
Main
Hadley
OR 131
Front
1st
2nd
3rd
4th
5th
6th
7th
8th
9th
10th
11th
12th
13th
14th
Beachwood
Cottonwood
Ash
Birch
Cedar
Douglas
Elm
Fir
Madrona
Kaster
Goodspeed
Delmonte
Trout
Miller
Pacific
Mesquite
Manor
Stillwell
Tone
Nielsen
OR 6
Linden
Pine
Evergreen
Irvington
Alder
Williams
Apple
Beach
Cypress
Dogwood
Elmwood
Maple
Walnut
Hawthorne
Domingo
Filbert
Gingko
Marolf
Marolf Loop
Wilson River
Schild
Kenway
Colonial Wy
Circle Dr
Colonial Ct
Mountain View
Brookfield
Faircrest
Glenview
McDaniels Loop
Trask River
N
10/9/12
1 inch = 1,300 feet
0 0.125 0.25 0.5 0.75 1 1.25
Miles
07/06/10
Urban Growth Boundary
Tillamook City Limits
Town Center
Tillamook City Zoning
C-C
C-H
C-N
I-G
I-L
O-P
O-S
P
R-0
R-5
R-7.5

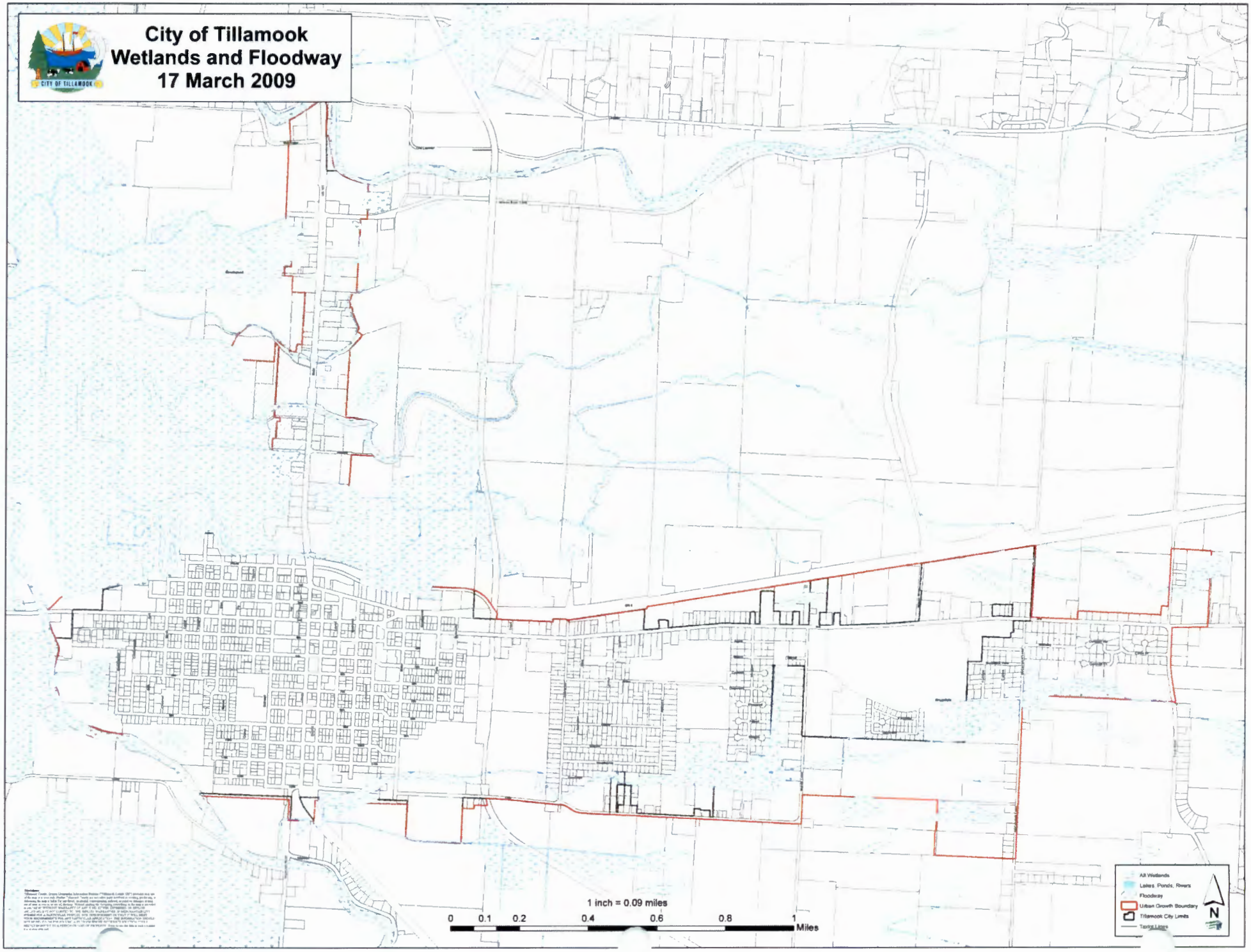

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Land Use
PUBLIC
PARK
INDUSTRIAL
MULTI-FAMILY RES
COMMERCIAL
VACANT
SINGLE FAMILY RES
CityLimits
Urban Growth Boundary
9/12


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Land Use
PUBLIC
PARK
INDUSTRIAL
MULTI-FAMILY RES
COMMERCIAL
VACANT
SINGLE FAMILY RES
CityLimits
Urban Growth Boundary
10/9/12

City of Tillamook
Vacant and Redevelopable Lands

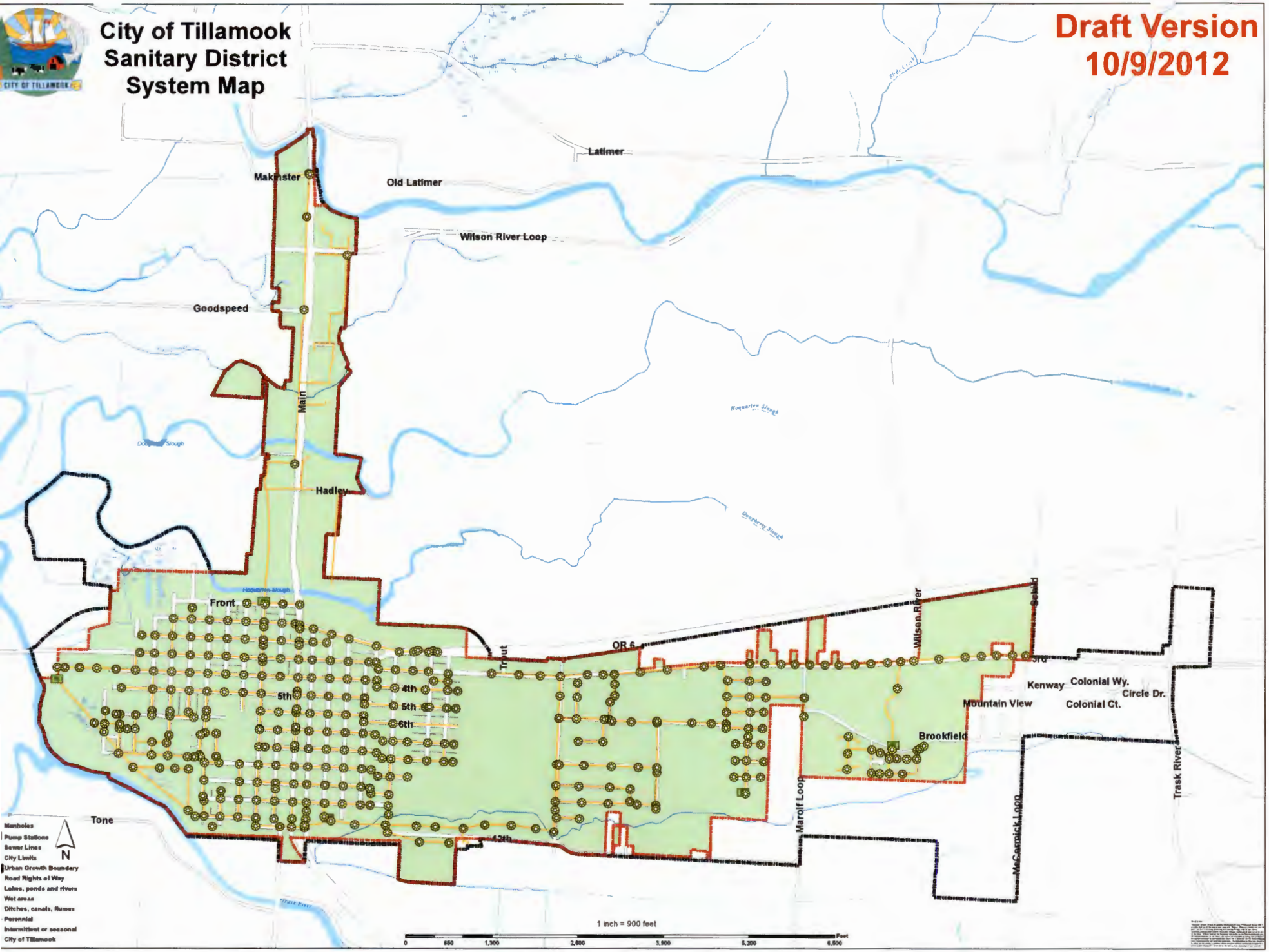


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City of Tillamook
Wetlands and Floodway
17 March 2009
1 inch = 0.09 miles
0 0.1 0.2 0.4 0.6 0.8 1
Miles
All Wetlands
Lakes, Ponds, Rivers
Floodway
Urban Growth Boundary
Tillamook City Limits
Taylor Lines
N

City of Tillamook Sanitary District System Map

Draft Version 10/9/2012



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Appendix I: Economic Analysis for Highway 101 Area including Supplement

PLACEHOLDER

[To be Inserted at a Later Date]

Appendix II. State Health Division Findings involving Health Annexation – Highway 101 North Area

PLACEHOLDER

[To be Inserted at a Later Date]

Appendix III. 2003 Urban Growth Boundary Adjustment and Zone Change, Comprehensive Plan Amendment and Comprehensive Plan Map Amendment Findings of Fact

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Background Statement:

The City of Tillamook retains jurisdictional authority to amend its Comprehensive Plan, Urban Growth Boundary and Zoning Map. The standards and criteria for modification of the Urban Growth Boundary are identified in State Planning Goals 2 and 14, as well as Oregon Administrative Rule 660-04-10(1)(c)(B). OAR 660-04-10(1)(c)(B) states that "when a local changes an established Urban Growth Boundary, it shall follow the procedures and requirements set forth in Goal 2 "Land Use Planning", Part II, Exceptions. An established Urban Growth Boundary is one that has been acknowledged by the Commission under ORS 197.251. Revised findings and reasons in support of an amendment to an established Urban Growth Boundary shall demonstrate compliance with the seven factors of Goal 14 and demonstrate that specific standards are met. The following description of required steps presented in the DLCD UGB guidance memorandum are included to exhibit the steps in addressing the goals and required decision making process and documentation.

Urban Growth Boundary Adjustment Review:

An Urban Growth Boundary is a line drawn on planning and zoning maps to show where a City expects to grow. Amending an Urban Growth Boundary is an analytical process that involves the following steps:

Part 1: Laying the Groundwork

De-annexation. Map 1S 9 30BD, Tax Lot 100 is proposed to be de-annexed from the City Limits and Urban Growth Boundary (UGB). The subject property contains approximately 21 acres and has requested withdrawal from the City since it remains agricultural land, has plans for dairy farm expansion, and does not meet, nor has ever met, the current zoning requirements for the Open Space (O-S) zone designation within the City. Over the years, the subject property has expanded its current non-conforming farm operations without taking the applications through due public process.

Annexation. An area that proposed to be annexed into the City UGB is that area south of Highway 6, north of Third Street, east of the existing City Limits and west of the IOOF Cemetery (also known as Map #1S 9 29 690, Map #1S 9 29BC 200, 300,

2100, Map #1S 9 29AC 800, 900, 1100). These parcels of land contain approximately 19.50 acres.

In general, the City proposes to remove 21 acres of non-conforming use property zoned as Open Space (OS) and recover 19.5 acres of property currently zoned RR-PD and F-1, rezoning said property to an adjacent zone designation of Neighborhood Commercial (C-N) and Single-Family Residential (R-7.5).

The adjustment will result in a transfer of 1.5 acres of productive farmland from the City to the County.

Part 2: Addressing the Goals

Address the planning requirements under Goal 14, Urbanization. These requirements have been addressed in the following seven factors:

Amendments to the Urban Growth Boundary, Review Process for City or County Request (Legislative) and Review Criteria

(1) Demonstrated need to accommodate long-range urban population growth requirements consistent with LCDC goals:

The adjustment of the UGB, City Limits and accompanying land use actions will provide an opportunity to increase the housing and neighborhood commercial sites available for development within the City and continue to meet and exceed housing and commercial land needs for the long-range population growth that is projected. The proposed UGB adjustment will also decrease the amount of non-conforming uses within the City Limits. The UGB and City Limits adjustment meets LCDC goals for long-range growth.

(2) Need for housing, employment opportunities and livability:

The adjustment of the UGB, City Limits and accompanying land use actions will provide an opportunity to increase the number of housing sites available for development within the City. The addition of the subject properties to the UGB will increase the land available for residential development by 19.5 acres, and commercial land by approximately 8 acres. The increased availability of commercial land will allow mixed uses to concentrate around an existing neighborhood commercial/public & semi-public node within the City of Tillamook.

(3) Orderly and economic provision for public facilities and services;

Land to be brought into the UGB:
Public facilities are currently nearby the subject properties to be brought into the Urban Growth Boundary, and potentially these facilities could be extended from the main lines to provide services to the properties in an orderly and economic manner. The subject properties are already surrounded on three sides by the existing UGB and separated from the large agricultural areas

northward by State Highway 6 and sloping ground. Public facilities and services from the City are available nearby the area to be brought into the UGB.

Land to be de-annexed from City Limits and withdrawn from the UGB:
The subject property is located in area already utilized for agricultural purposes.

(4) Maximum efficiency of land uses within and on the fringe of the existing urban area;

Land to be brought into the UGB:
The subject properties are contiguous to the Urban Growth Boundary on the south, east and west sides. Some parts are also contiguous to the City Limits on the west side. These properties are already surrounded on three sides by the existing UGB and separated from the large agricultural areas northward by State Highway 6 and sloping ground that is unsuitable for agricultural purposes. A majority of the tax lots involved in the UGB adjustment are already partially within the UGB. This UGB adjustment would bring the lots into the UGB to a greater extent and alleviate that hardship on the property owners. Additionally, City sewer and water lines are located to the south and west of the subject properties and are available for additional hook-up.

Land to be de-annexed from City Limits and withdrawn from the UGB:
The subject property will also maximize the efficiency of land uses as the property inefficiently used for urban purposes will be de-annexed from the City Limits and withdrawn from the UGB. Currently any agricultural additions proposed on the subject property to be de-annexed are non-conforming according to the City zone designation, and therefore require a lengthy public process which is an overburden to the property owner carrying out farm operations and is inefficient in terms of land uses.

(5) Environmental, Energy, Economic and Social consequences;

The ESEE consequences of the proposed uses would minimally affect the community, and upon further development of the properties will provide environmental, energy, economic and social benefits to the community, which outweigh any losses. The City's implementing ordinances including site plan review processes and general design standards regulate development by imposing specific design standards.

This supplemental ESEE analysis addresses how the adjusted UGB and City Limits may affect the City and may impact the proposed zone designations. These land uses in this instance, include all permitted or conditionally permitted uses allowed in the proposed zoned properties. The following chart shows the ESEE consequences of the UGB and City Limits adjustments.

	. . . . , FULLY ALLOWING UGB ADJUSTMENT	. . . . ., PROHIBITING UGB ADJUSTMENT	. . . . LIMITING UGB ADJUSTMENT TO DE-ANNEXATION
ECONOMIC CONSEQUENCES OF . . .	Full development of property. Potential increased property value, property tax revenues, and potential property uses. Will alleviate City of farm-deferred non-conforming agricultural uses that have no potential increase in property value and property tax revenue.	Restricted development of properties for farm use only. No potential increase in property value and property tax revenue.	Will alleviate City of farm-deferred non-conforming agricultural uses but no potential increase in property value and property tax revenue.
SOCIAL CONSEQUENCES OF . . .	Allows for property owners of unused farmland to develop property to urban standards. Provides opportunity for City to increase mixed uses and concentrate development in an already existing neighborhood commercial node.	Does not allow unused farmland to be developed to urban standards. Non-conforming farmland is required to be taken through the due public process for any proposed expansion of agricultural use.	Allows farm operations to continue on current property without consideration of non-conformity and the requirements for expanding farm uses to take effect. Does not allow unused farmland to be developed to urban standards.
ENVIRONMENTAL CONSEQUENCES OF . . .	Minimal. The proposed zoning changes will not alter the environmental consequences that currently exist on the property.	Minimal. The proposed zoning changes will not alter the environmental consequences that currently exist on the property.	Minimal. The proposed zoning changes will not alter the environmental consequences that currently exist on the property.
ENERGY CONSEQUENCES OF . . .	Reduces the future extension of City public services across State Highway 6 and Railroad ROW to future development on City property. Promotes infill of City services to property surrounded by existing services.	Does not reduce the future extension of City public services across State Highway 6 and Railroad ROW to future development on City property. Does not promote infill of City services to property surrounded by existing services.	Reduces the future extension of City public services across State Highway 6 and Railroad ROW to future development on City property. But does not promote infill of City services to property surrounded by existing services.

(6) Retention of agricultural land;

Land to be brought into the UGB:
The subject properties contain Class II and Class III soils. However, the properties are confined by Highway 6 to the north and Third Street to the south, and City Zoning on the south (R-7.5 and C-N), east (I-L and R-7.5), and west (P & SP and C-N). Agricultural uses on a portion of the properties, proposed to be brought into the UGB, are more complicated by the existence of large outbuildings even though the property is zoned for exclusive farm use, and limit the agricultural benefits. Part of the properties with quality soil classification has been zoned for non-agricultural use, rural residential, and are not subject to soil medium production.

Land to be de-annexed from City Limits and withdrawn from UGB:
The property proposed to be de-annexed from the City Limits and removed from the UGB is currently used for agricultural purposes and expanding. It is located on productive high-class soil and should be rezoned for exclusive farm use (F-1). This property should be returned to the County for the continued retention of agricultural land and accommodation of agricultural uses.

(7) Compatibility of the proposed urban uses with nearby agricultural activities, and compatibility of the proposed agricultural uses with urban activities;

Land to be brought into the UGB:
The subject properties, currently zoned RR-PD and F-1 would not result in uses that are incompatible with nearby similar uses. These said properties are not directly adjacent to other properties that are zoned agricultural due to the separation of these properties from one another by State Highway 6. Properties to the south, east and west are zoned for urban uses. Therefore the proposed urban uses are compatible with nearby agricultural activities since Highway 6 separates the urban uses from these agricultural uses.

Land to be de-annexed from City Limits and UGB:
The property to be de-annexed from the City is, and will continue to be, compatible with surrounding uses. Land to the north and east of the subject property is used for agricultural purposes. The Port Railroad Right-of-way and a steep slope divide this property from urban uses within the City Limits. Further a large portion of this land is designated as wetlands and a majority of the ground remains in the floodplain. The subject property to be de-annexed from the City Limits and UGB would not result in a use incompatible with nearby uses.

(8) Compatibility with the policies regarding the Urban growth Boundary specified in the City and County Comprehensive Plans;
This UGB adjustment is compatible with the policies regarding the Urban Growth Boundary (UGB) as specified in the City and County Comprehensive Plans. It focuses on Efficiency of Land Use, Environmental, Energy, Economic and Social Consequences, Retention of Agricultural Land, and Section 11, which lists the criteria in these findings as mentioned above.

Address the planning requirements under Goal 3, Agricultural Land. These requirements have been addressed in the following factor:

(1) To preserve and maintain agricultural lands;

Although the subject properties are or have been used for agricultural purposes, and contain Class II and Class III soils, Tax Lot 200 has been rezoned to Rural Residential Planned Development (RR-PD) by the County of Tillamook; a non-agricultural use. This action substantially eliminates the property from long term agricultural. One of the smaller parcels (Tax Lot 300) is zoned F-1 but used as an equipment staging and storage area, with barns for cattle. The smaller parcels cannot provide for a sustainable agricultural enterprise due to the severe restriction in acreage left for dairy operations.

The uses on the subject properties proposed to be taken into the City UGB are restricted by adjacent Highway 6 and Third Street. The restrictions resulting from the bordering on the properties by the road networks separates the pasturing operations to the North of Highway 6 from the subject properties to the south of the highway.

The use on the subject properties proposed to be de-annexed from the City Limits and UGB currently support a large productive farm operation. Long-term plans are to continue to use this property for agricultural purposes.

An adjustment of the City Limits and UGB will not reduce, but enhance acreage in actual agricultural production and will not conflict with Goal 3.

Address the planning requirements under Goal 2, Land Use Planning, Exception findings in OAR 660-04-010(1)(c). The following findings have been addressed:

(1) Why existing developed areas within the UGB and nearby exception areas are not sufficient to accommodate projected growth;

Existing developed areas within the current UGB and nearby exception areas are sufficient to accommodate projected growth. This adjustment removes a large piece of property from the City Limits and UGB that is unsuitable for urban purposes and therefore an addition of a similarly sized portion of land has been proposed to be brought into the UGB which is suitable for urban uses. With this adjustment of the UGB, additional pieces of land zoned residential and commercial will be available to accommodate projected growth.

(2) That the Economic, Social, Environmental and Energy Consequences have been minimized;

The ESEE consequences apparent with the change in jurisdictional boundaries appear to be minimal and appear to be beneficial to both the County and the City.

(3) That the proposed UGB Expansion is compatible with adjacent and nearby uses or is rendered so through measures designed to reduce adverse impacts.

The properties within the proposed UGB adjustment are compatible with surrounding uses. The property to be de-annexed from the City Limits and UGB is used for agricultural purposes as is the area surrounding the property. The property to be brought into the UGB is compatible with the urban uses that are located to the south, east and west. The proposed adjustment will serve to protect the nearby farmlands with special consideration for the most productive lands. State Highway 6 will serve as a protection corridor for the nearby farmlands.

Address the planning requirements under Goal 2, Land Use Planning, Part II-Exceptions. The following findings have been addressed:

The City of Tillamook may adopt an exception to a goal when:
(c) The following standards are met:

(1) Reasons justify why the state policy embodied in the applicable goals should not apply;

These reasons are given under the discussion relating to Goal 3 and Goal 14.

(2) Areas which do not require a new exception cannot reasonably accommodate the use;

The subject properties to be brought into the UGB are too small to reasonably accommodate agricultural uses. They are located just south of State Highway 6 and are adjacent to the existing UGB and adjacent urban uses.

(3) The long term economic, social environmental and energy consequences resulting from the use of the proposed site with measures designed to reduce adverse impacts are not significantly more adverse than would typically result from the same proposal being located in areas requiring a goal exception other than the proposed site;

The long-term ESEE consequences resulting from the uses on the subject properties would not be significantly more adverse than if other properties were developed. The properties to be brought into the UGB do not have any floodplain restrictions, and are adjacent to the City UGB on three (3) sides, City Limits on the west, and City sewer and water lines and are available for immediate hook-up to avoid septic/drainfield placement.

(4) The proposed uses are compatible with other adjacent uses or will be so rendered through measures designed to reduce adverse impacts.

The proposed uses (small scale commercial and residential) are compatible to adjoining parcels currently within the City UGB. Any adverse impacts resulting from the zone changes to the subject properties will be mitigated by the requirements of the City's Site Plan Review standards.

Exception Process Conclusion: The boundary adjustment appears to meet the goal exception criteria. In this case, the City concludes that the evidence presented demonstrates that no adverse impacts will occur in the transition of the properties from rural to urban, nor will there be adverse impacts on adjacent agricultural properties to the north.

Appendix IV. Findings of Fact for Annexation of North 101 Area

PLACEHOLDER

[To be Inserted at a Later Date]

INDEXED

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ORDINANCE NO. 1012

AN EMERGENCY ORDINANCE ANNEXING TERRITORY NORTH OF THE EXISTING TILLAMOOK CITY LIMITS, INCLUDING THE AREA APPROXIMATELY FIVE HUNDRED (500) FEET ON BOTH THE EAST AND WEST SIDE OF U.S. HIGHWAY 101, NORTH TO WILSON RIVER AS HEPEIN DESCRIBED; DISPENSING WITH BOTH A PUBLIC HEARING AND CITY ELECTION ON THE QUESTION OF ANNEXATION; AND DECLARING A HEALTH EMERGENCY TO EXIST.

WHEREAS, the City of Tillamook received an order with findings dated April 15, 1982, from the Health Division of the Department of Human Resources of the State of Oregon which compels the City to annex the below described area, located in Tillamook County, Oregon and subsequently serve that area with sewer facilities; and

WHEREAS, ORS 222.111(1) authorizes the boundaries of any city to be extended by annexation of territory contiguous to the city; and

WHEREAS, the Tillamook City Charter does not prohibit the City from dispensing with submitting the question of an annexation to the registered voters of the City of Tillamook, and further ORS 222.120 authorizes the City Council to dispense with submitting the question of annexation to the registered voters of the City; and

WHEREAS, ORS 222.900 authorizes annexation of territory which poses health dangers to the public without any vote or through the conduct of a public hearing of the owners of the affected property; and further that the judicial review period provided by ORS 222.900 has expired, and plans, specifications and time schedule have been approved by the Environmental Quality Commission;

NOW THEREFORE, THE PEOPLE OF TILLAMOOK CITY DO ORDAIN AS FOLLOWS:

1. Is is hereby declared that the following described property is annexed to Tillamook City, Oregon, to-wit:

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Beginning at a point where the East boundary line of the State Highway 101 intersects the center line of the Wilson River in the Northwest quarter of the Northwest quarter of Section 19 in Township 1 South of Range 9 West of the Willamette Meridian, Tillamook County, Oregon; and running thence South along said East boundary line of Highway 101 for a distance of 420 feet; thence Easterly at right angle to said East boundary line of Highway 101 to the center of the Wilson River; thence in a Northwesterly direction along the center of said Wilson River to the place of beginning.

ALSO BEGINNING AT A POINT on the East line of Coast Highway 101 at the Southwest corner of that certain tract of land conveyed to Herbert Louie Christensen, et ux by Deed Recorded April 4, 1962 in Book 180, page 120, Deed Records, Tillamook County, Oregon; thence Southerly along the East line of said Coast Highway 101, to an intersection with the centerline of Dougherty Slough; thence Southeasterly along said centerline of Dougherty Slough to a point which is East 500 feet from the East line of said Coast Highway 101 when measured perpendicular thereto; thence North parallel to the East line of Highway 101 to an intersection with the Southeasterly line of that certain tract of land described in Memorandum of Contract recorded December 30, 1977 in Book 254, page 464, Deed Records, Tillamook County, Oregon between Eileen Palmer, vendor and Craig W. Hubler, et ux, vendees; thence Northeasterly along the Southeasterly line of said tract to the most Easterly corner thereof, and the Southeasterly corner of that certain tract of land conveyed to Howard L. Randall by Deed Recorded February 9, 1978 in Book 255, page 64, Deed Records, Tillamook County, Oregon; thence North 20 degrees 30' East 231 feet; thence North 25 degrees 22' East 189.37 feet to a point in the center of Hall Slough; thence North 25 degrees 22' West 50 feet along the center line of said Hall Slough; thence North 6 degrees West 85 feet more or less along the centerline of said Hall Slough to the Southeast corner of a parcel conveyed to Edwin L. and Barbara H. Sorensen by Deed Recorded February 6, 1959 in Deed Book 165, page 118, Deed Records, Tillamook County, Oregon; thence North 8 degrees 47' West 111.66 feet; thence North 6 degrees West 126.06 feet to a point on the South line of that certain tract of land conveyed to Cornet Stores by Deed Recorded May 17, 1971 in Book 223, page 146, Deed Records, Tillamook County, Oregon; thence Easterly along the South line of said tract to the Southeast corner thereof thence North along the East line of said Cornet tract and the Northerly extention thereof to an intersection with the South bank of the Wilson River thence Westerly and Northerly along the South bank of the Wilson River to its intersection with the South line of the tract of land conveyed to Herbert Louie Christensen, et ux as hereinabove set forth; thence Westerly along the South line of said Christensen tract to the point of beginning.

ALSO Beginning at a Northeast corner of Lot 5, Section 24, Township 1 South, Range 10 West of the Willamette Meridian in Tillamook County, said point of beginning being the Northeast corner of that certain tract of land conveyed to Stanley L. Decker, et ux by Deed Recorded June 27, 1977 in Book 251, page 308; thence Southerly along the West line of Coast Highway 101 to a point of intersection with the center line of Dougherty Slough; thence Westerly along the said centerline of Dougherty Slough to a point which is 500 feet West of the West line of said Highway when measured perpendicular thereto; thence North in a direct line to the Southwest corner of that tract of land described in PARTIAL RELEASE OF REAL ESTATE MORTGAGE recorded December 29, 1978 in Book 260, page 862, Deed Records, Tillamook County, Oregon; thence continuing North along the West line of said tract to the Northwest corner thereof being

2

at a point on the South line of Makinster Road thence continuing Northerly to the North line of Makinster Road; thence Easterly along the North line of Makinster Road to the Southwest corner of that certain tract of land conveyed to Michael J. Hutchens, et ux by Deed Recorded, October 4, 1973 in Book 233, page 910, Deed Records, Tillamook County, Oregon; thence Northerly along the West line of said Hutchens tract to the South line of the Wilson River; thence Northeasterly along the South line of the Wilson River and the North line of the Hutchens tract to the Northeast corner thereof; said point being the Northwest corner of that tract of land conveyed to Stanley Decker, et ux in Book 251, page 308, Deed Records Tillamook County, Oregon; thence Easterly along the North line of said Decker tract to the point of beginning.

SAVE AND EXCEPT therefrom any portion thereof lying within the boundaries of the following described tract, to-wit:

Beginning at a point which is North 89 degrees 53' West 398.77 feet from the quarter section corner on the East line of Section 24, Township 1 South, Range 10 West of the Willamette Meridian, said point also being in the center line of the Goodspeed County Road; thence North 89 degrees 53' West along the center of said road 428.93 feet; thence South 858 feet to the center of Hall Slough; thence following center of Hall Slough South 69 degrees 30' East 145 feet; thence South 44 degrees 56' East 415 feet; thence North 1198.2 feet to the place of beginning.

ALSO SAVE AND EXCEPT therefrom any portion thereof lying within the boundaries of the following described tract, to-wit:

Beginning at a point on the South line of the Northeast quarter of Section 24, Township 1 South, Range 10 West of the Willamette Meridian which is South 89 degrees 46' West 527 feet distant from the quarter section corner on the East side of said Section 24; thence North 0 degrees 08' East, 119 feet; thence North 89 degrees 46' East, 100 feet; thence North 0 degrees 08' East 212.74 feet; thence West, 464 feet; thence North 65 degrees West, 244.2 feet; thence North 43 degrees 30' West, 396 feet to the center of a tide slough; thence in a Westerly direction (downstream) along the center of said tide slough to the West line of the Northeast quarter of Section 24; thence Southerly to the Southwest corner of said Northeast quarter of Section 24; thence along the South line of said Northeast quarter, Easterly 2113 feet, more or less to the point of beginning.

ALSO SAVE AND EXCEPT therefrom any portion thereof lying with in the boundaries of the following described tract, to-wit:

Beginning at a point where the East boundary line of the State Highway 101, intersects the centerline of the Wilson River, in the Northwest quarter of the Northwest quarter of Section 19, Township 1 South, Range 9 West of the Willamette Meridian, in Tillamook County, Oregon; thence Southerly, along the East boundary line of Highway 101, a distance of 495 feet; thence Easterly, at right angles to said East boundary line of Highway 101, to the center of the Wilson River; thence in a Northwesterly direction, along the center of said Wilson River, to the point of beginning.

ALSO SAVE AND EXCEPT:

Commencing at a point which is South 1070.71 feet and West 208.50 feet from the quarter corner on the East side of Section 24, Township 1 South, Range 10 West, W.M., thence North 89 degrees 47' West, 76.00 feet to the true point of beginning;

thence S. 89 degrees 47' East 76.00 feet;
thence N. 0 degrees 58' East 804.97 feet to the Northeast corner of that tract conveyed to John and Eva Johnson in Book 184 at Page 313 Tillamook County Deed Records, Tillamook County, Oregon;
thence South 89 degrees 47' West, 202.60 feet more or less, to the East line of that tract conveyed to Gust and Helen Johnson in Book 78 at Page 528, Tillamook County Deed Records, Tillamook County, Oregon; thence along the East line of said Gust Johnson tract, south 909.5 feet, more or less, to the centerline of Hall Slough; thence Easterly along said centerline to a point that is S. 5 degrees 15' West, from the point of beginning; thence North 5 degrees 13' East 121.61 feet, more or less, to the point of beginning.

Also included to be annexed, all that portion of State Highway 101 beginning from the existing North City limits line, the same being the center line of Dougherty Slough as it intersects Highway 101, thence running North to the center line of the Wilson River, all being situated in Tillamook County, Oregon.

2. The plans, specifications and time schedule as reviewed and approved by the State of Oregon Environmental Quality Commission pursuant to ORS 222.898 on June 11, 1982 are hereby adopted by Tillamook City.

3. If any section, subsection, sentence, clause, phrase or word of this Ordinance is for any reason held by a court of competent jurisdiction to be invalid, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council of the City of Tillamook City hereby declares that it would have passed this Ordinance, and each section, subsection, sentence, clause, phrase and word thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, phrases or word might be declared invalid.

4. This Ordinance being necessary for the immediate preservation of the public peace, health and safety of the City of Tillamook City, in order to obtain sufficient funds to pay for public improvements, an emergency is hereby declared to exist and this Ordinance shall be in full force and effect immediately upon its passage by the Council and approved by the Mayor. The City Recorder shall file certified copies of

4.

this Ordinance and map with the Tillamook County Clerk, the Tillamook County Assessor, the Oregon Department of Revenue, and a certified copy of this Ordinance, map and contents of annexation to the Secretary of the State of Oregon, within ten (10) days from the effective date of this Ordinance.

PASSED FIRST READING by the Tillamook City Council this 21st day of June, 1982.

PASSED SECOND READING by the Tillamook City Council this 21st day of June, 1982.

PASSED THIRD READING by the Tillamook City Council this 21st day of June, 1982.

APPROVED BY THE MAYOR this 22nd day of June, 1982.

Mayor

ATTEST:

City Recorder

254640

State of Oregon, County of Tillamook
I hereby certify that the within instrument was received for record at,

JUN 29 3 36 PM '82

BOOK 282 PAGE 391

Rtn: City of Tillamook
1982-3rd
Tillamook, OR 97141

Tillamook County OFFICIAL Records.
Witness my hand and seal affixed.
JUNE WAGNER, County Clerk

L. Creech, Deputy

Deed 20.00

5.

Appendix V. City of Tillamook location and Boundaries of Each of the Areas Designated for Each Land Use and Zone Designation

Public/Semi-Public

There are a number of areas within the Urban Growth Boundary designated as Public/Semi-Public Space. These include:
Fairview Grange,
The IOOF Cemetery,
The County Fairgrounds, Tillamook Bay Community College, The Swiss Hall, and the County Public Works Department Grounds,
The East Elementary property,
The Tillamook Junior High School property,
The Tillamook County Transportation Building,
The Wilson School property,
The ESD Building.
The Old Catholic High School and Parish Hall Buildings,
Tillamook High School property,
Tillamook PUD Building and property,
Tillamook County Courthouse, City Hall, and Pioneer Museum,
City parking lots at Second Street and Ivy Avenue,
The Liberty Elementary School and YMCA property,
City Public Works Department property,
Tillamook County General Hospital,
City Waste Water Treatment Plant,

Open Space

There are a number of areas in the Urban Growth Boundary designated as Open Space. These include:
Sue H. Elmore Park,
Lillian Goodspeed Park,
Carnahan Park and the additional open space along the Trask River,
Veteran's Peace Park,
Coatesville Ninth Street Park,
Hoqarton Interpretive Trail Park, and the additional open space along and near Hoquarton Slough north of First and Front Street, and
scattered tax lots along Highway 101 North that correspond to each of the FEMA buyouts.

Residential Land

Most land currently in residential use is south of First Street, surrounding the downtown area and east of the mill. It is made up of a majority of low density single-family residential units including the following low density residential areas:

1. That area south of First Street, west of Grove Avenue and Ivy Avenue, along Twelfth Street to the Trask River;
2. That area east of Laurel Avenue, Madrona Avenue and Ocean Avenue, along First Street south to Eleventh Street, west of the Mill;
3. That area east of the Mill, south of First Street, north of Twelfth Street, along and west of Marolf Loop Road;
4. That area east of the Fairgrounds south of Third Street, inside the Urban Growth Boundary.

The small areas of land made up of higher density multiple family residential units include the following areas:

1. That area south of Brookfield Avenue, east of the County Public Works Department, north of Holden Creek;
2. That area west of Marolf Loop Road adjacent to Marolf Place;
3. That area south of Third Street, west of Evergreen Drive, north of the mill site;
4. That area south of Third Street between Pine Avenue and Linden Drive;
5. That area north of Third Street east of the Pine Avenue intersection;
6. That area north of Twelfth Street (Marolf Loop Road) south of Holden Creek;
7. That area northeast of the Twelfth Street and Evergreen Drive intersection;
8. That area south of Sixth Street, north of Ninth Street on Chestnut Drive;
9. That area north of the Sixth Street and Cottonwood intersection;
10. That area south of Third Street, north of Meadowlark Lane.

Most vacant and not fully developed land zoned for residential uses lies east and south of the County Fairgrounds and north of Twelfth Street between Evergreen Drive and Marolf Loop Road. These areas are further described in terms of exact location on the approved and State acknowledged City Comprehensive Plan and Zoning Map.

Commercial Land

Land currently in commercial use includes the following areas:

1. That area along North Main Avenue north of Hoquarton Slough and south of the Wilson River;
2. That area along Main Avenue and Pacific Avenue (the Highway 101 couplet) south of Hoquarton Slough, east of Stillwell Avenue, west of Laurel Avenue, to the south City Limits;
3. That area east of Wilson River Loop Road, north of the County Fairgrounds, west of Schild Road, south of State Highway 6;
4. That area adjacent to the intersection of Third Street and Evergreen Drive;
5. Other scattered parcels located along Third Street .

Industrial Land

Much of the city's industrial use is concentrated in the following areas:

1. That area along Front Street;
2. That area on Third Street north of the County Fairgrounds;
3. That area around and including the Mill.

These industrial uses include wholesale, commercial, or retail, and manufacturing. These areas are further described in terms of exact location on the approved and State acknowledged City Comprehensive Plan and Zoning Map.

Appendix VI. City of Tillamook Land Use Tables

TABLE 1: EXISTING ZONED LAND USE WITHIN PRESENT TILLAMOOK CITY LIMITS IN 2008

Land Use	Acres
Residential	319
Single-family	(152)
Single-family & Duplex	(75)
Multi-family	(92)
Commercial	214
Central Commercial	(50)
Highway Commercial	(159)
Neighborhood Commercial	(5)
Industrial	110
General Industrial	(89)
Light Industrial	(21)
Public and Semi-Public	174
Street and Right-of-Way	179
Open Space	83
Total Land	**1.079**
Developed Land *	**1,018**
(Vacant) Undeveloped Land	**61**

Source: City of Tillamook Zoning Map, 2008

Within the City Limits, approximately 30% of the land is zoned for residential use, 20% for commercial use, 10% industrial, 16% public/semi-public, and 8% for open space. Approximately 16% of the area inside the City Limits is used for street right-of-ways.

TABLE 2: EXISTING ZONED LAND USE IN THE URBAN GROWTH AREA IN 2008

Land Use	*Acres*
Residential	227
Single-family	(86)
Single-family & Duplex	(55)
Multi-family	(86)
Commercial	27
Highway Commercial	(23)
Neighborhood Commercial	(4)
Industrial (Light Industrial)	74
Public and Semi-Public	10
Streets and Right-of-Way	30
Open Space	64
Total Land	**432**
Developed Land *	*297*
(Vacant) Undeveloped Land	**135**

Source: City of Tillamook Zoning Map, 2008

* Developed Lands as noted in Tables 1 & 2 refer to properties with buildings. It does not take into consideration the maximum buildable potential of each Tax Lot.

Within the Urban Growth Area, approximately 53% of the land is zoned for residential use, 6% for commercial use, 17% industrial, 2% public/semi-public, and 15% for open space. Approximately 7% of the Urban Growth Area is used for streets right-of-ways.

Tables 1 and 2, above, describe the developed parcels within the Urban Growth Boundary.

Table 1 and 2 do not described non-conforming uses within each zone designation. Table 3 (below) describes the number of non-conforming uses in each of the generalized zones (residential, commercial, and industrial).

TABLE 3: NON-CONFORMING USES WITHIN THE CITY LIMITS AND URBAN GROWTH BOUNDARY

Area	Residential	Commercial	Industrial	Total
City Limits:	31	75	16	122
Urban Growth Area:	0	0	6	6
Total:	31	75	22	128

Source: City of Tillamook Tax Lot Data

According to Table 3, there are 122 non-conforming uses within the City Limits, and six (6) within the Urban Growth Area. The corresponding acreage is as follows:

Residential:	12.49 acres
Commercial:	***13.08 acres***
Industrial:	11.58 acres
Total:	*37.15 acres*

This consumes approximately 2.5% of the total area of the City. These non-conforming uses consist of primary single-family and multiple-family residential dwellings in the Central Commercial District where only secondary residential uses are allowed; primary residential dwellings in the Industrial District, where only care-taker dwellings are allowed conditionally; commercial and industrial uses within the Residential Districts that don't allow such uses; and multiple-family residential development within the Low Density Residential Districts. Some of this non-conformity may be brought into compliance upon rezoning the properties.

The allocation of undeveloped land and developed land designated for conversion or redevelopment to another use from a non-conforming use is listed below. The acreage listed for conversion or redevelopment is for land development currently with a use other than that given in the Plan or with a conforming use under-utilizing the property.

TABLE 4: COMPREHENSIVE PLAN LAND USE ALLOCATION FOR DEVELOPMENT/REDEVELOPMENT (CONVERSION)

	ACRES		
Land Use	Undeveloped	Conversion of ***Redevelopable/Non-conforming***	Total
Residential	73	12	85
(single-family residential)	**(44)**	**(10)**	**54**
(multi-family office)	**(29)**	(2)	**(31)**
Commercial	***28***	***19***	***45***
(Neighborhood Commercial)	(0)	(5)	(5)
(Central Commercial)	(2)	(9)	(11)
(Highway Commercial)	(26)	(3)	(29)
Industrial	**60**	**12**	**72**
(Light Industrial)	**(58)**	(10)	**(68)**
(General Industrial)	**(2)**	(2)	(4)
Total:	**161**	**43**	**202**

TABLE 5: UNBUILDABLE LAND INVENTORY

(In acres)

	Residential			Industrial	
	R-7.5	R-5.0	R-0	I-L	I-G
Perennial Stream Buffers	2.0	0.28	1.5	1.4	0.0
	Highway Comm.		Neighborhood Comm.		Central Comm.
River and Slough Buffers	5.12		0.0		1.1

Other than those various buffer areas, the available acreage within the UGB is either free of negative development characteristics or, as in the case of the floodplain area along North Highway 101, adequately protected.

The area within the Floodplain in relationship to each zone district is shown in Table 6 below.

TABLE 6: LAND ACREAGE WITHIN THE FLOODPLAIN

Floodplain	Residential			Industrial		Commercial
	R-7.5	R-5.0	R-0	I-L	I-G	C-H
Zone AE	0.00	0.00	0.00	0.00	0.00	0.00
Floodway	0.00	0.00	0.00	2.03	0.00	41.92
Total						

TABLE 7: 2008 BUILDABLE LAND WITHIN TILLAMOOK CITY LIMITS

Land Use	Acre	Existing Tax Lots	Existing Developed Units	Potential Development (in units)	(in acres)
Low Density Res.	226.43	1,195	1,071	459	43.95
Med. Density Res.	92.29	282	556	877	31.02
Commercial	214.34	518	316	323	23.57
Industrial	109.73	71	66	5	6.48
Total:	642.79	2,066	2,009	1,664	105.02

Source: City of Tillamook Tax Lot Data

TABLE 8: 2008 BUILDABLE LAND WITHIN TILLAMOOK URBAN GROWTH AREA

Land Use	Acre	Existing Tax Lots	Existing Developed Units	Potential Development (in units)	(in acres)
Low Density Res.	140. 61	170	165	807	115.54
Med, Density Res.	86.49	67	324	1,445	51.45
Commercial	26.70	131	11	211	21.81
Industrial	73.50	12	10	66	61.96
Total:	327.30	380	510	2,529	250.76

Source: City of Tillamook Tax Lot Data

TABLE 9: 2000 BUILDABLE LAND AT THE PORT OF TILLAMOOK BAY

Land Use	Acres	Existing Developed Acres	Vacant Potentially Developable acres
Industrial	1600.00	600.00	1,000.00
Total:	1600.00	600.00	1,000.00

Source: Port of Tillamook Bay, 2003

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Within the City Limits, approximately 30% of the land is zoned for residential use, 20% for commercial use, 10% industrial, 16% public/semi-public, and 8% for open space. Approximately 16% of the area inside the City Limits is used for street right-of-ways.

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According to Table 3, there are 122 non-conforming uses within the City Limits, and six (6) within the Urban Growth Area. The corresponding acreage is as follows:

Residential:	12.49 acres
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This consumes approximately 2.5% of the total area of the City. These non-conforming uses consist of primary single-family and multiple-family residential dwellings in the Central Commercial District where only secondary residential uses are allowed; primary residential dwellings in the Industrial District, where only care-taker dwellings are allowed conditionally; commercial and industrial uses within the Residential Districts that don't allow such uses; and multiple-family residential development within the Low Density Residential Districts. Some of this non-conformity may be brought into compliance upon rezoning the properties.

The allocation of undeveloped land and developed land designated for conversion or redevelopment to another use from a non-conforming use is listed below. The acreage listed for conversion or redevelopment is for land development currently with a use other than that given in the Plan or with a conforming use under-utilizing the property.

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Land Use	Acre	Existing Tax Lots	Existing Developed Units	Potential Development (in units)	(in acres)
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Land Use	Acres	Existing Developed Acres	Vacant Potentially Developable acres
Industrial	1600.00	600.00	1,000.00
Total:	1600.00	600.00	1,000.00

Source: Port of Tillamook Bay, 2003

TABLE 10: GEOGRAPHIC POPULATIONS

Within City Limits:

Type of Residential Dwelling Unit	2000 Total Housing Units	2000 Household Size	Totals	1980 Total Housing Units	1980 Household Population Totals	% Population Change since 1980
Single-Family	1,222	2.27	2,776	1,272	3,129	- 11%
Multi-Family	657	2.27	1,492	504	821	+ 82%
Mobile Homes	37	2.27	84	23	42	+100%
Subtotal:	1,916	2.27	4,352	1,799	3,992	+ 9%

Within Urban Growth Area:

Type of Residential Dwelling Unit	2000 Total Housing Units	2000 Household Size	Totals	1980 Total Housing Units	1980 Household Population Totals	% Population Change since 1980
Single-Family	207	2.46	509	216	531	- 4%
Multi-Family	145	2.43	352	34	55	+540%
Mobile Homes	36	2.43	87	39	70	+ 24%
Subtotal:	388	2.44	948	289	656	+ 44%
Total:			5,300		4,648	+ 14%

TABLE 11: PROJECTED DEMAND FOR OFFICE, INDUSTRIAL, AND RETAIL LAND WITHIN THE CITY OF TILLAMOOK URBAN GROWTH AREA AND PORT OF TILLAMOOK PROPERTY BASED ON THE TILLAMOOK COUNTY GROWTH PROJECTIONS

	Commercial	Industrial	Total
Base Case			
Current Supply (Acres)	197	1,068	1,264
Less: 2025 Demand (Acres)	141	76	217
Over/(Under) Supply	56	992	1,048
Low Growth			
Current Supply (Acres)	197	1,068	1,264
Less: 2025 Demand (Acres)	64	51	115
Over/(Under) Supply (Acres)	133	1,017	1,150
High Growth			
Current Supply (Acres)	197	1,068	1,264
Less: 2025 Demand (Acres)	159	115	274
Over/(Under) Supply (Acres)	38	943	981

Source: Tillamook Commercial and Industrial Land Demand Analysis, Hobson and Associates, 1992 (revised 2009)

TABLE 12: PROJECTED DEMAND FOR COMMERCIAL AND INDUSTRIAL LAND WITHIN THE CITY OF TILLAMOOK URBAN GROWTH BOUNDARY

Commercial Demand:

Step 1: Total present commercial employees / Total City Population = % of City pop. Employed in Commercial sector

2204 / 4700 = **46.9%**

Step 2: % of City pop. employed in Com. sector x Proj. pop. for yr 2020 = Est. of total employees in 2020

46.9% x 5811 = **2,725**

Step 3: Total Net Acres in Commercial Use / Total present commercial employees = Avg. amt. of net acreage utilized by each com. employee

307.6 / 2204 = **.14**

Step 4: Est. Tot. Com. Employees in 2020 x Avg. amt. of net acreage = Total acreage needed in 2020

2943 x .14 = **410.7**

Step 5: Total acreage needed in 2020 – Land presently in com. use = Add. Acres necessary

410.7 - 307.6 = **103.1**

Step 6: Add. Acres necessary x 25% allow. for parking + Add. Acres necessary = Tot. Acreage needed.

103.1 x 25% = 25.8 + 103.1 = **128.9**

Total acreage needed for Commercial Development: **128.9**

Industrial Demand:

Step 1: Total present industrial employees / Total City Population = % of City pop. Employed in Commercial sector

787 / 4700 = **16.7%**

Step 2: % of City pop. employed in Com. sector x Proj. pop. for yr 2020 = Est. of total employees in 2020

16.7% x 5811 = **970**

Step 3: Total Net Acres in Industrial Use / Total present Industrial employees = Avg. amt. of net acreage utilized by each com. employee

108.4 / 787 = **.13**

Step 4: Est. Tot. Ind. Employees in 2020 x Avg. amt. of net acreage = Total acreage needed in 2020

1051 x .13 = **144.8**

Step 5: Total acreage needed in 2020 – Land presently in ind. use = Add. Acres necessary

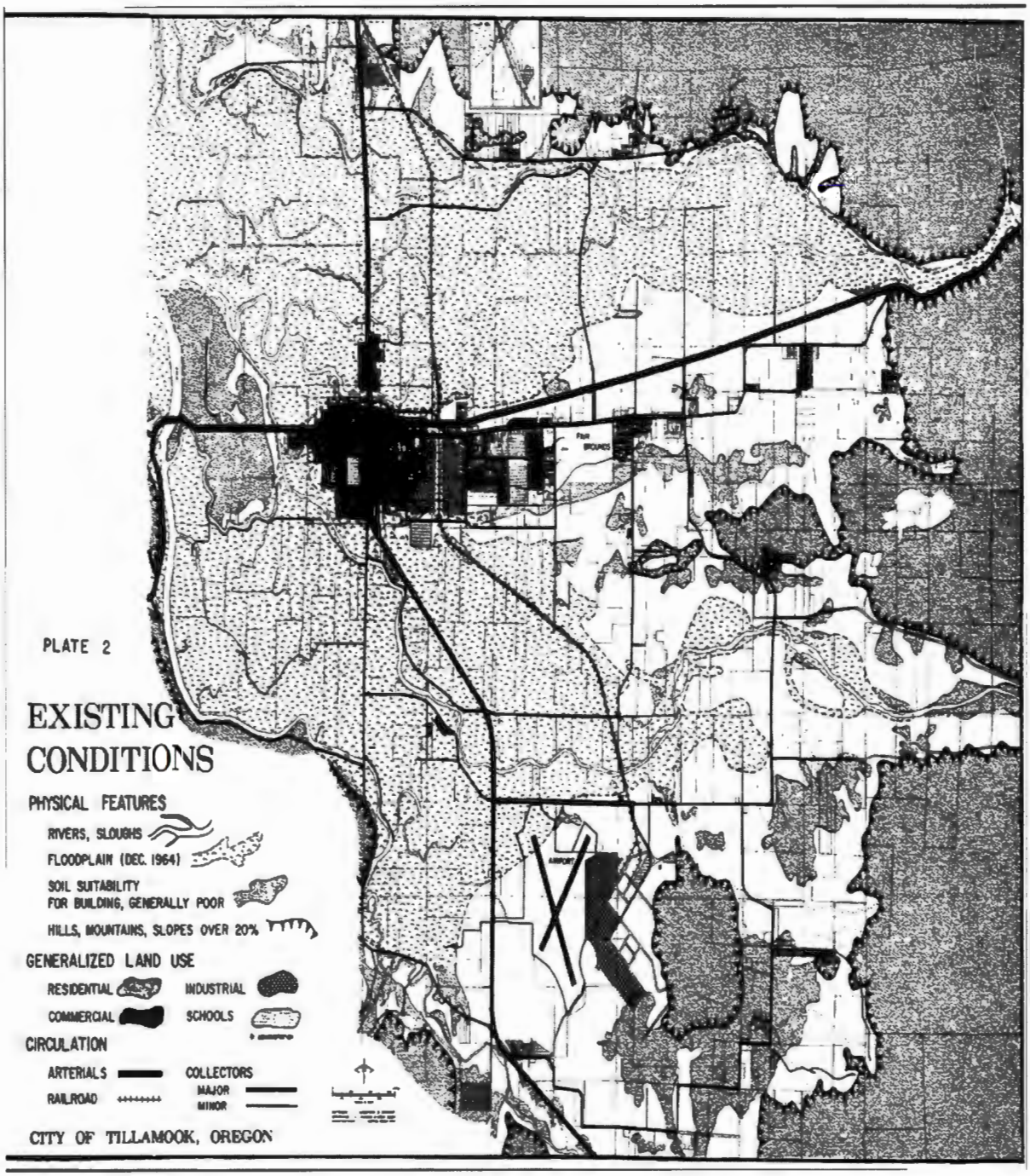
144.8 - 108.4 = **36.4**

Step 6: Add. Acres necessary x 25% allow. for parking + Add. Acres necessary = Tot. Acreage needed.

36.4 x 25% = 9.1 + 36.4 = **45.5**

Total acreage needed for Industrial Development: **45.5**

Appendix VII. Prior General Plan (1972)



GENERAL
PLAN
TILLAMOOK
OREGON

Amendments to the Text of this Plan were made by:

Resolution #919 - Passed 10-17-78

Amendments to the Map of this Plan were made by:

Resolution	#875 - Passed	9-19-77
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	#895 -	6-19-78
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Winter Flooding Photos by Doc Adams

Aerial Photos, July 1971, by Patterson, Langford and Stewart

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PATTERSON • LANGFORD AND STEWART
AIA AIP
ARCHITECTURE • PLANNING AND URBAN DESIGN

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May 1972

To Members of:
The Planning Commission,
City Council, and
The People of Tillamook, Oregon

We are pleased to submit herewith the General Plan for the City of Tillamook. We believe the long-range objectives of this Plan will materially assist the people of Tillamook in guiding their future development.

The City now stands in an enviable position. The relatively slow growth rate should enable the people to revitalize lagging sections of the City and to keep pace with new growth. The need for planning is more obvious in areas of rapid growth. However, in areas of slower growth, the need is there but is not as apparent to the general public. The City of Tillamook and Tillamook County must exercise particular care in evaluating future development policies since the growth is slow enough to be difficult to appreciate but is sufficient to influence the quality and livability of the area if not properly channeled. It is hoped that this plan will help to properly channel future growth.

It has been a privilege to have served you. We wish you success.

Respectfully submitted,

PATTERSON / LANGFORD & STEWART

Lyle A. Stewart, A.I.P.

LAS:jjh

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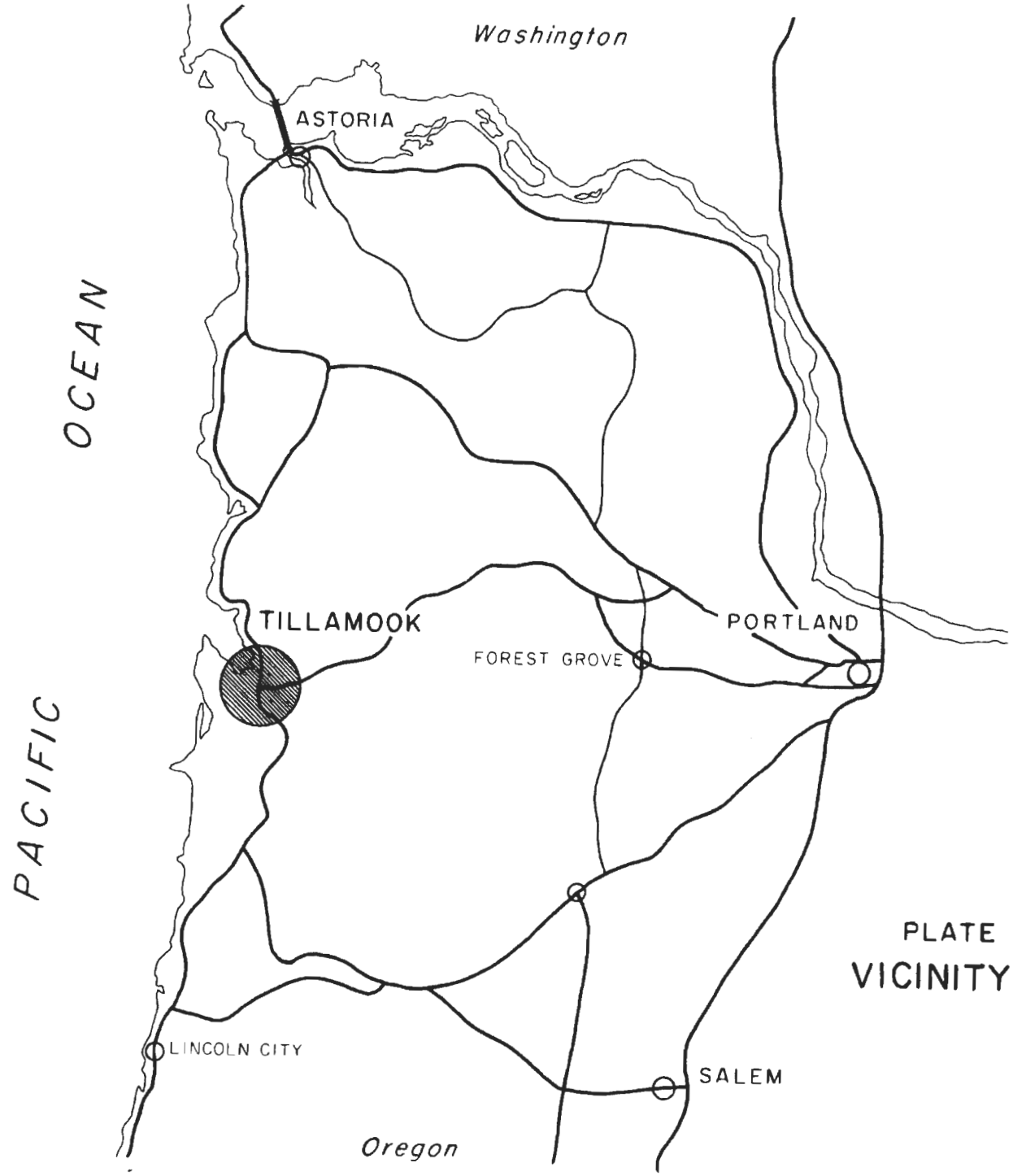


PLATE I

VICINITY MAP

PART I - EXISTING CONDITIONS

Any general plan must be based on factors and influences which exist at the time the plan is prepared and upon a realistic evaluation of future growth potential. In order to develop the basis for a general plan, considerable research is necessary relating to land use patterns and development trends, housing conditions, circulation patterns, economic and population growth, and the natural character of the area. Tillamook County and other agencies have made or sponsored a number of studies relating to economic and population growth, traffic patterns, and flooding, and this information has been considered in the preparation of this plan.

NATURAL FEATURES

The planning area is located on the Oregon coast about 70 miles west of Portland and an equal distance south of Astoria and the mouth of the Columbia River (Plate 1). Included within the 38 square mile area are the floodplains and lower reaches of the Wilson, Trask, and Tillamook rivers. The rich agricultural lowlands of the planning area are surrounding by forested foothills of the Coast Range with an opening to Tillamook Bay to the northwest. The City of Tillamook is situated on higher ground in the west-central portion of the planning area at the junction of U.S. 101 and the east-west state highway which leads to Portland.

The climate of the Tillamook area is typical of much of the Oregon coast with mild winters and moderate summers. As in other coastal areas, precipitation is heavy, over 90 inches per year, with about 70 percent occurring in the winter from November through March. Although supplemental irrigation is needed in the drier months, the climate and the fertile soils are largely responsible for Tillamook County being the primary dairy producer in Oregon. These same factors also establish a potential for production of field crops for the growing Portland market. The general climatic characteristics also allow the area to participate in the growing attraction of the recreation and tourist industry to the beauties of the Oregon coast.

Most of the 38 square mile planning area is composed of the lowlands between the Wilson, Trask, and Tillamook rivers. This relatively level floodplain is broken by low hills in the eastern part of the planning area and by a network of streams and sloughs in the west. There is little difference in elevation in the lowlands, and seasonal flooding, which is detrimental to both agriculture and urban development, is a major problem in the planning area. When winter rains combine with rapid snowmelt and runoff, floods of exceptional magnitude can occur.



Winter flood north of Tillamook along U.S. 101. View northwest. Winter 1971-72.

Plate 2 illustrates the areal extent of the December, 1964, flood which inundated more than half of the valley floor and reached into the city in several locations. Because of the rapid runoff characteristic of the rivers involved, the problem of flooding cannot feasibly be dealth with by flood control works. Therefore, the most reasonable course of action for the community would appear to be to reduce the hazard by regulating land uses in those areas subject to flooding.

The 1964 flood shown on Plate 2 was a "70 year" flood and was a fundamental factor considered in the preparation of the General Plan. Because of the large area affected and the relative infre-

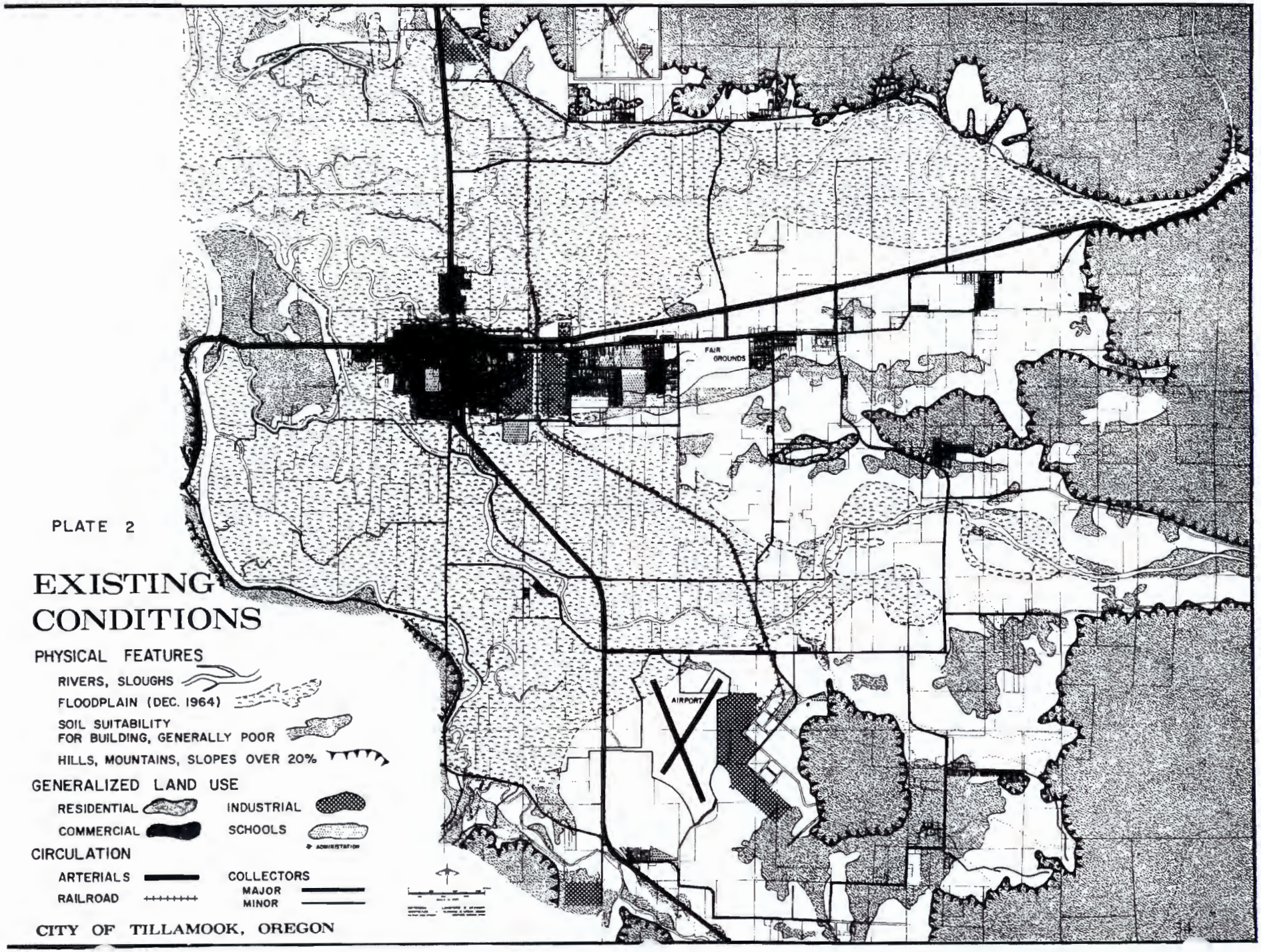


PLATE 2

EXISTING CONDITIONS

PHYSICAL FEATURES

RIVERS, SLOUGHS

FLOODPLAIN (DEC. 1964)

SOIL SUITABILITY FOR BUILDING, GENERALLY POOR

HILLS, MOUNTAINS, SLOPES OVER 20%

GENERALIZED LAND USE

RESIDENTIAL

COMMERCIAL

INDUSTRIAL

SCHOOLS

CIRCULATION

ARTERIALS

RAILROAD

COLLECTORS

MAJOR

MINOR

CITY OF TILLAMOOK, OREGON

quency of flooding of this magnitude, the city and county may wish to obtain information on possible flood frequency within the planning area. The Water Resources Division of the United States Geologic Survey in Portland can do a study which will forecast flooding in various time frequencies and indicate those sections of the valley floor which would be subject to inundation. This kind of study can be funded through a Federal 701 planning program.

The soils of any area are of basic importance to its economy and development. The composite map of existing conditions in the Tillamook Planning Area (Plate 2) indicates general suitability for urban development based on soil characteristics. The suitability of each soil type for building construction and domestic on-site sewage disposal is based on topographic conditions, soil profile data, natural drainage, and permeability as rated by the Soil Conservation Service. The soils were also evaluated for agricultural suitability, and it was found that, with the exception of tideland soils, most were well suited to agricultural use.

Tillamook County soils may be divided into four categories: floodplain, tideland, alluvial terrace, and hillside. In general, floodplain and tideland soils are unsuitable for any kind of urban development other than parks, recreational access facilities, and similar flood-tolerant uses. Floodplain soils are generally well suited to agriculture, and tideland soils are unsuitable for this use. With the exception of poorly drained swales and peripheral areas of steep slope, the alluvial terrace soils are well suited to both urban development and agricultural use. Most of the more intensive urban development in the planning area is situated on these alluvial terrace soils. Hillside soils are generally good for timber growth and limited residential development on large lots. The foregoing comments are generalizations, and the specific capabilities and limitations of each soil within the broader classifications should be carefully considered in order to avoid economic problems and hazards to public health and safety in any new development.

The terrain, drainage patterns, and soils represent natural features and characteristics which relate to existing and future development of the planning area. Natural elements establish the setting in which development can occur. They can suggest possibilities unique to an area or establish limitations for use. They must be considered carefully, and both their assets and limitations respected as a basic factor in the planning process. An examination of Plate 2, Existing Conditions, indicates that most of the existing urban development in the planning area has respected the natural features in the valley. The City of Tillamook and the residential development to the east have been located on higher ground which is not subject to flooding and has soils which are relatively well-suited for urban development. However, some commercial and residential development has occurred both north and south of the city in areas subject to flooding. Concerted community effort should be made to discourage further development in these areas and, if possible, to remove those existing uses from the flood hazard areas.

EXISTING LAND USE

The kind, location and distribution of existing land uses is a fundamental factor to be considered in the future planning for any area. The location of agricultural, residential, commercial, and industrial areas provides a basis for understanding present conditions and for making projections for future land-use patterns. Research and analysis necessary to study existing development patterns is based on a field survey of the use of each parcel of property in the planning area. The 38 square mile area, including the City of Tillamook, was surveyed in August of 1971 by the Consultant. The many uses found in the survey were grouped into a land-use classification system and recorded on land-use maps. These maps indicate graphically the pattern of land uses and are a basic tool in the preparation of the plan. A detailed colored land-use map at a scale of 1" = 800' has been prepared and is available for study at the city offices. Plate 3 is a land-use map which is intended to show the existing development pattern in the entire planning area.

Another basic tool used in understanding existing development patterns is a statistical land-use analysis. The uses indicated by the field survey were compiled, and this information was summarized according to each land-use classification and tab-

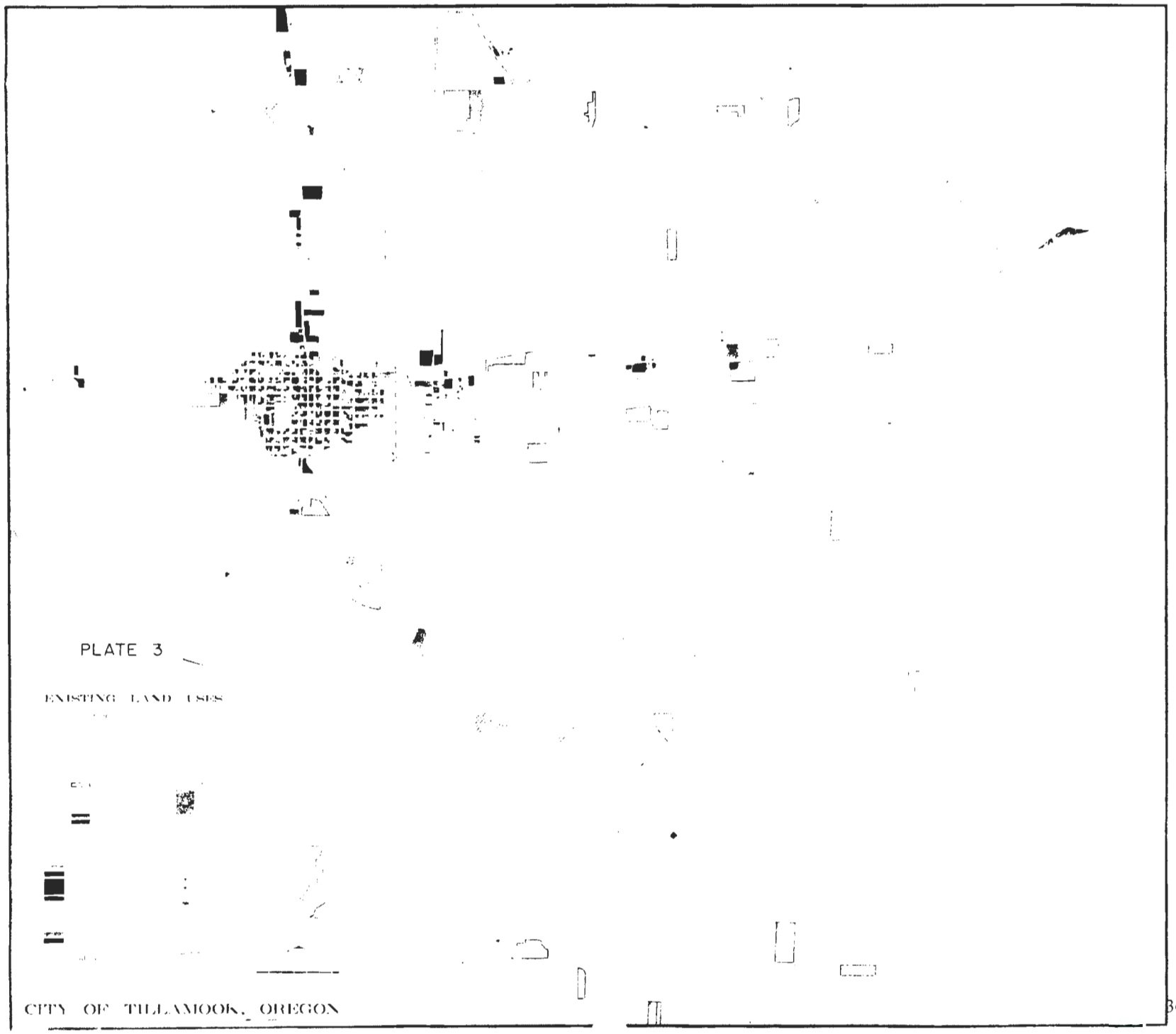

PLATE 3
EXISTING LAND USES
CITY OF TILLAMOOK, OREGON

TABLE 1

TILLAMOOK GENERAL PLAN

DETAILED LAND USE DATA

	CITY OF TILLAMOOK		OUTSIDE CITY		TOTAL PLANNING AREA		SUMMARY COMMENTS
	Acres	Dwelling Units	Acres	Dwelling Units	Acres	Dwelling Units	
WATER	13.61	--	702.52	--	716.13	--	716.13 Acres
AGRICULTURE							
Pasture (including Dairy)	18.63	2	11,360.91	207	12,798.23	209	
Row Crops	------	--	398.85	6	398.85	6	
Other	34.72	--	8,070.99	26	6,687.02	26	20,782.81 Acres
							241 Dwelling Units
VACANT	81.92	--	816.79	--	898.71	--	
RESIDENTIAL							
5 to 10 acres	------	--	352.00	47	352.00	47	
2-1/2 to 5 acres	11.64	4	228.96	66	240.60	70	
1 to 2-1/2 acres	7.09	8	163.77	113	170.86	121	
20,000-43,599 (.47-.99)	27.63	47	86.78	132	114.41	179	
7,500-19,999 (.17-.46)	88.92	367	90.55	297	179.47	664	1,169.75 Acres
2,500- 7,499 (.06-.16)	87.65	710	8.26	64	95.91	774	2,172 Dwelling Units
Less than 2,500 (.00-.05)	5.66	228	------	--	5.66	228	
TRAILER PARK	------	--	10.84	89	10.84	89	
COMMERCIAL							
Service (offices)	7.78	--	5.30	--	13.08	--	
Retail	6.82	2	15.01	--	21.83	2	
Auto Oriented	11.74	--	9.94	--	21.68	--	
Highway (large site oriented)	4.71	--	18.50	--	23.21	--	87.86 Acres
Recreation	1.12	--	------	--	1.12	--	10 Dwelling Units
HOTEL - MOTEL	1.21	8	4.82	--	6.03	8	
PARKING	0.91	--	------	--	0.91	--	
INDUSTRIAL							
Light	1.05	--	------	--	1.05	--	
General	4.69	--	31.99	--	36.68	--	307.09 Acres
Heavy	77.07	4	181.59	1	258.66	5	5 Dwelling Units
PUBLIC UTILITY	0.25	--	10.45	--	10.70	--	
INSTITUTIONAL							
Church Related	8.19	1	7.66	--	15.85	1	
Medical Related	2.82	--	5.28	--	8.10	--	77.76 Acres
Lodges, Meeting Halls	1.28	--	1.36	--	2.64	--	1 Dwelling Unit
Miscellaneous	0.12	--	51.05	--	51.17	--	
PUBLIC							
City-County	3.21	--	357.16	--	360.37	--	376.82 Acres
State-Federal-Other	4.11	--	1.63	--	5.74	--	0 Dwelling Units
Shops, Sewer, Airport	0.96	--	9.75	--	10.71	--	
SCHOOLS							
School Facilities	71.91	--	13.76	--	85.67	--	91.67 Acres
Administrative	------	--	2.43	--	2.43	--	0 Dwelling Units
Shops	1.72	--	1.85	--	3.57	--	
PARKS AND RECREATION							
Standard Use	3.79	--	------	--	3.79	--	3.79 Acres
Special Use	------	--	------	--	------	--	0 Dwelling Units
Private (i.e., golf)	------	--	------	--	------	--	
ROADS	155.53	--	600.79	--	756.32	--	756.32 Acres
RAILROAD	6.51	--	65.72	--	72.23	--	72.23 Acres
TOTALS	754.97	1,381	23,687.26	1,048	24,442.23	2,429	

TABLE 2

LAND USE SUMMARY

Land Use Category	City of Tillamook		Outside City		Total Planning Area	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Water	13.61	1.80	702.52	2.96	716.13	2.93
Agriculture	53.35	7.07	19,830.75	83.70	19,884.10	81.35
Vacant	81.92	10.85	816.79	3.45	898.71	3.68
Residential	228.59	30.29	930.32	3.93	1,158.91	4.74
Trailer Park	------	-----	10.84	0.05	10.84	0.04
Commercial & Parking	34.29	4.54	53.57	0.23	87.86	0.36
Industrial	82.81	10.97	213.58	0.90	296.39	1.21
Public Utilities	0.25	0.03	10.45	0.04	10.70	0.04
Institutional	12.41	1.64	65.35	0.28	77.76	0.32
Public	8.28	1.10	368.54	1.56	376.82	1.54
Schools	73.63	9.75	18.04	0.08	91.67	0.38
Parks and Recreation	3.79	0.50	------	----	3.79	0.02
Roads	155.53	20.60	600.79	2.54	756.32	3.09
Railroad	6.51	0.86	65.72	0.28	72.23	0.30
TOTAL	754.97	100.00	23,687.26	100.00	24,442.23	100.00

ulated for sub-areas within the total planning area. The overall summary of land-use type indicates the relative amount and significance, and the sub-area tabulation permits comparison and analysis of land uses in different sections of the total planning area. The basic statistical analysis was done in terms of the City of Tillamook, the planning area outside of the city, and the total planning area. Table 1 gives detailed land-use data for these three areas. One of the principal values of Table 1 is that the detailed listing of land uses existing at the time of the land-use survey provides an invaluable data base for comparative analysis in future reconsiderations of the General Plan. Table 2 condenses the same detailed inventory data and groups the information into a more manageable form.

An examination of Plate 3 indicates that most of the land in the planning area is used for some agricultural purpose or is classified as open or wooded land. Most nonagricultural uses are located on the higher ground which extends from the foothills of the Coast Range at the eastern edge of the planning area, westerly to the western boundary of the City of Tillamook. Within this area of higher ground, most of the urbanization is located between the western boundary of the City of Tillamook and Trask River Loop Road to the east. Other more or less isolated residential subdivisions occur in a random pattern throughout the planning area. Some, such as those located south of the city along the Trask River, are subject to fairly frequent flooding.

Some commercial development occurs north of the city along U.S. Highway 101, and much of this area is also subject to frequent flooding. Most of the major industrial developments are located on higher ground along the railroad tracks and include the cheese factory north of the city, the lumber mill within the city, and the industrial developments at the airport.

Most of the land in the planning area is rural in nature and reflects the fact that agriculture is still a strong and viable part of the community's economy. In the future, care should be taken to discourage small, random, and incompatible residential developments within agricultural areas because agricultural land can sometimes be removed from productivity without being developed for another use. Use conflicts between agricultural and other uses increase with time and with the number of other uses, particularly residential developments. The greatest conflicts will occur in areas above the 1964 flood line which are well suited to both urban and agricultural uses. Land in this area should be retained in agricultural use as long as possible, with urban development directed close-in to the existing urbanized area. Eastward expansion of residential areas should be an orderly extension of existing areas. Urban development of any type should be discouraged or prohibited in all parts of the planning area subject to flooding.

In order to map and analyze the many kinds of land uses which occur in the area, it is necessary to develop a classification system in which various kinds of uses can be grouped. The land-use classification system for the Tillamook Plan was designed to reflect urban development patterns and to indicate potential future problem areas. No attempt was made to prepare a detailed breakdown for various kinds of agricultural lands in the planning area. The brief definition of each land-use classification, which precedes the discussion of land-use in the planning area, is intended to be a description rather than a comprehensive listing of uses for each category.

Water Areas - includes areas more or less permanently inundated by major natural or man-made water features. The principal water elements in the planning area are the Wilson, Tillamook, and Trask rivers, together with a series of meandering sloughs located principally in the northwest part of the planning area. These water elements present very serious flooding problems, and urban development along rivers or in their floodplains should be discouraged. However, they do present extensive opportunities for recreation or recreational development within the planning area. An analysis of the land-use survey indicates that there are approximately 716 acres of water surface in the planning area.

Agriculture - the agricultural classifications are oriented toward the influence of agricultural use on the potential urban pattern within the planning area. As previously stated, no attempt was made to prepare a detailed breakdown of different agricultural uses. The land-use survey indicates that the total of all land

classified as agriculture amounts to approximately 19,884 acres, or about 81 percent of the total planning area.

Pasture (including dairy) includes all dairy uses and other types of pasture lands. As mentioned previously, Tillamook County is the leading producer of dairy products in the State of Oregon, and Tillamook cheese has a world-wide reputation. In order to maintain a continued high level of production, it will be necessary to retain much of this pasture land. Large areas classified as pasture can be retained in this use because it is compatible with the seasonal flooding problems in the area. In general, nearly all of the arable land in the planning area which is not used for field crops is used for pasture in association with dairying.

Row Crops in this context includes intensively cultivated areas of relatively high value crops. Land in this category amounts to 398 acres in the planning area, and nearly all is used for the growing of broccoli.

Other includes predominantly wooded areas in the foothills and on the valley floor and essentially undeveloped land in tracts of more than 10 acres in size, some of which are used as seasonal pasture. This classification accounts for approximately 6,687 acres of land in the planning area, most of which is wooded and is located in the surrounding foothills. The largest non-wooded tracts of land in this classification are located on the western and southern sides of the airport property.

Vacant - includes open undeveloped land in parcels of 10 acres or less with no permanent structures. Some of these areas may be used occasionally as pasture but are too small to be an agricultural unit for the purposes of this plan. An examination of Plate 3, Existing Land Uses, shows that vacant parcels are scattered at random throughout most of the planning area. This classification accounts for approximately 898 acres of the total land use, and 82 of these acres occur within the City of Tillamook. However, most of the land within the city which was classified as vacant was inundated during the 1964 flood. Many of these parcels elsewhere in the planning area are also subject to flooding. Since these are often the first parcels to be committed to non-agricultural uses, efforts should be made to discourage development on these sites by uses which will suffer from flood damage.

Residential - this classification is based on the land area per dwelling unit, or housing density, rather than the number of dwelling units in any structure. Development problems and the need for community services are more closely related to housing density than to the type of residential structure. The lot size breakdown is as follows:

5 to 10 acres - large rural-residential lot, too small to be considered agricultural; can be subdivided further with relative ease; not often a problem for septic tank systems.

2-1/2 to 5 acres - relatively large rural or suburban lot; not too easily subdivided further into a reasonable urban pattern with adequate access--requires cooperation with other property owners, which is difficult; not often a problem for septic tank systems.

1 to 2-1/2 acres - suburban lot; further development becomes more difficult; at this density septic tanks are a problem in some soils; keeping animals sometimes a problem.

.17 to .99 acres (.17 to .46, .47 to .99) - single-family urban lot patterns; septic tanks nearly always a problem, except under unusually favorable conditions; breakdown in parentheses reflects the detailed land-use classification used in survey.

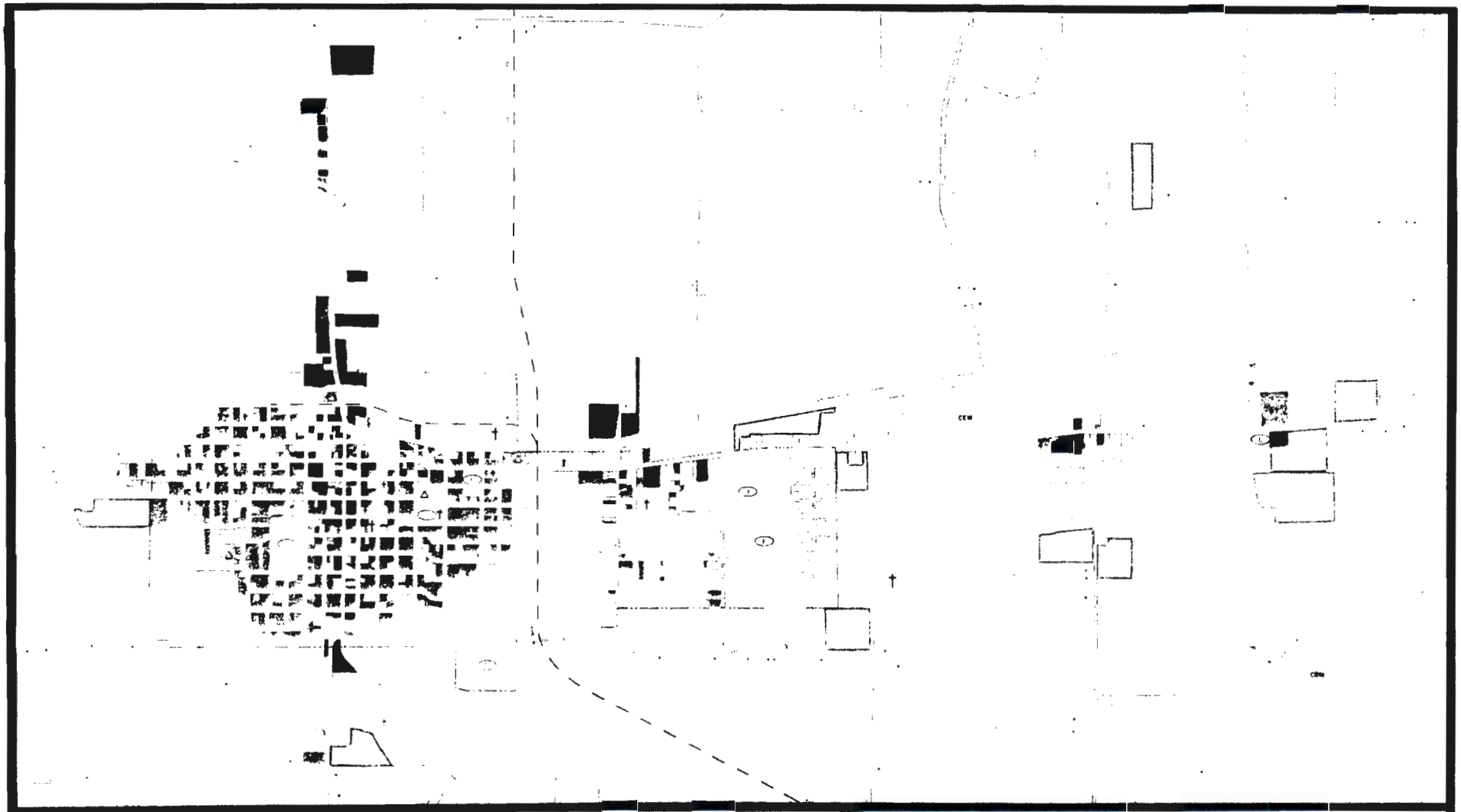
.00 to .16 acres (.00 to .05, .06 to .16) - medium to high-density residential development, usually in city or special-service district where full community services are available; breakdown in parentheses reflects detailed land-use classification used in survey.

TABLE 3

HOUSING DENSITY SUMMARY

	City of Tillamook		Outside City		Total Planning Area	
	Dwellings No. of Units	Percentage of Total	Dwellings No. of Units	Percentage of Total	Dwellings No. of Units	Percentage of Total
Over 10.00 acres	2	0.14	239	22.81	241	9.92
5.00 - 10.00 acres	0	0.00	47	4.48	47	1.93
2.50 - 4.99 acres	4	0.29	66	6.30	70	2.88
1.00 - 2.49 acres	8	0.58	113	10.78	121	4.98
.17 - .99 acres	414	29.97	429	40.93	843	34.71
.00 - .16 acres	938	67.93	153	14.60	1,091	44.92
Other Use Areas	15	1.09	1	0.10	16	0.66
	1,381	100.00	1,048	100.00	2,429	100.00

The residential classifications based on lot area per dwelling unit are intended to group uses with more or less similar characteristics and future development potential (Table 3). At the present time, about 56.8% of the dwelling units in the total planning area are inside the city, which accounts for only 3.1% of the land area. Slightly more than 68% of the land within the city is now committed to an urban use, whereas only about 9.9% of the planning area outside of the city contains urban uses (Plate 3). As mentioned earlier, most of the urban development has taken place on the higher ground which extends from the foothills of the Coast Range in the east to the west city limits of Tillamook. From the western boundary of Tillamook to and including the properties facing on Trask River Loop Road, this higher ground includes approximately 67% of all housing units in the planning area (Plate 4). The great majority of dwelling units in this area occur in the form of single-family dwellings on lots of less than 20,000 square feet in area. Most of the housing within the city is found on lots ranging from 5,000 to 6,000 square feet in area with scattered instances of small apartments and duplexes. With the exception of the lots along Maple Lane and Hummingbird Lane, which average between 1/2 and 1 acre, nearly all of the remaining housing units occur on lots ranging in size from 7,500 to 20,000 square feet. Throughout the remainder of the planning area, most housing units which are located in subdivisions occur on lots between 7,500 square feet and 1 acre in area, with the remainder tending to have a land area of over 1 acre per dwelling unit.



CITY OF TILLAMOOK, OREGON

EXISTING LAND USES

PLATE 4

AUGUST 1971

AGRICULTURE

PAST IRE (INCL DAIRY)

ROW CROPS

OTHER

RESIDENTIAL DENSITIES

ACRES

SQUARE FEET

TRAILER PARK

DWELLING UNIT

COMMERCIAL

SERVICE (INCL OFFICE)

RETAIL

AUTO ORIENTED

HIGHWAY ORIENTED

RECREATION

MOTEL & MOTEL

INDUSTRIAL & UTILITY

LIGHT

GENERAL

HEAVY

PUBLIC UTILITY

CIRCULATION

ARTERIAL

COLLECTOR

LOCAL

OTHER

PARKING

WOODED

VACANT

RAILROAD

WATER

PUBLIC FACILITIES

COUNTY, STATE

FEDERAL & OTHER

PUBLIC SHOPS, YARDS, ETC.

INSTITUTIONAL

CHURCH

HOSPITAL & MEDICAL

LODGES & MEETING HALLS

CEMETERY

SCHOOLS

ELEMENTARY

JUNIOR HIGH

SENIOR HIGH

SCHOOL SHOPS, BUS YARDS

PARKS

N NEIGHBORHOOD

C COMMUNITY

R REGIONAL

S SPECIAL USE

The residential development pattern in the planning area reflects the good judgment of the people in their selection of homesites which are largely free of flood hazards. However, some development has taken place in areas subject to flooding, and new residential units are appearing along county roads in other parts of the planning area. Previous mention has been made of the land-use conflicts between residential and agricultural uses, and care should be taken to insure that this problem does not become widespread in the future. In addition to the problem of residential and agricultural conflicts, provision of public services, such as water and sewer service and police and fire protection, becomes increasingly more expensive as the area to be served enlarges. At this point in time none of these problems appears to be acute, and the people of the planning area have a tremendous opportunity to direct future residential development into those areas which are safe from flood hazards and can be most readily and economically provided with necessary community services. In the process of concentrating urban development in those areas most suited for urbanization, consideration should be given to creating and preserving a wide variety in the characteristics of residential districts and to retaining the desirable characteristics of each type of area. The use of innovative subdivision design and planned unit developments can make possible the mixing of housing densities or building types in a manner in which all residential uses are compatible.

Commercial -

Service - basically, a commercial activity where a service is rendered rather than goods or wares sold; for example, business and professional offices, banks, barber and beauty shops, small repair businesses, nursery schools, laundromats.

Retail - retail stores and businesses with relatively small land requirements; for example, shoes, gifts, groceries, drugs, sporting goods.

Auto-Oriented - commercial sales and services oriented toward the automobile; for example, gas stations, minor auto repairs, auto dealers and parts, auto painting, auto rental, drive-in restaurants.

Highway-Oriented - sales and service business with large site requirements, or those oriented to highway access; for example, building material sales, auction houses, trailer sales, equipment sales and rental, nurseries or greenhouses.

Recreation - basically, commercial recreation not involving open space; for example, drive-in theaters, bowling alleys, skating rinks, miniature golf courses.

Hotel and Motel - hotels and motels.

Parking - separate, private or public parking lots not associated with a specific business or shopping center.

There are approximately 88 acres of commercial land in the planning area, of which 61% occurs outside the City of Tillamook. Most of the commercial development inside of the city is concentrated in the central area north of 7th Street along the highway couplet. At the present time, the central business district consists essentially of a concentration of retail and service-commercial uses in an area characterized by older buildings, inadequate off-street parking, and heavy traffic congestion. If the central business district is to continue as the center of retailing and service activity in the planning area, some action must be taken to provide additional off-street parking, relieve the traffic congestion, and to upgrade the quality of the environment so that it is more attractive to the shopper. The recent development of a major retail outlet north of the city, on a site which exceeds 6 acres, provides a clear indication of the future for downtown if it does not take steps to remain competitive.

The new retail development mentioned above is one of several kinds of commercial uses located north of the city along Highway 101. Most of the other commercial developments are automobile or highway-oriented and, taken together, represent a substantial beginning of a commercial strip development which would extend from the northern city limits of Tillamook to the north end of the planning area. In addition to the problem of traffic congestion and appearance, nearly all of the land included in this potential commercial strip is subject to flooding. There would ordinarily be considerable doubt about the advisability of encouraging strip

development for this distance along the highway, but, with the additional factor of frequent flooding, there appears to be little question that commercial development should be discouraged in this area. In fact, serious consideration should be given to removing these uses over a period of time to other locations within the planning area which are better suited to commercial development.

Industrial -

Light - basically, wholesaling, warehousing and light manufacturing, fabricating or processing; for example, wholesaling, warehousing, storage, light manufacturing, welding, sheet metal, machine, upholstery, printing, cabinet shops, and bottling plants.

General - basically, servicing of large equipment, heavier storage or processing activities; for example, equipment repair or service (including trucks), general contractor operations, lumber storage (not a mill), trucking and freight handling, creamery.

Heavy - basically, heavy industrial uses; for example, lumber and plywood mills, wrecking yards, sand and gravel operations, foundry or iron works, gravel quarries.

There are approximately 296 acres of industrial land in the planning area, most of which occurs in three separate locations along the Southern Pacific Railroad tracks. One industrial area lies in the northern part of the planning area north of Latimer Road and includes the cheese factory and the lumber mill. In the central part of the planning area, within the City of Tillamook, the principal industrial use is the Publishers Paper Company which accounts for about 77 of the total of 83 acres of industrial land in the city. Other industrial areas within Tillamook consist of light and general industrial uses, which include beverage or oil distributors, a creamery, warehouses, and small custom fabricating cabinet and machine shops. Most of these uses are located north of the core of the central business district and west of Highway 101. A third concentration of industrial development is located on the old Naval Air Station site at the terminus of the Southern Pacific tracks. A veneer plant and a lumber mill are the two major industrial uses in the area.

These three groupings of industrial areas in the northern, central, and southern part of the planning area constitute the major industrial locations. Other industrial uses in the area include an operations yard of a lumber company southwest of the airport, a gravel quarry along the Wilson River off of Donaldson Road, a source of topsoil along the Wilson River Highway at the Southern Pacific tracks, and an auto wrecking yard between the old and new Wilson River highways opposite the fairgrounds. It is interesting to note that, with the exception of the quarry along the Wilson River, virtually all industrial uses are located on sites free from flood hazards.

Institutional - uses of various kinds considered institutional in nature and usually nonprofit; for example, churches and parochial schools, hospitals and cemeteries, lodges, granges, and meeting halls.

The land-use survey and analysis shows that there are approximately 78 acres of land devoted to institutional uses in the planning area. In terms of numbers, churches are the most common use in this group, and most of these are located in the more intensively developed section of the planning area. In terms of acreage, the largest land uses in this classification are hospitals, cemeteries, and a parochial school. The location of the convalescent hospital on Highway 101 south of the city presents a fairly serious problem because the site is subject to frequent flooding. The two cemeteries are located on the higher ground east of the City of Tillamook. The parochial school occupies a site of approximately 3.2 acres and has a combined elementary and high school enrollment of about 300 students. The 230 elementary school students represent about one-half of the enrollment in a standard public elementary school.

Institutional uses have a wide variety of site and location requirements and can be successfully placed in many different use areas. Care should be taken to see that institutional uses recognize the character of areas in which they are located and that they do not create problems because of noise or traffic congestion.

Public Utilities - all electric and gas utilities, telephone, telegraph, radio, and television stations and facilities; for example, equipment and transformer yards, offices, and radio and television stations.

Public utility uses classified in this survey and analysis account for a total of 10.70 acres. This total includes only offices and various types of storage and equipment facilities. It does not include land used or overpassed by power, telephone, or gas transmission lines, since most of these are located in public rights-of-way or in easements on land used for another purpose.

One of the more significant public utility features is the Bonneville Power Administration transmission line which moves in a general north-south direction through the central part of the planning area. At the present time, this transmission line extends through areas which are either industrial or agricultural and creates no major problems.

The principal expression of public utilities in the land-use pattern of a community is made by transmission and distribution facilities. Power and telephone lines are obvious elements in the landscape, and they often become one of the principal features of the skyline in more intensively developed sections. This is particularly obvious in the more intensively developed sections of the planning area. Efforts should be made to encourage the underground installation of community power and telephone services. The cost is higher, but there are long-range benefits to both the community and the utilities.

The natural features and the existing land-use patterns are clearly fundamental factors in the future development of the area. Many of the same factors which influenced past development will exert similar influences on the future. Community efforts should be directed toward bringing about future growth patterns which respect and recognize the natural advantages and the hazards within the planning area and which will encourage variety in future development patterns.

RESIDENTIAL CHARACTERISTICS AND HOUSING ELEMENT

A condition of housing survey was conducted in conjunction with the land-use inventory. This survey indicates that, in general, there is a problem with deteriorating housing in the area. The results of this survey are summarized for the city, for the area outside the city, and for the total planning area in Table 4. A classification system of "A", "B", "C", "D" and "T" was used to denote condition of structures in the area. Mobile homes or trailers were classified as "T", and no attempt was made to categorize them by condition. This classification may be briefly summarized as follows:

"A" - Standard structure, most new housing, includes 15.45 percent of all structures in the area and 11.60 percent of those in the city.

"B" - Structure with only minor deficiencies, some of which may be caused by changes in building or electrical codes since the time of construction. Includes about 29.28 percent of the housing inventory and about 30.48 percent of those in the city.

"C" - Structures with significant deficiencies where remodeling to comply with present codes may not be economically feasible. Includes about 37.21 percent of the housing inventory and about 44.46 percent of those in the city.

"D" - Dilapidated structures, rehabilitation not economically feasible. Includes about 10.45 percent of the total housing inventory and about 12.36 percent of those in the city.

"T" - Trailers or mobile homes in parks or on individual lots. Includes about 7.61 percent of the total housing inventory and about 1.10 percent of those in the city.

TABLE 4

CONDITION OF HOUSING SUMMARY

Classification	City of Tillamook		Outside City		Total Planning Area	
	Structures No. of Units	Percentage of Total	Structures No. of Units	Percentage of Total	Structures No. of Units	Percentage of Total
A	137	11.60	206	19.83	343	15.45
B	360	30.48	290	27.91	650	29.28
C	525	44.46	301	28.97	826	37.21
D	146	12.36	86	8.28	232	10.45
Sub-Total	1,168		883		2,051	
T	13	1.10	156	15.01	169	7.61
Total	1,181	100.00	1,039	100.00	2,220	100.00

The classification is based upon an exterior evaluation of whether or not a structure meets current building, plumbing, and electrical code requirements.

In general, "A" and "B" structures are essentially standard, with "B" structures having some minor deficiencies. "C" and "D" structures are substandard; however, rehabilitation of many "C" structures may be possible. For the purposes of long-range planning for maintaining and improving existing housing conditions, both "C" and "D" categories are grouped together and represent housing problems. There are 2,051 structural units in the planning area, not including trailers. Of this total, 1,058 or 51.6% have been grouped in the "C" and "D" classifications. Within the City of Tillamook, comparable figures are 1,168 structural units of which 671 or 57.4% have been grouped in the "C" and "D" classifications.

Some of the structures in the "C" group are older homes and are widely distributed throughout the planning area. Their inclusion in this classification is often related to some degree to code changes upgrading standards for fire walls, wiring, and plumbing that have been made since their construction. The "D" group includes dilapidated housing and amounts to about 10.4% of the total housing inventory in the planning area and about 12.4% of that within the city. Much of the substandard housing in the city is in the older residential sections around the core area and in some locations on the east side of the city. Serious consideration should be given by the city to entering into programs to improve the condition of housing within the community. This could include one of several forms of redevelopment programs or a program to provide housing for senior citizens. Such a program might also include the revitalization of the older central business district. There is a significant amount of older housing in the

area which accounts for the relatively high percentage of sub-standard structures. As time passes and the area grows, new development will modify the residential character and housing conditions in the area. As this growth occurs, efforts should also be made to improve and rehabilitate the older areas in order to retain insofar as possible their present character and charm.

PUBLIC FACILITIES

An examination was made relating to existing public facilities within the area. These include schools, parks, fire stations, public buildings, and the airport.

Schools -

The school analysis includes that part of the Tillamook school district which lies within the planning area. Plates 3 and 4 show the location of existing schools within the planning area and Table 5 gives the name, enrollment as of September 30, 1971, and the site acreage for each existing school in the project area. There are seven schools within the planning area, five elementary schools, one junior high school, and one senior high school. On September 30, 1971, there was a total of 2,101 students enrolled in the seven schools. There were 1,029 elementary, 348 junior high, and 724 senior high school students. According to the land-use survey, these school sites occupy approximately 77.28 acres of land.

Existing school sites were evaluated in terms of state educational standards which indicate a minimum site of 5 acres plus one acre per 100 students for elementary schools and a minimum of 10 acres plus one acre per 100 students for secondary schools. These standards also relate to generally recognized enrollment targets of 500 elementary school students, 1,000 junior high, and 1,600 senior high school students. An examination of Table 5 indicates that, with the exception of East Elementary School, no school in the area approaches these enrollments. Two of the five elementary schools presently have site problems. Wilson School, with an enrollment of 216, has a site of 2.16 acres and, according to state standards, should have a site of approximately 7 acres. However, existing development on adjacent properties

TABLE 5

EXISTING SCHOOLS

	Sept. 30, 1971 Enrollment	Acreage
ELEMENTARY SCHOOLS		
Liberty	160	7.80
Wilson	216	2.16
East	466	26.90
South Prairie	160	6.97
Fairview (Primary)	27	1.55
Sub-Total	1,029	45.38
SECONDARY SCHOOLS		
Tillamook Junior High	348	20.20
Tillamook Senior High	724	11.70
Sub-Total	1,072	31.90
Total - All Schools	2,101	77.28

Elementary - Grades 1 - 6
Junior High - Grades 7 - 8
Senior High - Grades 9 - 12

indicates that expansion of this site would be prohibitive. Fairview, which is a primary school, has an enrollment of 27 students and a site of 1.55 acres. According to state standards, a minimum site for an elementary school is 5 acres. It may be possible to expand this site to the south by acquiring adjacent residential properties, but this action would appear questionable. This older school may not warrant the expense of additional site acquisition to sustain an outdated physical plant. A more appropriate course of action appears to be to seek a new site which would accommodate an elementary school with an enrollment of 500 students. This would solve the problems at Fairview School and would also serve to relieve future pressure on East Elementary School where the enrollment is approaching the desired maximum of 500 students.

Tillamook Junior High School has an enrollment of 348 and a site of 20.20 acres. This site should be adequate to serve the junior high school needs of the community for many years to come. Tillamook Senior High School, with an enrollment of 724, has a site of 11.70 acres which is not adequate to meet recommended state standards. This site could be expanded to the west or south without acquiring developed land.

The anticipated growth in school enrollment in the Tillamook area should be sufficiently slow that the school district can keep pace with anticipated enrollment increases. However, the school sites should be acquired well in advance of need so that the best sites can be purchased before the cost becomes prohibitive.

Parks -

There are three small parks in the planning area which total approximately 3.8 acres of land, and all three are located within the city. At present, most park and recreation facilities in the community are found on school playgrounds. As the area grows, there will be a need for additional park and recreation facilities, more than can be provided on school playgrounds alone. As with schools, the park sites should be acquired in advance of need so that the best sites can be obtained before the cost becomes prohibitive.

Fire Stations -

There is one fire station in the planning area adjacent to the Tillamook City Hall, and this facility can continue to serve as a fire station for many years. However, as urban growth continues to the east, there will be a need for added fire protection in that area. In addition, better fire protection would be an asset to future development at the airport and the adjacent industrial area.

Future considerations for fire protection for the planning area should be directed toward establishing fire stations in locations which will provide desirable coverage and give the citizens maximum benefit for a minimum cost. Fire protection inside and outside the city should be considered as essentially one problem and approached as a combined effort.

Other Public Facilities -

There are other public facilities which provide a service or enhance community life. These include the offices of various levels of government, the post office, the museum, the library, the fairgrounds, the airport, and shops and maintenance yards. There are two groupings of public facilities located in the central area at the present time. These include the courthouse, post office, and museum, and the city hall, fire station, and county library. As time passes and the area grows, some thought should be given to the possibility of gathering these facilities together into a civic center which can create a focal point for government activity, and, if properly designed, can become a source of community pride. Other state and federal offices are scattered throughout the planning area with some located at the airport. Those state and federal agencies which serve the frequent need of the general public should have a central location in the community. Others, which are more or less special purpose functions, may be located in more outlying locations.

The County Fairgrounds occupies a site of approximately 90 acres, and it is the largest single development in the more urban section of the planning area. The fairgrounds enjoys a location which will be relatively central to future new growth areas east of the City of Tillamook and has considerable potential for use of at

least part of the site as a major park.

A plan has already been prepared for future airport development by the Oregon State Board of Aeronautics. The plan recommends runway extensions, new hangars, tie-down areas, and other detailed items. The city and county should make every effort to protect approach zones to the airport from future urban development.

At the present time, the City, County, and State Highway departments all have maintenance shops and yards in the planning area. Consideration should be given to locating these public uses in industrial areas instead of adjacent to residential districts as is the case at the present time.

CIRCULATION

Most of the circulation problems in the planning area occur in the highly congested central business district of the City of Tillamook. Traffic volume information from comparative surveys done in 1958 and 1968, and published in the Tillamook County Plan, indicates that there has been a substantial increase in traffic volumes during that period. For example, north-south traffic on Highway 101 increased by 43% at the northern city limits and by 52% at the southern city limits. East-west traffic on Highway 6 at points just east and west of the city boundaries increased by 31% and 10% respectively. It can safely be assumed that traffic volume increases since 1968 have followed a similar pattern.

A study of survey data indicates there is a significant difference in seasonal traffic volumes. For example, north of the planning area, where it is possible to measure what is essentially highway traffic as opposed to local traffic, volumes recorded in August are approximately 2.8 times as high as those recorded in December. Heavy summer volumes are obviously related to tourist travel, and therefore a similar but probably smaller seasonal variation can be expected on Highway 6. The downtown area is congested to some degree during the winter months, and normal local traffic together with the high seasonal peak creates serious traffic problems in the central area during the summer months. This traffic congestion, together with lack of adequate parking, will seriously jeopardize the future of the central business district as a shopping area. Every effort should be made to develop a highway bypass of the downtown area for the north-south traffic on U.S. 101.

Elsewhere in the planning area, the existing road net appears to be adequate. However, as the area east of the city urbanizes, an additional east-west street extending from the one-way couplet to Trask River Loop Road in the general area of Marolf Road would greatly simplify access to future residential areas. All future highway and arterial street alignments should recognize the floodplain as a major factor in location.

Railroads -

The Southern Pacific Railroad which now terminates at the airport is an extremely important element in the local economy. As mentioned previously, most of the clusters of industrial use in the planning area are located along the railroad tracks. This route should be respected and future development should recognize the importance of this vital shipping link to the local economy.

ECONOMIC AND POPULATION GROWTH--ANALYSIS AND PROJECTIONS

Tillamook County and other agencies have made or sponsored studies involving population and economic forecasts. Rather than repeat the data in this study, only a brief summary of those results pertinent to the General Plan have been included. It is estimated that the planning area has a current population of approximately 6,200 people, which amounts to 35 percent of the total county population. Based on forecasts for the City of Tillamook, it is estimated that the planning area will continue to account for about 35 percent of the total population. Based on county population forecats and this assumed percentage relationship, it is estimated that the planning area will have a population of approximately 7,175 people in 1990. This represents a relatively small population increase, and it is based on modest estimates for employment increases in agriculture, lumber, and tourism over the coming years. However, the General Plan has

been prepared in a manner which accommodates a greater population than forecast by 1990. If the growth rate exceeds estimates, some of the public facilities and circulation elements will be needed at an earlier date, but their location and relation to other land uses will remain the same. In this way, community development patterns can be suggested which can serve as a guide for various periods of time, depending upon the growth rate.

PART II - THE GENERAL PLAN

INTRODUCTION

Planning is essentially an organized attempt at community foresight. It seeks to guide future development of an area within a framework of goals and objectives which are consistent with the physical characteristics, attitudes, and resources of the community. The basic aim of the general plan is to organize and coordinate complex interrelationships between people, land, resources, and facilities in such a way as to assure the future health, safety, welfare, and convenience of the citizens.

The need for planning is more obvious in some communities than in others. In larger areas of rapid growth, the need is clearly defined. In smaller communities, however, the need is there but is not as apparent to the general public. Although growth may occur, it often is not of sufficient magnitude to alter significantly the character of the community. The development of a general plan for Tillamook is extremely important to the future development and livability of the community.

In any area, each individual and organization participates in some way in the planning process. The community planning process is the continuing effort to coordinate short-range and long-range private and public actions toward the fulfillment of generally accepted overall community goals. The plan provides the foundation for the planning process by establishing long-range goals and objectives and by providing, through its various elements, an integrated view of future public and private development patterns in the community. It is an important tool to help the community identify problems and take steps necessary to solve them before the cost of desirable solutions is beyond the community's economic capabilities to achieve.

The General Plan is not intended as a rigid system of goals and development policies, but should function as a general working frame of reference for government officials and administrators in enunciating community policies and specifying methods and standards for implementation of these policies. All public facilities--schools, parks, utilities, highways--can be planned and a program for land acquisition and development prepared in advance of need so that services will be available when and where they are needed. These same community policies serve individual decisions. They are able to determine how their individual interests can best be served in a manner which is consistent with the plan. They are assured by the plan that once they commit their investment to the land, there will be a reasonable continuity of land policies which will protect their interests.

The planning process is in itself a means of constantly evaluating the General Plan. It is essential that the plan be adaptable, but this must not be interpreted to permit piecemeal amendments that disregard the basic relationships established by the original effort. Proposed changes must be carefully considered in terms of possible overall effects on the entire community. Accommodation of a proposed development which appears very desirable on the surface may, after a thorough investigation with reference to the plan, prove costly to both the future public interests and to committed private investment. Adherence to the policies developed in the plan therefore provides a means of protecting existing public and private investments and values.

The General Plan is a guide--a statement of official long-range policy. A zoning ordinance and map, by contrast, is a legislative device to regulate the use and development of privately owned land. No existing zoning provisions are changed by the plan unless and until appropriate amendments are legally enacted by the City Council or County Board of Commissioners. Zoning is one of the important legislative tools available to aid in implementing the plan. The greatest single problem between the plan and zoning activity is timing. Some areas suggested in the plan for different kinds of land uses can only be justified at some time in the future when sufficient population growth has occurred to warrant the development. All zoning amendments should be considered in relation to the General Plan, and this serves as one of the continuing means of evaluating the plan. If zoning amendments are contemplated which are contrary to the plan, the community should just amend the policies and concepts in the plan before the amendments are made. This

process assures that each proposal by a zoning amendment is considered in light of the best interests of the entire community.

The plan for Tillamook recommends appropriate uses for various areas and attempts to provide a maximum range of choice in the planning area within the limits of community living. If there is to be choice, various areas must be protected from intrusion of other uses which would limit or destroy the privacy of homes or the proper and economic functioning of areas of commerce or other special values. If there is to be choice which justifies a long-term investment in homes or business, areas must be set aside for different types of uses. If all uses are intermixed indiscriminately, there is, in fact, no safe choice for any individual kind of use.

The plan must be implemented if it is to be of value to the community. The difference between the plan as an empty gesture of community concern and the plan as a vital instrument of civic betterment hinges upon the involvement of both public and private sectors of the community in its realization. It involves extensive daily contact with public groups and individual citizens, the administration of appropriate codes and ordinances which influence development, capital-improvement programing for the expenditure of local governmental funds, and the continuing refinement of the plan in special circumstances, such as the community's central business district, park and recreation development, neighborhood subdivision design and site planning, and community appearance. The efforts applied in the continuing planning process extend the plan from the present to the future accomplishment of its goals and objectives.

The basic objective of the General Plan is that community efforts be directed toward improving the character and quality of urban development and at the same time encouraging and preserving the environmental qualities of the area as inducements to economic stability and growth. Care must be taken to see that future development in the community does not detract from its desirability as a residential area, nor from the unique quality of its environment. All that is necessary for both new development and natural beauty to flourish together is consideration of the mutual importance of each to the people of the community. The General Plan provides basic guidelines with which the community can chart a course for change with some assurance that the results will be progress. The benefits of community living that are enjoyed today are the result of what was done yesterday, and the benefits for future generations will result from what is done today.

In order to understand the scope of future requirements for land and facilities in the community, it is necessary to look ahead to the time when development requirements greatly exceed areas presently used for urban purposes. In this way, future needs for streets, schools, parks, and other facilities can be understood and steps taken at appropriate times to secure property for rights-of-way and sites for public facilities at the best location and at the greatest savings to the community. Some facilities such as water and sewer systems can be modified or enlarged as the area grows. However, once a desirable school or park site is developed for another use or a street alignment blocked or a right-of-way restricted by development, the cost of acquisition for public use most often becomes prohibitive, and a less expensive, less useful, and less desirable alternative must be found. Similar considerations also relate to private developments in the community. Premature, poorly located, unsightly, inappropriate commercial or industrial developments can retard the growth of residential areas, and, conversely, construction of residences in commercial or in industrial areas will adversely affect proper development of these vital districts. Again, only by looking ahead can the need for residential, commercial, and industrial land reasonably be anticipated. The General Plan inserted in the back of this report forecasts the many public and private land-use requirements for the Tillamook Area and will serve as a guide for the long-range development of the community.

GENERAL PRINCIPLES AND RECOMMENDATIONS

The following major principles and recommendations relate to the goals and objectives of the plan. In the body of the report these basic principles are further refined for each of the various elements of the plan.

Rivers and floodplains should be respected for both their assets and liabilities. Recreational access to rivers should be improved, and agricultural uses should be encouraged and retained in floodplain areas.

Agriculture and other open uses should be encouraged, protected, and preserved as uses capable of tolerating flooding and as vital elements of the local economic base.

Urban development should be encouraged in areas where services can be provided in a manner which will minimize tax costs related to necessary urban services such as schools, parks, highways, garbage disposal, police protection, fire protection, libraries, and other facilities and services. In areas subject to flooding, no new development should be permitted, and the removal of existing uses in more hazardous areas should be encouraged over a period of time.

Residential subdivisions should be located so that they are convenient to places of employment and shopping facilities, and they should be developed in ways which are consistent with the character of the topography and soils on the site. No new subdivisions or lot segregations should be permitted for residential development in areas subject to flooding.

Residential densities should offer a wide variety of housing types in locations best suited to each and should be developed in a way which will not create health or erosion hazards. Densities recommended on the plan should be recognized in order to maintain proper relationships between proposed public facilities and services and population distribution. Efforts should be made to bring about greater variety in residential areas through the use of such techniques as cluster subdivisions or planned unit developments.

Schools and parks should be located to best serve the anticipated population and provide maximum service for the greatest economy in terms of expenditure of tax dollars for both present and future residents.

Streets and highways should be located and constructed in a manner which will accommodate both current and future traffic needs. Highways and arterial streets should be located in an area where flood damage and maintenance problems can be minimized. Streets should be designed to maintain the character and quality of the area through which they pass. Local or minor streets should provide adequate access to each home site without encouraging unnecessary traffic through the area.

Sidewalks should be constructed on all urban lots to provide safe places for pedestrians, particularly children, to walk safely. In more rural areas, street rights-of-way should be of sufficient width to accommodate installation of sidewalks as they are needed.

Commercial facilities should be allocated in a reasonable amount and in a planned relationship to the people they will serve. Commercial facilities should be located in areas free from flooding, and those existing facilities within floodplains should be encouraged to relocate over a period of time. Efforts should be made to separate commercial and noncommercial uses through the use of walls, fences, or landscaping and open space.

Off-Street parking should be provided in adequate amounts so that traffic lanes of streets will not be unnecessarily congested by parked vehicles during peak hours. Parking lots should be surfaced and landscaped to make them attractive to use rather than being simply open, barren expanses of asphalt.

Industrial areas of the community should be located where necessary services can be provided. Industrial lands should be used by industries which will enhance the livability of the area and help to promote diversified economic growth.

Recreation sites should be obtained as soon as possible so that these open spaces will be preserved for the future. If recreation sites are not acquired in advance of need, the cost often becomes too great to be practical or the available properties may be too small to provide services that are desired.

Community appearance should become a major concern and the subject of a major effort in the area. Special attention should be given to the appearance of the community from the highways. Commercial, industrial, and residential developments with sen-

sitive design and landscaping can create an image of dignity and beauty consistent with the surrounding areas. Street tree planting and landscaping, sign regulations and building improvements, and painting programs will all contribute to an improved environment throughout the city.

THE GENERAL PLAN

The General Plan for the Tillamook area is a comprehensive plan. It includes more than 38 square miles of land and is a single plan which relates proposed land uses to each other both inside and outside of the city. The basic urban pattern projected on the General Plan has been influenced considerably by the existing development pattern and limitations imposed by natural features in the area.

There are many land uses in the plan, ranging from timbered hillsides to the complex urban uses in the City of Tillamook. The plan recommends appropriate uses for various areas and attempts to provide a maximum range of choice in the planning area within the limits of community living. If there is to be a range of choice, various areas must be guarded against the intrusion of other uses which would limit or destroy the privacy of homes or the proper and economic functioning of areas of commerce or industry. If there is to be a choice which justifies a long-term investment in homes or businesses, areas must be set aside for different types of uses. If all uses are intermixed, there is, in fact, no reasonable choice for any individual kind of use.

Land Use -

This land use plan provides basic guidelines with which the community can chart a course for change with some assurance that the result will be progress. This element of the General Plan proposes several classifications for land which were developed specifically to apply to the Tillamook urbanizing area. They relate to the existing land-use pattern, the physical characteristics of the area, and to estimates of requirements for land for various activities in the future.

Open Uses -

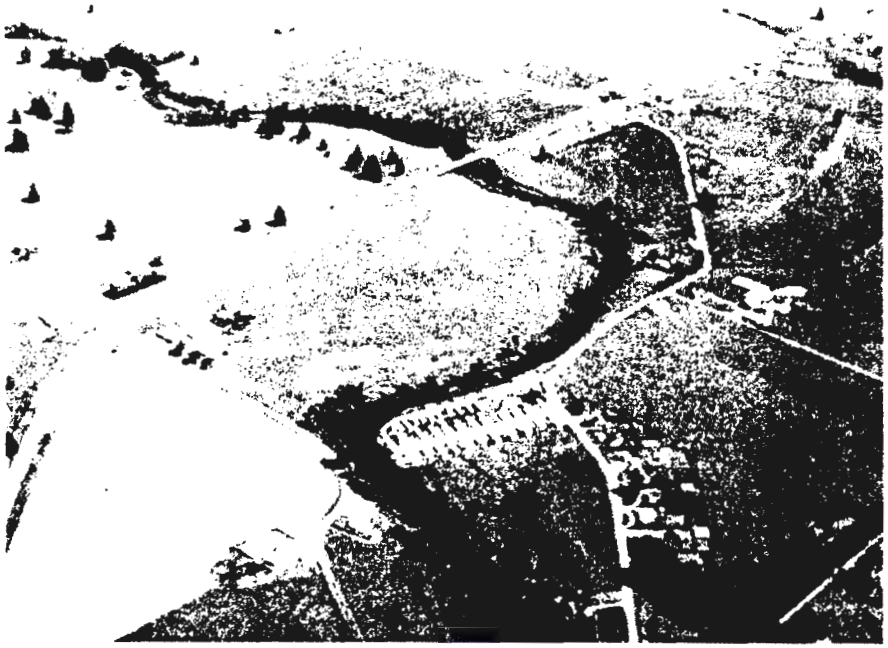
The General Plan recognizes three kinds of open land uses--open, wooded and farm. With two exceptions, open lands lie along streams and have rather severe physical limitations relating to their use, such as flooding, steep slopes, or poor soils. Two exceptions are immediately north of the developed sections of the City of Tillamook. One lies immediately north of the hospital adjacent to Hoquarton Slough and is currently being used as a dump site for miscellaneous building materials and other trash. This land could be used for recreation purposes or, if filled to raise the level above the flood line, may have some potential for residential development. The second area lies immediately north of Wilson River Highway east of the Southern Pacific tracks. It is presently being used as a quarry site for gravel and topsoil. Alternate uses here could be park and recreation or industrial. Any industrial use such as warehousing or extension of the power transformer yard would require filling to raise the level of the site above the floodplain. With the exception of these two sites, no development is recommended for the open land shown on the General Plan.

Most of the open wooded land in the planning area is found in the forested mountains to the north and east of the valley floor. This land should be retained in forest or recreational uses for watershed protection, scenic value, and the forestry resource. Other smaller wooded areas are scattered around the valley floor. Several have potential as future park sites, and others, which are located in areas subject to flooding, can be retained as interruptions in the otherwise open pasture landscape.

Agriculture -

Farmlands account for more area on the General Plan than any other kind of land use. At the present time most of this area is used for pasture with some significant beginnings in cash crops. Agriculture is a vital part of the local economy, and every effort should be made to preserve and encourage agricultural activity. Present trends indicate a promising future for cash crops to serve the Portland market, and, as times passes, it is probable that an increasing amount of farm land will be given over to this use.

Much of the land designated as farm is subject to periodic flooding from the Wilson, Trask and Tillamook rivers, and urbanization should be discouraged from these areas. The General Plan indicates certain locations with a symbol designated as special. These are areas where urban uses occur within the floodplain, and the symbol is a combination of farm and the present land use. North of the City of Tillamook along Highway 101, the special symbol indicates farm and commercial. Existing commercial uses in this area are subject to periodic flooding, and the plan recommends that over an extended period of time these uses be phased out and the land returned to agricultural activity. South of the city on Highway 101 and along the Trask River, the special areas are combinations of farm and residential uses. Again, these areas are subject to flooding, and the General Plan recommends that, over an extended period of time, these uses be phased out and the land returned to an agricultural activity.



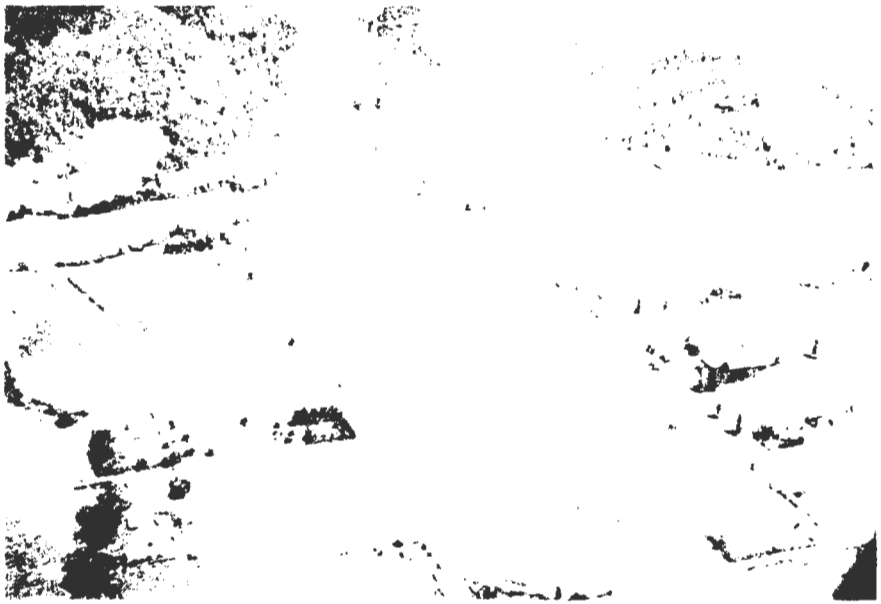
Farm and residential uses south of City along Trask River and Gienger Road. View southeast. July 1971.



Farm and residential uses in same area during winter floods. View southwest. Winter 1971-72.

The basic concept underlying the farm element of the plan is that prime agricultural land is an irreplaceable natural resource. Once extensively developed for urban uses, it is lost forever as agricultural land. Unlike many other uses, it cannot easily be reclaimed as prime farm land by removing the buildings and peeling back the asphalt. In those areas designated as special, development at this time is relatively limited, and they could be returned to pasture use without too much difficulty. It is strongly recommended that no additional development be permitted within these areas.

One of the basic problems is that most lands which are good for agricultural use are also well-suited for other kinds of develop-



Residential subdivisions in agricultural areas east of the City. View east. July 1971

ments. Generally speaking, the most fertile soils are easily developed and are also well-suited to individual septic systems which increases their general desirability for other kinds of uses and places strong economic pressures on agricultural areas. This is and will continue to be true of the areas located on the higher ground east of the present City of Tillamook. An examination of the land-use map indicates a scattering of residential subdivisions within areas which are considered to be good for agricultural use. This kind of development should be discouraged in the future, and urbanization should occur in an orderly extension outward from the present urban center.

In addition to the actual removal of agricultural land through development, it can sometimes be removed from productivity without being developed for another use. Increasing land values and subdivision of agricultural properties which reduce ownerships to a size less than enough to function as farm units can effectively remove land from use without development. It can also be lost as agricultural land by the intrusion of incompatible uses into farm areas. Pockets of small-lot residential subdivisions, such as those described in the paragraph above, are not compatible with agricultural land uses. These are essentially single-family residential lots, and such development scattered in agricultural areas tends to raise values of adjacent farm lands and to increase the farmer's property taxes. In addition, agricultural spraying, the keeping of large numbers of animals, irrigation, and other farm activities often create use conflicts between these essentially urban residential subdivisions and the farm use and restrict reasonable farm practices. These kinds of use conflicts increase with time and with the number of residential lots created in the agricultural area.

Preservation of agricultural land can also serve as a means of retaining productive open space in the area as urbanization continues to increase in the future. It provies a reasonable land use for areas subject to flooding along the Wilson, Trask and Tillamook rivers. It will also serve to tend to direct residential uses into more compact urban forms where community water and sewer services can be provided most economically and efficiently.

It is recommended that agricultural land be considered as an irreplaceable natural resource and that concerted community effort be made to protect it as a basic element of the local economy. Further, agricultural lands should be protected against intrusion by urban uses which would tend to adversely affect farming activities, and the county should seek ways and means of relieving pressure on agricultural lands by encouraging development elsewhere through zoning, or by providing community services, or by legislative means such as tax differentials or other inducements. Agriculture is the most reasonable use of land in areas subject to rather severe periodic flooding and should be retained until such time as this condition changes.

Residential Areas (including the Housing Element) -

A major objective of this General Plan is to establish residential

areas that are safe, convenient, healthful, and attractive places to live and will provide a maximum range of residential choice for the people in the planning area. The development of desirable residential areas applies to maintaining or improving existing districts as much as to proper development of new sections. The General Plan indicates residential land uses in terms of housing densities and establishes four ranges of residential densities for the Tillamook area.

The term "density" describes the quantity or area of land per dwelling unit regardless of housing type. A ten acre track of land may contain ten separate single-family homes, or it may contain one ten-unit apartment building. In either case, density is one dwelling unit per gross acre. Density is the basic unit of measurement in determining future requirements relating to the number of schools and parks, the capacity of water and sewer systems, the volume of traffic on streets, the size and amount of shopping and service commercial facilities, and the number of electrical power and telephone connections. Once the several densities have been agreed upon, indiscriminate changes of or within areas can cause serious imbalance in the services and facilities mentioned above. The results can be seen in scores of communities across the land--overcrowded schools with no undeveloped land available for open space or expansion of facilities or on which to build a second school. Sewer systems are overloaded, water systems undersized, and traffic congests streets which are loaded far in excess of their original design capacity.

In years to come, there may be valid reasons to increase or decrease densities that are established on the plan. However, such change should include a complete and comprehensive analysis of what the effects of change will be on other vital elements of the city and on the very livability of the community.

The several residential classifications are intended to guide density but in the process, to encourage a variety of housing types. The ten acre example above, resulting in one dwelling unit per gross acre density, is a case in point. Another example could be a five acre parcel of property located in the 2.5 to 7.4 density range. The plan would permit a typical lot size of 5,000 square feet per dwelling unit. Five acres of land reduced to square footage terms is 217,800 square feet (5 x 43,560). If the five acres were subdivided into conventional 5,000 square-foot lots, approximately 25 percent of the gross area would be developed into streets. This would result in approximately 54,500 square feet of the original 217,800 being "lost" to streets. The net area would be 163,300 square feet of land available for houses (217,800 - 54,500) or 32 lots at 5,103 square feet each.

If on the other hand, the five acres were not subdivided but developed in a single building (or several buildings) utilizing a condominium concept, the entire 217,800 original square feet could be mathematically divided by 5,000 to yield a dwelling unit count of 43 (217,800 divided by 5,000), a gain of 11 units over the conventional approach. The latter example assumes that the property is accessible to adequate roads where land for additional streets would not be required. Either of these examples would be consistent with the General Plan. The latter would preserve a larger area in open space and would lend a new visual dimension to the city. As the area grows, it will be possible to develop and at the same time retain positive, well maintained open space for variety and relief from stereotyped development patterns. This can be extremely beneficial in the Tillamook area because of the anticipated long, narrow urban form which will occur as the area above the floodplain develops.

The residential density categories established in this plan are as follows:

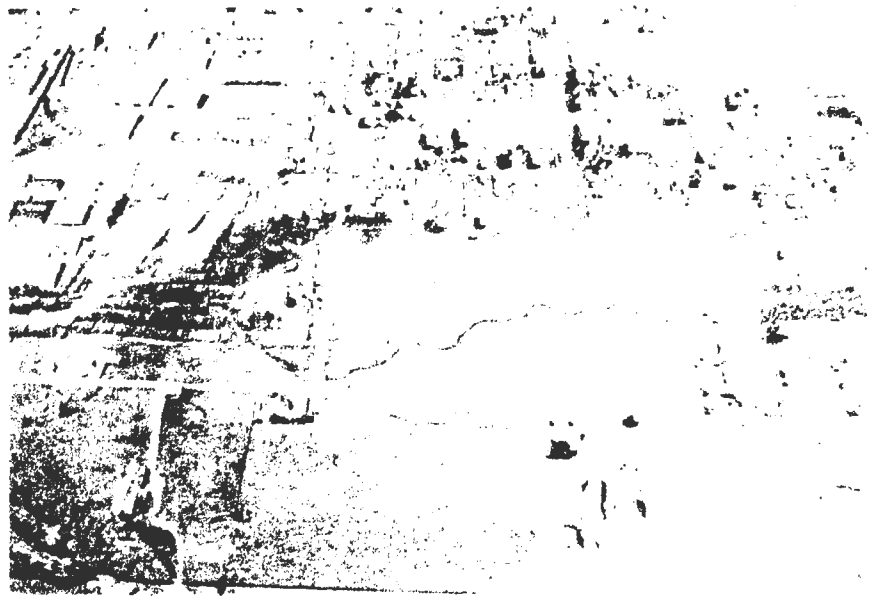
Density Dwellings per Gross Acre	Net Area Per Dwelling Unit in Square Feet
0.1 to 1.0	Acreage to 40,000
1.1 to 2.4	39,999 to 15,000
2.5 to 4.4	14,999 to 7,500
4.5 to 14.0	7,499 to 2,500

The net area per dwelling unit is determined by reducing gross acreage by the percentage which will be required for streets.

The total residential land designated on the General Plan has an estimated population holding capacity of about 15,000 persons or approximately two and a half times the present population. This is considerably in excess of the anticipated growth by 1990 and should provide ample areas for development. To a large degree, housing densities recommended on the General Plan recognize existing development patterns. An examination of the General Plan indicates that nearly all residential areas developed to urban standards are recommended west of the proposed realignment of U.S. Highway 101. The higher densities, 4,500 to 7,400 square feet per dwelling unit, are recommended in the western part of the area, which includes the present City of Tillamook, and on additional land extending along the old and new Wilson River highways. It is anticipated that new residential growth in this area east of the railroad tracks will occur on lot sizes ranging from 6,000 to 7,500 square feet in area. From Old Wilson River Highway, south to Marolf Loop Road between the industrial area and the proposed realignment for U.S. 101, residential densities of 7,500 to 14,900 square feet per dwelling unit are recommended. It is anticipated that much of this development will occur on lots ranging from 8,000 to 12,000 square feet in area.

South of Marolf Loop Road and east of the proposed highway realignment, most of the housing densities are forecast at from 15,000 square feet to one acre in area. The plan also recognizes existing subdivisions in this area which have lot sizes ranging between 7,500 and 15,000 square feet. However, no additional development of this kind is recommended east of the proposed highway realignment.

Some housing densities east of Evergreen Drive and south of Alder Lane now occur in the range of 20,000 to 40,000 square feet of lot area. Plates 5 and 6 show a proposed resubdivision pattern for these areas. Plate 5 indicates conditions as they exist today in terms of development and ownership patterns, and Plate 6 shows a proposed resubdivision. These two plates illustrate some of the problems which occur when ultimate housing densities are not envisioned at the time of subdivision. By sensible preplanning of the original large lot subdivisions in conformity with future housing densities, the transition from



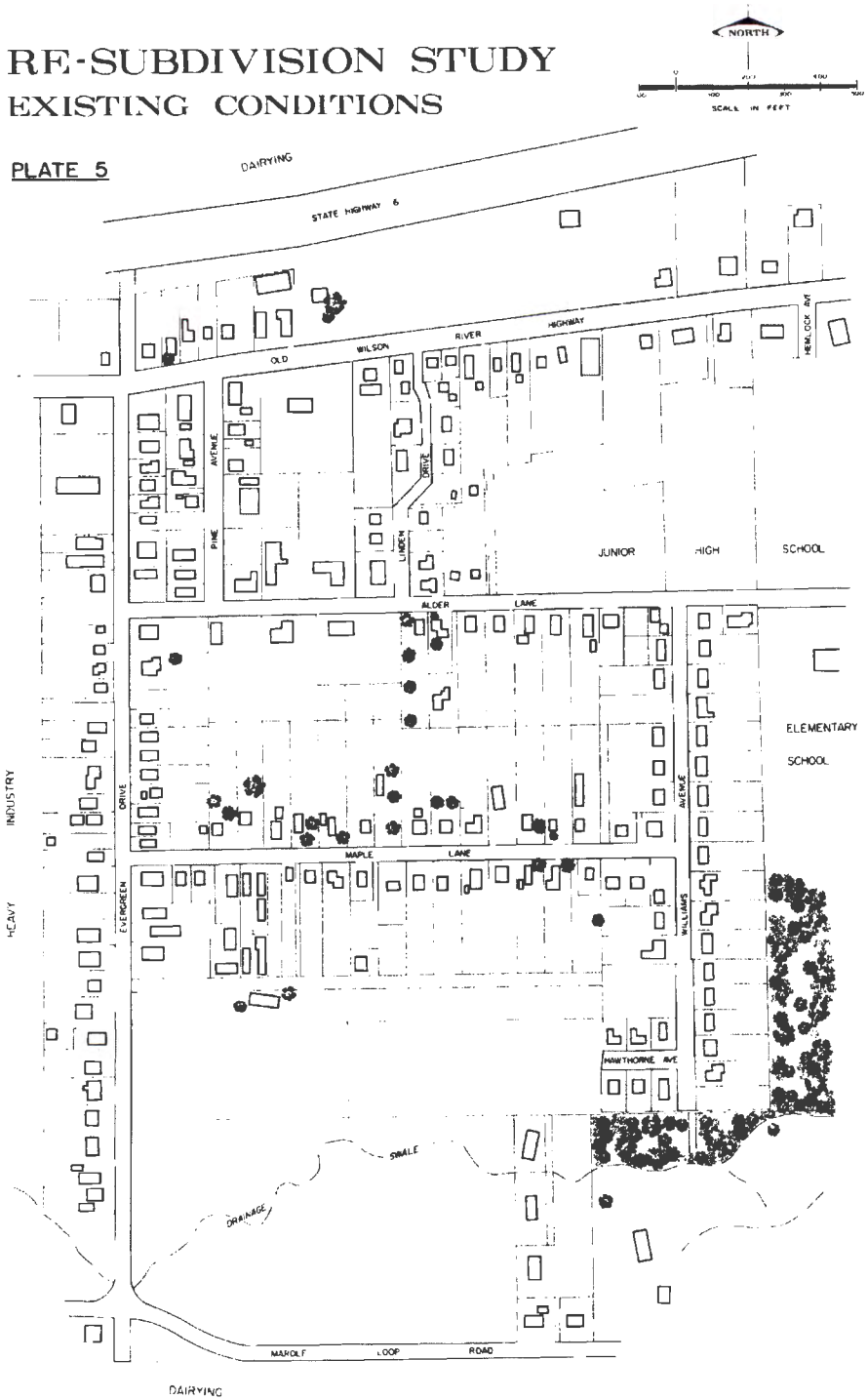
Resubdivision study area shown on Plates 5 and 6. View north. July 1971.

large lots to smaller lots can be made easily and profitably for the property owners.

The low density or rural residential areas with lot sizes of one acre or over are located along the foothills in the northern and eastern parts of the planning area. Again, these General Plan locations generally recognize existing development patterns. Most of these areas are located so as to have a minimum conflict with agricultural uses, and all are above the 1964 flood line. However, some of these large-lot developments located in the southeast part of the planning area can conflict with agricultural activity. Further segregation of these properties into smaller lots should be discouraged in order to minimize this kind of conflict. In addition, large residential lots strung along existing county roads should be discouraged in order to minimize conflicts between residential and agricultural land uses.

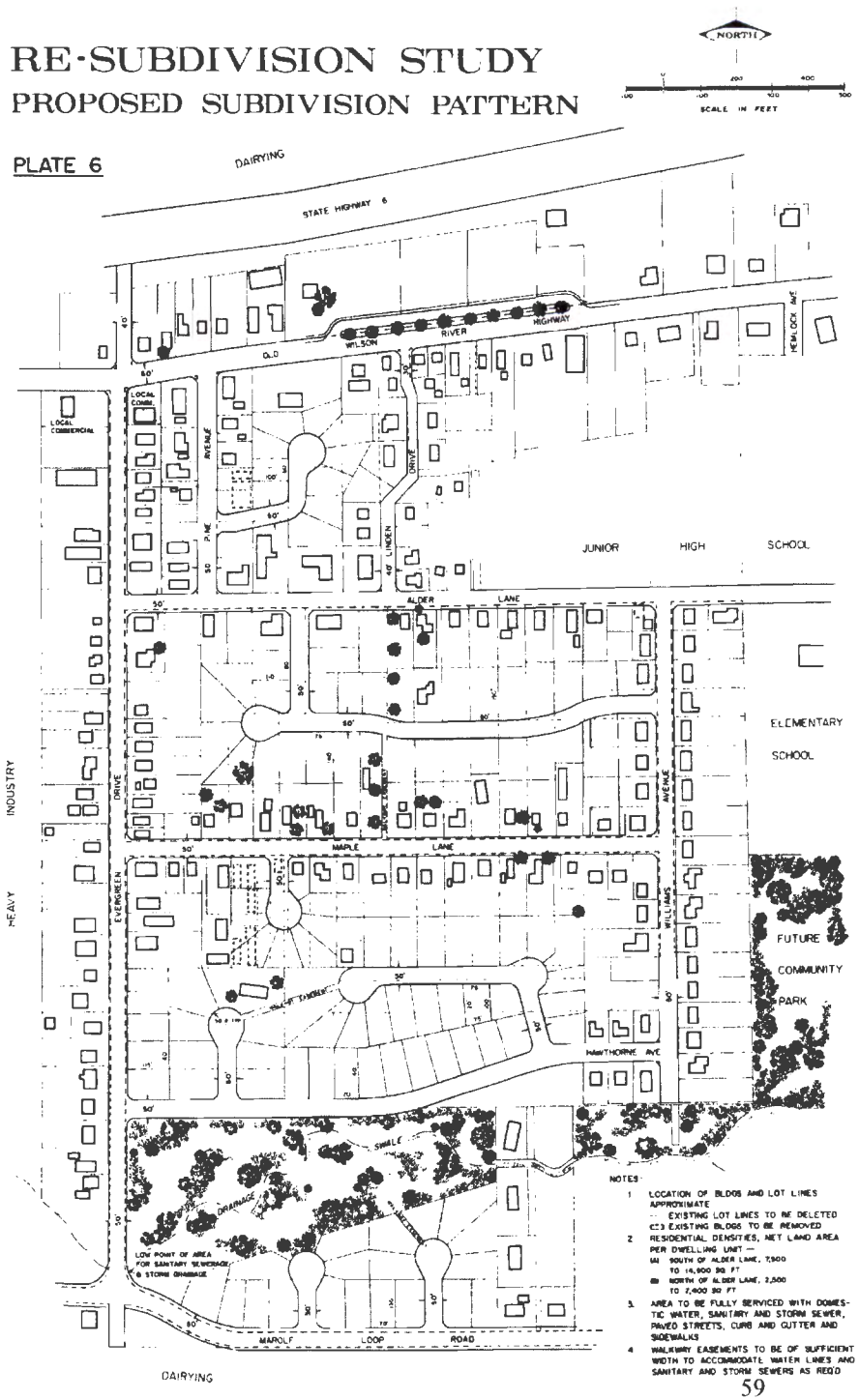
RE-SUBDIVISION STUDY
EXISTING CONDITIONS

PLATE 5



RE-SUBDIVISION STUDY
PROPOSED SUBDIVISION PATTERN

PLATE 6



NOTES

1. LOCATION OF BLDGS AND LOT LINES APPROXIMATE
   - EXISTING LOT LINES TO BE DELETED
   - EXISTING BLDGS TO BE REMOVED
2. RESIDENTIAL DENSITIES, NET LAND AREA PER DWELLING UNIT —
   (a) SOUTH OF ALDER LANE, 7,500 TO 14,000 SQ FT
   (b) NORTH OF ALDER LANE, 2,500 TO 7,400 SQ FT
3. AREA TO BE FULLY SERVICED WITH DOMESTIC WATER, SANITARY AND STORM SEWER, PAVED STREETS, CURB AND GUTTER AND SIDEWALKS
4. WALKWAY EASEMENTS TO BE OF SUFFICIENT WIDTH TO ACCOMMODATE WATER LINES AND SANITARY AND STORM SEWERS AS REQD

The residential areas indicated on the General Plan are sufficient to accommodate population growth anticipated by 1990. The plan clearly indicates that new development should be concentrated south of Wilson River Highway and west of the proposed realignment for U.S. 101. In this way, it will be possible to encourage orderly expansion of residential areas outward from the existing urban center, and, by concentrating development, it will be possible to provide urban services such as water and sewer, police and fire protection, and schools and parks in a most efficient and economic manner. It will also place new development in areas free from flood hazard and reduce the dangers to the public health and safety as well as reduce the tremendous costs resulting from the frequent flooding of developed areas.

The Housing Element of the plan consists of a program to provide all people of the planning area with decent, safe, and sanitary housing. During August of 1971, the city's planning consultants, as part of their research work leading up to this plan, conducted a housing inventory, including a condition of housing survey. The results are summarized in Table 4. At the time of the survey, there were 1,368 dwelling units located in 1,168 structures (not including trailers) within the City of Tillamook. Of this structural unit total, 671 of 57.4% were substandard in some respect. At the same time, the remainder of the planning area outside of the city had 883 structural units (not including trailers) of which 387 or 43.8% were substandard in some respect. In addition, the area outside the city contained 156 mobile homes which amounted to about 15 percent of the total housing inventory. Generally speaking, the lower percentage of housing units with deficiencies outside of the city is accounted for by the fact that much of the recent growth in the area has occurred outside of the city.

The close-in older areas of the City of Tillamook contain a high percentage of substandard structures. It is strongly recommended that the city and the county develop urban renewal programs to attack the problem of substandard housing by securing federal financial assistance to aid the families now living in these structures. The Federal Department of Housing and Urban Development (HUD), utilizing provisions of the Housing Act of 1949, as amended, is the only practical method to use to assist in this process. Oregon Revised Statutes (ORS) Chapter 457 is the state enabling law that permits such local government action. It appears at this time that the HUD Neighborhood Development Program (NDP) is the most appropriate federally assisted program available to aid the city in its goal of housing all of its citizens in decent, safe, and sanitary housing which is within their abilities to finance. The use of federally funded programs does not necessarily mean clearance of the area. In many cases, existing dwelling units can be rehabilitated without the need of displacing people from their homes. These federal programs should be explored to determine the most appropriate course of action to rehabilitate older sections of the city.

Commercial Areas -

Commercial areas designated on the plan recognize the existing central business district and indicate recommendations relating to relocating outlying commercial areas. The plan recommends that the highway and automobile-oriented strip on U.S. 101 north of the city be relocated in part in the central area but primarily along the south side of Wilson River Highway west of the proposed realignment for U.S. 101.

One of the most difficult problems in the planning process is the allocation and regulation of commercial land uses. Most areas are reluctant to limit locations for business use for fear of discouraging competition and growth. This attitude is also based on a desire to allow each individual the opportunity to realize maximum gains from his property. However, time and experience have proven that this concept yields uncertainty, mixed land uses, and development patterns which are so unstable as to threaten all investments. In fact, zoning as it exists today has resulted from abuses of complete freedom of land use which have ultimately endangered life, health, and property values in many areas.

It is not the intent of the General Plan to limit commercial activity, but rather to direct it into areas where it can develop harmoniously with the rest of the community. The plan proposes relationships between commercial uses and other elements of the community which can be achieved with minimum conflicts among



Commercial area along U.S. 101 north of Hoquarton Slough. View north. July 1971



Commercial area on west side of U.S. 101 north of Hoquarton Slough. View north. Winter of 1971-72.

uses. The responsibility for land-use decisions rests with the City Council and the County Commissioners, and the careful use of this authority will make the entire community more attractive and economically sound.

The most important recommendation for future commercial development relates to the relocation of those existing uses now found along U.S. 101 north of the city. It is not anticipated that such relocation will occur quickly, nor is it intended that these uses be penalized because of their present location. However, no existing uses should expand and thereby prolong their life at this location, nor should any new commercial development occur in these areas. The frequent flooding which occurs along this stretch of U.S. 101 constitutes a very real health and safety problem, and the periodic damage results in a needless economic loss to the community in general. In addition, the proposed relocation of U.S. 101 east of the City of Tillamook will make these sites less attractive for highway or auto-oriented commercial activity. The General Plan recommends that these uses locate elsewhere in the urban area on the higher ground, partly

in the central business district, but mostly on the south side of Wilson River Highway west of the proposed new alignment for U.S. 101.

A substantial amount of new commercial area is designated on the General Plan between the old and new Wilson River highways and between Wilson River Loop Road and the proposed realignment of U.S. 101. There is sufficient acreage in this area to accommodate anticipated tourist commercial development, a community shopping center, new growth in auto and highway-oriented uses, and most of the uses now located along U.S. 101 north of the city. With the exception of the relocation of commercial uses in areas designated as special on the general plan, commercial development in this eastern part of the urban area should not take place until such time as the north-south highway is realigned. Relocation of existing commercial uses could take place at any time, preferably in the area between Wilson River Loop Road and McCormack Road. In the event that the realignment of U.S. 101 does not occur in the manner shown on the General Plan, commercial uses indicated as suitable for this area should be reconsidered in light of the different alignment.

As the area grows, there will be a need for additional retail shopping facilities. An area is designated on the north side of Old Wilson River Highway west of Circle Drive for a community shopping center. Such a shopping center would have as its principal tenant a major supermarket and would provide convenience shopping for people in the eastern part of the planning area.

All new commercial developments in the eastern part of the planning area should recognize the environment in which they are located. The city and county should establish development standards relating to setbacks, signs, and landscaping so that new commercial uses will not detract unnecessarily from surrounding areas. This is particularly true along Old Wilson River Highway where commercial development is suggested across the street from residential uses. On New Wilson River Highway and along the proposed new alignment for U.S. 101, commercial developments should recognize that they will be at the entrance to the city and that they should present a pleasant and attractive face to the traveler.

The largest concentration of business and professional offices is located on either side of Third Street near the hospital. It is anticipated that medical offices will constitute the principal uses at this location in the future and that most other business and professional offices will locate in the central area.

Tourist or recreation-oriented commercial activities are suggested at two basic locations in the planning area, one in the north near the cheese factory and a second in the commercial area along the south side of Wilson River Highway in the eastern part of the urban area. With the exception of the travel-trailer park at the extreme northern limit of the planning area, the other tourist-commercial areas are intended to suggest desirable locations for motels, restaurants, or other commercial activities oriented toward the traveling public. The two small recreation tourist areas on Netarts Highway west of the city will continue to be oriented toward the sportsman.

The Tillamook central business district represents the historic center of activity for the community and is the heart of the entire area. It is very important to recognize the significance of this center for business, governmental, and social life in the planning area. Although new commercial development has taken place on the highway north of the city, the downtown area still has the largest concentration of retail and service commercial uses in the area. However, recent construction of a large retail outlet to the north and the proposed realignment of U.S. 101 to the east raise a serious question as to how long the central area will remain the heart of the community.

Downtown Tillamook suffers from the same kinds of problems as experienced by most central areas. Heavy truck traffic passing through the area, congestion, interruptions to easy pedestrian movement, obsolete buildings, inadequate off-street parking, and multiplicity of ownerships and interests which complicate cooperation are all assisting in the gradual deterioration of the central business district. These complex and difficult problems are beyond the scope of a general plan. However, it is safe to say that the central area will continue to decline until such time

as property owners, merchants, and the city work together to retain downtown as the heart of the community. It is recommended that a specific plan be prepared in cooperation with all interest groups for the revitalization of the central business district. In addition, various kinds of federal urban renewal funding should be explored as a means of assisting the city financially in redeveloping its core area.



Downtown Tillamook with Courthouse in left center of photo. View south. July 1971

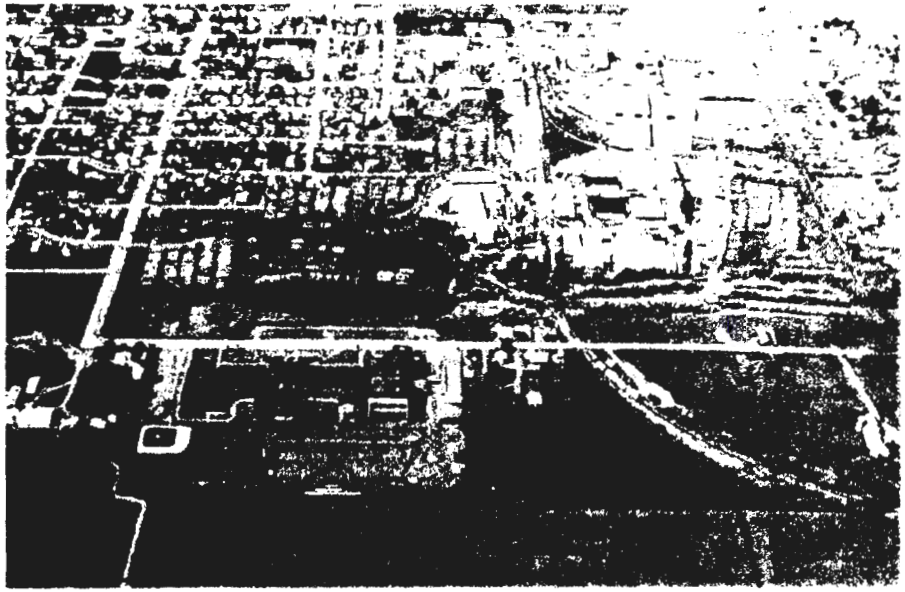
The General Plan indicates considerably more area for commercial development than exists at the present time. All of the area shown on the plan should not be zoned at the present time, and the addition of commercial zoning should bear some relationship to growth in the community. It should also be related to changing conditions such as relocation of commercial uses in areas subject to flooding or construction of the new alignment for U.S. 101. The amount of new commercial development which can be expected to take place in the central business district will depend upon that area's ability to provide well-located, attractive sites for new or relocated businesses. If concerted action is taken by central business district interests, much of the new commercial growth can be captured by that area, which will reduce the amount of land needed on the south side of Wilson River Highway to accommodate new or relocated commercial development. The time available for the community to act is limited, and, if downtown Tillamook is to remain a center of Tillamook County, efforts to upgrade the area must begin at the earliest possible date.

Two small local shopping facilities are shown on the plan east and south of the fairgrounds. These small commercial areas are intended to serve the daily needs of people living in the area. Additional small developments may be warranted elsewhere as the area urbanizes but are not indicated on the plan.

Industrial Areas -

Most of the industrial land on the General Plan is in the same location as at the present time. The major sites are along the Southern Pacific tracks and are in areas free from flooding. It is recommended that new industrial development be encouraged to locate on the old Naval Air Station site where there is ample land well-suited to industrial development. After relocation of U.S. 101, it will have excellent highway access from the residential sections of the community.

A major industrial use in the city, the Publishers Paper Company, now operates on a site which is confined by a residential development. Expansion of this site would be difficult and expensive, and, for this reason, this operation may seek a location elsewhere in the community in the future. Should this happen, the reuse of the property becomes a major concern for the people of Tillamook. The General Plan suggests that the property be redeveloped for residential use at housing densities compatible with those which exist on either side of the site at the present time.



Publishers Paper Company in central Tillamook. View north. July 1971

However, it may be desirable to seek a new industrial development which would be compatible with adjacent residential areas, particularly east of the railroad tracks. An industrial park with adequate development standards including setbacks, landscaping, and performance standards might be an excellent reuse of this property. If agriculture continues to diversify, food processing plants may seek sites in the Tillamook area and could be considered an appropriate use in an industrial park at this location. Such a use would create considerable employment at a location which establishes an excellent home-to-work relationship for employees. Finally, reuse of this property for industrial development would help sustain the city's tax base.

The development of well-located industrial areas is vital to the future of the community. Industrial developments should be encouraged to locate only in those areas free from flooding. They should be protected from incompatible commercial or residential uses which interfere with industrial operations. Efforts should be made to improve the appearance of industrial areas so that they do not detract unduly from the tourist potential of the area. All industry should be encouraged to abate air and water pollution sources in order to improve the general livability of the community.

Public Facilities -

Public facilities are those areas and improvements which accommodate or provide various governmental services to the people of the community. These include schools, parks, fire stations, and other facilities such as public buildings, libraries, shop areas, and solid waste disposal sites. Adequate public facilities are essential to well-ordered community life, sustaining and enhancing health, safety, and education and recreational aspects of urban living. In many ways the adequacy, character, and quality of public facilities express the community's collective opinion of itself and its environment.

Schools -

Identifying the location of public schools is an important function of the General Plan. The need for new schools is closely related to residential development and housing densities in the community. It is possible, therefore, to estimate the number of school-age children for each type of school which will be required to serve anticipated residential developments in various sections of the planning area. It is extremely important that schools be located with reference to the development pattern indicated on the General Plan. Elementary schools in particular can have a significant influence on the location or direction of growth in any given area and will in themselves attract residential development. They should be centrally located with reference to the service area and space in a way that will provide reasonable locations for future schools as the area continues to urbanize. The responsibility for providing schools rests with the local school district, and the purpose of the General Plan is to recommend a comprehensive plan for location of various types of schools consistent with anticipated development patterns.

Population forecasts and housing densities indicate that there will be approximately 2,060 elementary school children in the planning area by 1990. At present, there are four elementary schools and one primary school in the planning area. The General Plan recommends that Liberty, Wilson, and East elementary schools be retained as part of the school system and that South Prairie Elementary and Fairview Primary be phased out of use. To accommodate the projected elementary school enrollment, Liberty and Wilson schools would be used at their present capacities. East Elementary would be expanded to accommodate 600 students, and an additional school with an enrollment capacity of 600 students would be needed just east of McCormack Road. This combination of school facilities would provide for approximately 1,575 elementary school students, an increase of more than 500 over the September 30, 1971, elementary school enrollment. This should accommodate growth in the community for several years. The two schools recommended for an enrollment capacity of 600 students are intended to simplify long-range enrollment requirements. If the schools are properly designed, classrooms can be added as needed and the entire facility need not be constructed at the outset. From the long-range point of view, there will probably be a need for two additional elementary schools east of the proposed U.S. 101 alignment. Care should be taken to see that these schools are located so that each will have an effective service area as the section beyond the proposed highway urbanizes in the future.

The junior and senior high schools will be adequate for many years in the future, and no additional junior or senior high schools are anticipated. However, as enrollment increases in the senior high school, the site should be expanded, and adjacent undeveloped property can be acquired for this purpose.

An alternate course of action open to the city relating to the industrial development in the center of the urban area can affect future school requirements. If the present large industrial use should move, and if the area develops for residential purposes, an elementary school site should be acquired and developed in the area. A site at this location would replace Wilson School and would eliminate the need for one elementary school east of the freeway in the long-range requirements. However, if this industrial land does not develop for residential purposes, the two schools east of the proposed U.S. 101 will be required. It should be understood that these school projections are long-range requirements and that all of the schools discussed in this plan will not be needed for many years.

Parks -

Throughout the northwest, development of parks and recreation facilities has become increasingly important in recent years. The demand for these facilities has been brought about in part by a higher standard of living and the resulting increase in leisure time. Such things as shorter work weeks, earlier retirement, and increasing life span have added many leisure hours to the lives of a growing segment of the population.

As areas urbanize, park development becomes increasingly important. The results of urbanization in terms of congestion, dirt, and noise create a greater awareness of need for breaks or open space in the urban environment. There has been a growing recognition that an adequate park and recreation system will contribute to the physical, mental and moral health of the community and that it can also be a very real source of community pride.

As features in the urban landscape, parks will improve the character of existing neighborhoods and tend to stabilize property values. Many businesses and industries seek locations with a high level of environmental quality as a means of increasing their ability to attract and retain a stable and productive work force. With improvement of transportation systems, giving greater flexibility for business and industrial site selection, a well-developed park and recreation system can be an important factor in attracting such developments to the community.

The General Plan makes two major recommendations relating to future parks in the planning area, a park chain along the south side of the proposed urban area and a regional park on the east side of the old Naval Air Station property. Much of the land included in both recommendations is now in public ownership or is land with some limitation for urban development.



County Fairgrounds with wooded area recommended for park development. View east. July 1971.

The park chain begins east of the proposed U.S. 101 alignment with a 68 acre wooded hillside site. Much of this site could remain natural with developments such as viewpoints or picnic areas in appropriate spots on the south facing slope. This park is connected to others in the chain by a bicycle, pedestrian, equestrian trail which follows a watercourse westward. The trail meets a small park north of the proposed new elementary school just east of McCormack Road and continues on to the County Fairgrounds. The wooded areas in the southwestern part of the County Fairgrounds site are included in the proposed park chain, and active recreation facilities could be developed on other parts of the fairgrounds property in a manner which would not interfere with County Fair activities. The next major area of park development lies west of the northern section of Marolf Loop Road and includes most of the heavily wooded land north of the natural drainage course. It also includes the wooded sections of the East Elementary School property. The park continues westward along the north side of the watercourse to the intersection of Marolf Loop Road and Evergreen Drive. These three park areas within the urban section of the planning area can offer a wide variety of recreational opportunities to the people of the community. Various sections could provide sites for active recreational facilities, such as playgrounds or playfields, and other parts could be left in a more or less natural state. A specific park plan prepared by a qualified consultant in the field should be prepared before development of this area takes place. The natural watercourse which unites the park system continues westerly into the industrial property. In the event that the latter use should change and be converted to residential developments or an industrial park, trails should continue along either side of the watercourse to the high school site. Trail development should then continue through the high school site to connect with the small parks at the beginning of the one-way couplet system for the existing highway.

The watercourse along which the trail is recommended is a natural drainage feature which serves the east side of the community and will approximate the future location of any major sewer line in this area. Because of these functions, this drainage channel can be converted into a community asset by developing a trail alongside. Storm drainage easements or sewer easements will be necessary to protect any improvements in the area, and the trail system could be developed within the confines of these easements. The development of this park chain along the connecting trail can become an outstanding feature in the community. It will tend to encourage new development into adjacent areas and will have a positive and stabilizing effect on the area's residential land value.

A major regional park is recommended on the east side of the old Naval Air Station property. The entire site is now in public ownership, and therefore acquisition should not be a problem. This forested property has varied terrain and could easily be provided with a good water supply and with electric power. A park at this site could provide extensive facilities for picnicking, camping, or nature study and could be developed either as a county or state facility. Improvement of this regional park site should be viewed as a long-range effort.

Other recommendations on the General Plan include a park located along the south side of Hoquarton Slough and a roadside rest area south of Wilson River Highway east of proposed U.S. 101. The park along Hoquarton Slough extends from the main Southern Pacific Railroad tracks westerly along the spur track and Front Street to an extension of Douglas Avenue. This park assumes the removal of the spur track and could be developed into a site for picnic areas and marina facilities. Public boat launching facilities could also be enlarged. The roadside rest east of Highway 101 can serve as an inducement for tourists to pause in Tillamook. A tasteful display of points of interest and recreation opportunities in the immediate vicinity could serve as a means of introducing the community to the traveling public.

In the future, as the area urbanizes east of proposed U.S. 101, parks should be considered adjacent to any required schools. This is an efficient and economic way of providing useful recreation space which takes advantage of the school playground development. Both the school and park functions benefit from the school-park relationship.

Fire Stations -

The General Plan recommends three fire stations, one in the central business district, a second on the south side of Old Wilson River Highway near the proposed U.S. 101, and a third in the industrial area on the old Naval Air Station property. It is anticipated that the present fire station in the central business district can be used for many years to come. As additional development occurs in the eastern part of the urban section of the planning area, additional fire protection will be needed. Industrial development at the airport will benefit from a fire station at that location.

Fire protection inside and outside of the city should be considered as a single problem and approached from that point of view. Station sites should be selected in conformance with fire underwriter standards which are set forth below.

Maximum Distances for First Engine and Ladder Companies:

Types of Area Served	Under 22,000		Over 22,000 to 95,000	
	Engine Company	Ladder Company	Engine Company	Ladder Company
High Value, Major Commercial and Industrial Districts	1-1/2 miles	2 miles	1 mile	1-1/4 miles
High Density Residential and Apartment Districts	1-1/2 miles	2 miles	1-1/2 miles	2 miles
Where life hazard is above normal	1 mile	1-1/4 miles	1 mile	1-1/4 miles
Single-Family Residential	2 miles	3 miles	2 miles	3 miles
Low Density District, average distance between homes exceeds 100 feet	4 miles	4 miles	4 miles	4 miles

Communities under 22,000 require fire flow (water) of approximately 4,500 gallons per minute.
Communities over 22,000 require fire flow (water) of between 4,500 and 9,000 gallons per minute.

The need for additional fire protection will be determined to a large degree by the rate of growth. It may be many years before either of the two stations are required, but, as with other public facilities, the sites should be acquired in advance of need so that the best location is available to serve the public.

Other Public Facilities -

Other public facilities considered in the plan are government offices, shops and yards, and the airport. The General Plan indicates most government buildings in the same location which they occupy today. However, a special analysis should be made to determine the feasibility of gathering government buildings into a center located around or near the present County Courthouse. This study should be performed as part of an analysis of the entire central area. Grouping together of public buildings can provide a real convenience to the public, can simplify coordination and cooperation between governmental agencies, and can become an architectural highlight in the downtown area.

No specific locations have been recommended for city, county, or state maintenance yards and shops. These facilities should be located in industrial or heavy commercial areas in a manner in which they will not interfere with commercial or industrial activities or adversely affect any abutting or adjacent residential uses.

The airport has been a subject of study by the Oregon State Board of Aeronautics, and that plan is available for public review. However, in the process of examining the availability of industrial land in the Tillamook area, a question was raised in the mind of the Consultants relating to the future runway located along the west side of the airport. It may be advisable for the community to re-examine the airport plan in terms of this runway in order to determine whether the best interests of the community would be served by an additional runway or whether that land would prove more beneficial if designated and set aside as future industrial property. Any industrial development in that area would necessarily have to respect clear zones and approach zones for the airport runway. Even under these circumstances, a significant amount of land would be available for future industrial development.

Circulation -

The circulation element of the plan sets forth a system of streets and roads necessary to move people and goods safely and conveniently within the planning area at the level of development proposed on the General Plan. The circulation system is shown on the General Plan map. The type of street, arterial, collector, or local, is symbolized by line weight.

The circulation element of the plan designates the north-south and east-west highways as arterial streets. It is recommended that these highways be constructed as five-lane routes with four 14 foot moving lanes and left-turn pockets. In between the areas for turning movements, a landscaped median strip should be installed. These development standards should be possible on nearly all of the proposed realignment of U.S. Highway 101. However, there will be sections of State highways 131 and 6 where existing right-of-way and roadside development will not permit these improvement standards. In these areas efforts should be made to secure at least four moving lanes with left-turn pockets at the more congested intersections.

A network of major collector streets is indicated on the plan. The recommended design standard for major collector streets is four 12 foot moving lanes with left-turn pockets only at the more congested intersections. Collector streets are intended to move traffic within commercial, industrial, and residential areas to the arterial street network. Minor collectors have also been designated on the plan. The recommended design standard for minor collector streets is two 14 foot moving lanes. These minor collectors interconnect major collectors or arterials, or are the more important county roads through rural areas.

The major recommendation in the circulation element of the plan is the realignment of U.S. Highway 101. A rerouting of this highway is recommended in order to remove through traffic from the central part of the City of Tillamook and thereby significantly reduce traffic congestion in that area. The recommended alignment is based on considerations relating to terrain, soil suitability, and flooding. The new alignment crosses the Wilson and Trask River floodplains at the narrowest point possible in order to min-

imize traffic interruptions during periods of high water. The new highway will also serve as the eastern boundary for the more intensively developed urban sections of the planning area.

The street locations and alignments indicated on the plan are not exact, and more detailed studies will be necessary to determine the best precise alignments. Initial improvements on arterial or collector streets can be less than those recommended on the plan, with the final improvement to come later when traffic volumes warrant the expenditure of the funds. However, it is extremely important that adequate rights-of-way be secured before the land along these streets develops. It is also extremely important that the new segment of U.S. 101 be acquired and constructed as a limited access highway. Such access control will greatly reduce points of intersection with the highway and significantly lessen congestion. By limiting access points, the highway will be able to carry a higher volume of traffic with greater safety and will not become a frontage road for unlimited strip commercial development within the planning area.

Community Appearance -

The value to the community of a pleasant appearance is very important, particularly where tourism is a potential source of economic growth. The combined efforts of both the county and the city will be required to retain the quality and livability of the area as growth occurs. The relatively slow rate of population increase anticipated for the area will make an attractive community possible and, at the same time, more difficult to achieve. The slow growth rate will tempt the community to lower its standards in order to obtain new development "at any cost". As the Tillamook area continues to grow, each new development should be evaluated in terms of its impact on the appearance of the community.

Community action programs should be initiated to evaluate community appearance and develop programs for its improvement. These could include concerted efforts to improve the appearance of streets and highways by establishing street landscaping programs in existing and developing areas, landscaping of traffic islands and median strips, establishing sign regulations in both urban and rural areas, encouraging private property owners in both residential and business districts to maintain and upgrade their properties, working toward placing utility lines underground in existing and proposed developments, protecting open areas from the intrusion of billboards and signs not relating to these areas, and removing old car bodies and other debris from public and private property throughout the planning area. All of these elements can play a part in the overall appearance of the community, and continued efforts by local government and citizens can preserve and enhance the natural beauty and livability of the area.

Implementation -

If the plan is to have any meaning, it must be implemented. This is not an easy process and requires constant vigilance on the part of local government and citizens. As growth occurs and conditions change, the plan will need to be reviewed and updated so that it remains a viable and useful tool for guiding growth and development. The various processes for implementing the plan are as closely interrelated as the elements of the plan itself.

Public information and participation is essential if the plan is to succeed. The plan should be kept before the public as a basis for community action. By involving citizens and by keeping the plan current, it can become an effective tool for guiding future community development patterns in a manner consistent with the goals and objectives of the people.

Adoption of the plan as a statement of community policy is essential to its effectiveness. When the plan is officially recognized as a guide to future growth patterns, public and private community actions must be evaluated in terms of the General Plan. Action contrary to the plan should not be taken unless the plan is first amended to reflect the change in objectives or policy.

Revision of codes and ordinances is an important step in effectuating the plan. The zoning ordinance should reflect and refine land-use relationships and development standards recommended in the General Plan, and zoning issues should be evaluated in the context of the plan. Subdivision ordinances should also re-

flect improvement requirements and other development standards included in the plan.

Capital improvement programing is an important process in the implementation of the General Plan. It consists of three basic elements--listing of necessary public improvements, determination of priorities, and a financial analysis. A listing of all capital improvements that will be needed in the foreseeable future is first established. Based on evaluation of the projects and their relative urgency, a priority is assigned to each project based on the apparent need. A financial analysis is prepared to determine existing and anticipated future sources of revenue which can be applied to the capital improvement programs. From these projections, it is possible to estimate the amount of revenue available annually for capital expenditures and to allocate these funds to appropriate projects. Capital improvement programs are usually prepared on an overall basis for twenty years in five-year increments, and they are revised annually as funds are expended and priorities change. Developing a realistic capital improvement program and applying it to the city budgeting process can be one of the most significant and beneficial steps which the community can take to guide its growth in an orderly manner.

There are many federal programs which can be applied to the community's capital improvement requirements. These programs cover a wide variety of community problems, and the following is a list of program titles which might be appropriate to the Tillamook area. This list was taken from the "Catalogue of Federal Assistance Programs, Office of Economic Opportunity, Executive Office of the President."

Federal Programs -

Financial Assistance to Small Towns and Rural Groups
Loans for Recreational Purposes
Rural Renewal Loans
Grants and Loans for Public Works and Development Facilities
Public Works and Economic Development
Library Services and Construction
Advance for Public Works Planning
Code Enforcement
Homes Association Residential Subdivision
Low-Rent Public Housing
Neighborhood Facilities
Open Space Land
Public Facility Loans
Urban Beautification
Urban Renewal Projects
Urban Renewal Rehabilitation and Code Enforcement
Outdoor Recreation Assistance
Outdoor Recreation Technical Assistance
Commercial Employment Program
Job Market Information
Smaller Communities Program - Rural Areas
Airport Development Program
Highway Beautification
Recreation Resource Development
Community Action Programs

Appendix VIII. Urban Service Area Policies & Implementation Guidelines, and County Ordinance Adopting the City's Plan including Coordination Functions in the UGMA, 2011.

ORDINANCE NUMBER 1260

CITY OF TILLAMOOK AND TILLAMOOK COUNTY URBAN GROWTH MANAGEMENT AGREEMENT REPEALING ORDINANCE NO. 1179 AND NO. 1043

WHEREAS, the City of Tillamook City, Oregon, hereinafter referred to as **the City**, and Tillamook County, Oregon, hereinafter referred to as **the County**, are authorized under the provisions of Oregon Revised Statutes Chapter 190.030 to enter into intergovernmental agreements for the performance of any or all functions that a party to the agreement has authority to perform; and

WHEREAS, Oregon Revised Statutes195.025, 197.175, & 197.250, and Oregon Administrative Rules 660-03-010 & 660-018-0021require counties and cities to prepare and adopt comprehensive plans consistent with statewide planning goals, and to enact ordinances or regulations to implement the comprehensive plans; including joint management agreements, and

WHEREAS, Statewide Planning Goal Number 14 requires that establishment and change of urban growth boundaries shall be a cooperative process between the city and county that surrounds it; and

WHEREAS, the City and County recognize the need for coordination and cooperation in the management of growth in and around the Tillamook Urban Area; and

WHEREAS, this agreement establishes a process for maintaining current and ongoing planning efforts, essential to assure the citizens of the City and County that growth occurs in an orderly and efficient manner; and

WHEREAS, this requires powers and procedures to be put in place by which a plan for the management of the unincorporated area but within the Urban Growth Boundary can be implemented and by which urban growth can be modified; now, therefore,

BE IT AGREED, that the City and the County do hereby enter into this agreement, which shall provide the basis for future intergovernmental planning and regulatory action, and which may be modified as new governmental and procedural modifications warrant.

Section 1: Definitions

Terms contained herein and not defined within this agreement shall be construed as defined within the Statewide Planning Goals, the City Comprehensive Plan and the City Zoning Ordinance.

Party: The applicant, or any person who appears orally or in writing at a public hearing conducted pursuant to the provisions of this agreement, or the City, or the County.

Urban Area: Those lands, which lie within the designated Urban Growth Boundary, either within or outside the City.

Urban Growth Area: That portion of the Urban Area, which is outside of the incorporated limits of the City, but inside the Urban Growth Boundary.

Urban Growth Boundary: The line drawn around the Urban Area which separates rural from urbanizable land.

as identified within the Comprehensive Plan for the City.

Urbanizable Land: Urbanizable lands are those lands within the Urban Growth Boundary which are identified and (1) determined to be necessary and suitable for future urban development; and (2) can be served by public facilities and services.

Section 2: Intent of Agreement

1. The City and the County do hereby agree to establish a procedure for the implementation of the Urban Growth Management Agreement through use of land use regulation procedures within the Urban Growth Area. The Comprehensive Plan for the City, hereby referred to as the Plan, shall serve as the plan for Urban Growth Area. City Zoning regulations and Zoning Districts shall apply to all of the area within the City Urban Growth Area and Urban Growth Boundary. All public and private sector land use actions within the Urban Area shall be reviewed for consistency with the City Comprehensive Plan, City zoning, and the provisions of this agreement, as applicable.

2. The provisions of this agreement, as amended, shall establish the procedure for review and action on comprehensive plan amendments, implementing ordinances, land use actions, public improvement projects and other related matters.

3. The adopted Urban Growth Boundary shall define the geographical limits of urbanization.

4. The City and the County shall encourage urbanization to occur in an efficient manner, resulting in a compact and orderly development of the urban area meeting the long-term social, economic, open space, and environmental health needs of the residents of the City. Urbanization within the Urban Growth Area shall be managed and regulated in accordance with the provisions of Section 4.

5. The very nature of planning requires continual refinement of various elements of the planning process. This includes the preparation of implementing ordinances, and the refinement of this Urban Growth Management Agreement. As the plan is implemented, the City and County will work together in a coordinated effort to achieve the goals of these documents.

Section 3: Terms of this Agreement

This agreement becomes effective as of January 1, 2012. This agreement shall be reviewed and may be amended at the time established for review of the Plan, or at any other time by mutual consent of both parties, after public hearing by the City and the County.

Any modification in this agreement shall be consistent with the City Comprehensive Plan and Section 11 of this agreement.

Section 4: Land Use Regulatory Procedures

The City and County recognize that those unincorporated lands, which are within the Urban Growth Area, could ultimately become part of the City and, until such event occurs, will impact directly upon the existence and the operation of the City. It is the intent of the City and County, therefore, to administer a mutually beneficial policy relating to land use regulation within said unincorporated lands until such time as these lands become urbanized and/or annexed.

The County hereby recognizes the Planning Commission for the City as the official planning commission for purposes of administering the land use provisions of this agreement within the Urban Area.

Also in line with the policy, the City shall serve as the lead agency for all development requests within the Urban Area, and the following procedure shall be adopted:

1. All land use applications for development shall be submitted to the City Planning Department and shall be on a form or forms provided by that Department. The application and all additional required information shall be accompanied by the appropriate City filing fee.

2. Building Permit fees shall be shared between the City and County in such a manner as provided for under separate administrative agreement, incorporated herein by this reference. Such policy may be amended from time to time upon mutual consent of the City and County.

All such applications shall be subsequently reviewed as provided for in the City's Zoning Ordinance and Subdivision Ordinance.

3. For any land action, described in Subsection (5) below, within the Urban Growth Area that requires adoption by a governing body, the recommendation of the City Planning Commission shall be forwarded to the appropriate governing body for final approval. Within fifteen (15) working days from the date of receipt at the recommendation, the appropriate governing body shall schedule a hearing to review the findings and recommendation of the City Planning Commission.

The appropriate governing body shall conduct a public hearing on the record of the City Planning Commission hearing. The scope of that hearing shall be limited to the record made before the City Planning Commission. If the governing body determines that new testimony shall be taken, it shall refer the matter back to the City Planning Commission. The City Planning Commission shall conduct a public hearing on any additional testimony or evidence, which may be submitted. The City Planning Commission shall report its recommendations back to the appropriate governing body. The decision rendered by that body shall sustain or reverse the recommendation of the City Planning Commission and shall be in writing. The decision shall be announced at that time or within thirty-five days thereof; provided however, the matter may be continued to a future hearing and the decision announced at the close of such hearing. The final decision shall be mailed to the applicant and the other governing body within five days from the date of decision.

4. A decision by the City for any land use action within the Urban Growth Area that does not require final approval by the County may be appealed to the City Council by filing written notice in accordance with the procedures contained within the City Zoning Ordinance.

5. Final approval for any land use action within the Urban Growth Area shall be as follows:

Action	Final Approval
Plan Amendment	Board of Commissioners
Zone Change	City Council
Subdivision/Planned Unit Development	City Planning Commission
Partition *	City Staff/Planning Commission
Conditional Use Permit *	City Staff/Planning Commission
Site Plan Review *	City Staff/Planning Commission
Variance *	City Staff/Planning Commission
Building Permits and Associated Local Permits	City Planning Staff

** Please refer to Zoning Ordinance #978, Section II, for exceptions to this action*

Section 5: Annexations

1. The City may initiate the land annexation process upon action by the legislative body of the City, on its own motion, or after having received a request for annexation, in the form of a petition to the legislative body of the City by owners of real property in the territory to be annexed, when affirmative findings are made in relation the following:

A. The land is contiguous with the city limits and within the Urban Growth Boundary.

B. The development of the property is suitable for the extension of utilities and roads to the surrounding area.

C. The City is capable of providing and maintaining its full range of urban services to the property without negatively impacting the City's ability to adequately serve all areas within the existing City limits.

D. The proposal is in compliance with the Comprehensive plan of the City.

E. Sanitary sewer shall be extended to all annexation areas, and sewer plant capacity and sources of funding shall be available at the time of annexation.

2. Requests for annexation to the City for areas outside the Urban Growth Boundary shall be considered as a request for an amendment to the Urban Growth Boundary and shall be subject to the approval of the City and County as an amendment pursuant to Section 13 herein.

3. Requests for annexation shall be handled in conformance with the provisions of Oregon Revised Statutes Chapter 222.

Section 6: Urban Services

The City and the Fairview Water District are hereby recognized as the providers of urban water and sewer services within the Urban Area. The City is recognized as the provider of urban sewer services within the Urban Area. To this end the following shall prevail:

1. Extension of water and or sewer services shall be required when they are consistent with the policies and proposals of the comprehensive plan and with any adopted functional plans for water and/or sewer, which are consistent with the City Comprehensive Plan.

2. Sewer main extensions shall be accomplished in a logical manner, taking into consideration the following factors:

A. serving properties nearest to the City Limits first, after applying geographic limitation and the availability of other public facilities.

B. financing of the facilities through an equitable manner those benefited properties.

3. All City services shall be provided and maintained to City Standards and under the supervision of the City, unless some other arrangement acceptable to the City has been made for the maintenance and supervision of services.

4. Sewer service may be extended to lands outside of the Urban Growth Boundary only as provided for in OAR 660-011-0060. The City and County recognize the acknowledged Goal 11 and 14 exceptions adopted by Tillamook County by ordinance OA-02-12B as authorizing the extension of sewer service to the lands subject to these exceptions, in accordance with OAR 660-011-0060 (9). Intervening non-urban properties not located in such areas may not utilize such sewer line extensions.

5. The City and the County shall coordinate the maintenance of utility extension plans. These plans shall provide a basis for the extension of services within the Urban Area as mandated by Oregon Revised Statute 195.065.

6. Approval of on-site sewage disposal permits shall be in conformance with the State Department of Environmental Quality On-Site Sewage Disposal Rules, Chapter 340, Divisions 71 and 73. Permits to construct septic systems shall be issued by the County.

Section 7: Special Districts

Before the County shall create any special districts for the provision of urban services, the County shall first determine the ability of a preferred provider to provide such services. Said provider shall submit to the County an analysis of its abilities to provide the service desired. The County shall review such an analysis and shall incorporate its findings into the decision as to whether or not to create a new district. No district shall be formed unless it is found by the County that the service desired cannot be feasibly provided by any preferred provider.

Section 8: Public Works Construction Standards

1. Public-works construction standards, as adopted by the City, shall be applied within the Urban Growth Area by the County, excepting the existing subdivision known as Colonial Estates, Phases I and II, in which City Public Works Construction Standards shall be applied by the City. These standards shall include, but not be limited to, streets, curbs and sidewalks, water, sewer and storm drainage.

2. No septic system shall be permitted within the Urban Growth Area except as provided for in this section. Septic systems may be permitted for single-family and multi-family residential developments, and commercial development when these developments meet the requirements of the Oregon Department of Environmental Quality On-Site Sewage Disposal Rules, Chapter 340, Divisions 71 and 73. As a sanitary sewer system is extended to an area, in accordance with Section 6 of this Agreement, all development structures discharging sewage wastes to a septic system shall be required to connect to the sanitary sewer system upon failure of the septic system and or determination by County Sanitarian. Such sanitary sewer services shall be extended only to those areas, which are annexed, except when the Administrative Staff determines it to be in the City's best interest to allow service connections outside of the City's limits. When this is the case, a consent to annex form must be presented to the City as a hookup requirement.

Section 9: Phasing of Development

In order to ensure that development in the Urban Area is timely, orderly and efficient, the City and County shall recognize the following priority lists in their review of development proposals. In all three cases, consideration shall be given to the factors listed in the City Comprehensive Plan.

1. Land currently within the City limits. This land has the highest priority ranking because it is efficiently serviced, and its owners are paying property taxes within the City for the maintenance of City services.

2. Platted land within the Urban Growth Area.

3. Unplatted land within the Urban Growth Area.

In all cases, the City, County and all developers shall assure that development will not over-burden the capacity of public facilities or the carrying capacity of the environment.

Section 10: Special Provisions for Specific Areas and Problems

1. For agricultural and farming practices surrounding and within the Urban Growth Boundary, including the City, the following policies shall be recognized:

A. It shall be the policy of the City and the County to protect agricultural operations from potential conflicts arising from Highway Commercial activities. Accepted agricultural practices, adjacent to or within the City may create noise, dust, odors, or other such inconveniences for the owners or users of the commercials properties. This includes but is not limited to, the spreading of liquid manure on fields in the area when frequent strong winds are likely to carry the resultant odor into areas designated for non-farm development. However, the City does not consider it the agricultural operator's responsibility to modify accepted practices to accommodate Highway Commercial areas. The owners of the Highway Commercial property shall not allow activities on their properties which create management difficulties, fire hazards or increased costs for adjacent agricultural operations, and shall not hold agricultural operators or the City, or the County, responsible for noise, dust, odors or other such inconveniences resulting from those agricultural practices that are not more offensive than what is customarily required to maintain profitable farm operation.

B. The County shall not allow the placement of new agricultural structures closer than 30 feet from a property line, which is also the City limits. This provision shall not apply to the replacement of an existing structure with a new structure.

2. Recognizing the quantity of industrial lands proximate to but outside of the UGB designated by Tillamook County for urban industrial use through Goal 11 and 14 exceptions, the County and the City agree on the need to evaluate industrial land needs on a regional basis. To accomplish this, the City and County agree to prepare a single, coordinated Economic Opportunities Analysis for the central Tillamook County region in accordance with the OAR 660-009-0030. The EOA and any land use regulation amendments necessary for its implementation shall be adopted by both the City and the County.

3. In addition to the requirements of the City Zoning Ordinance, the following requirements and procedures shall apply to McCormick Loop and Schild Roads.

A. It shall be the policy of the County and City jointly to work with the developer or developers for the necessary improvement of McCormick Loop Road and Schild Road from Highway 6 south to the UGB, at such time as the properties west of McCormick Loop and Schild Roads are actually developed and the expected increased traffic use or actual increased traffic use is such that said roads should be improved. The design of such improvement shall be based on the expected increased traffic as a result of the development or developments. Responsibility for the costs of the improvements shall be determined at the time the improvement is made.

Section 11: Amendments to the Urban Growth Boundary

1. Purpose

The purpose of revision to the Urban Growth Boundary is to accommodate public necessity, convenience and general welfare and to provide for flexibility within the planning process in response to individual land use changes as a result of changed public needs, and the rate of development in order to carry out the statewide planning goals.

2. Review Process - Individual Request - (Quasi-judicial)

The revision process for the Urban Growth Boundary is a review procedure, which shall result in a decision by the City Planning Commission, the City Council, and the Board of County Commissioners on a proposed Urban Growth Boundary revision submitted by the individual property owner.

A. An application for a revision of the Urban Growth Boundary may be initiated by the owner or group of owners of the subject property or their authorized representative.

1. All applications shall be submitted to the City Planning Department and shall be made on a form provided by the Department.

2. The application form and all additional required information shall be accompanied by a filling fee. Such fee shall be an amount agreed upon from time to time by the City and County and adopted by resolution by each governing body. This fee shall be to defray the costs of the review procedures.

B. Within five (5) working days of receipt of a complete application, the City Planning Department shall forward to the County Community Development Department and the State Department of Land Conservation a complete copy of the application, appropriate forms and shall schedule a hearing before the City Planning Commission.

The hearing shall be held no sooner than forty-five (45) days and no later than ninety (90) days after the receipt of the application.

C. Both the City and the County shall prepare a staff report on the proposed Urban Growth Boundary revision. The County shall submit the report no later than thirty (30) days after the receipt of the application.

D. The City Planning Commission shall conduct a public hearing on the request at the time and place designated on the notice of public hearing. After consideration of all pertinent information and testimony, they shall announce a recommendation at that time. The recommendation shall be to approve, conditionally approve, or disapprove the request. Said recommendation shall incorporate findings in support of such recommendation and shall be in writing. A copy thereof shall be mailed to the applicant, the City Council and the Board of Commissioners within fifteen (15) days of the formal recommendation.

E. Within fifteen (15) working days of receipt of the Planning Commission recommendation, the City Council and the Board of Commissioners shall each at their respective public hearing, review the findings and recommendation of the Planning Commission. Each governing body shall either approve or deny the application for a revision of the Urban Growth Boundary within thirty (30) days after the hearing is conducted.

(1) Denial - If either one of the governing bodies votes to deny the request, the application is denied.

(2) Approval - To approve an application for a revision of the Urban Growth Boundary, both bodies are required to vote to approve the application.

(3) If a revision is approved, the City Planning Department shall revise the Urban Growth Boundary on their comprehensive plan map and issue a copy of the revised map and associated documents to the County and other appropriate agencies.

F. Any Quasi-judicial decision made by either the City Council or by the County Board of Commissioners may be appealed to the State Land Use Board of Appeals, as provided by Oregon Revised Statutes.

G. An appeal will be filed with the jurisdiction which decision is in opposition to the appellant.

3. Review Process - City or County Request - (Legislative)

The revision process for the Urban Growth Boundary is a review procedure, which shall result in a negotiated legislative policy decision by the City Council and the Board of County Commissioners to determine whether the Urban Growth Boundary should be revised.

A. Initiation by the City Council or the Board of County Commissioners - The City Council or the Board of County Commissioners may initiate proceedings for a legislative revision of the Urban Growth Boundary.

(1) The governing body that initiates the procedure for revision shall first declare by resolution at a public meeting the specific and compelling reasons to hold legislative hearings for a revision of the Urban Growth Boundary (2) Within five (5) working days a copy of that resolution shall be sent to the other governing body, the City Planning Department, County Department of Community Development, and other appropriate agencies and groups in accordance with goals one (1) and two (2) of the statewide Goals and Guidelines.

(3) Upon receipt of the resolution a public hearing, will be scheduled within forty (40) working days with both the Board of County Commissioners and the City Council, for a joint session. The 40 working day schedule will allow either jurisdiction the option of sending the request to their respective planning commissions for their consideration and recommendation.

(4) Staff reports, any relevant testimony, and general discussion will be heard at the joint sessions.

(5) At the close of testimony, the City and County shall discuss the application in preparation to vote. At the end of discussion, the body that submitted the request shall vote on the matter. Following the completion of this vote, the second body shall vote on the matter.

(6) This vote will either approve or deny the request for the revision of the Urban Growth Boundary.

(a) Denial -If either one of the governing bodies votes to deny the request, the application is denied.

(b) Approval -To approve an application for a revision of the Urban Growth Boundary both bodies are required to vote to approve the application.

(c) If the request for a revision is approved, the City Planning Department shall revise the Urban

Growth Boundary on the comprehensive plan map and issue a copy of the revised map to the County and other jurisdictions and other appropriate agencies.

7) Each jurisdiction will be subject to their appropriate rules of procedure for public hearings.

4. Review Criteria

Each application for a revision to the Urban Growth Boundary either Quasi-judicial or legislative, shall include sufficient information to make a decision based on the following factors:

A. Compliance with Oregon Statewide Planning Goals;

B. Compatibility with City Comprehensive Plan

Section 12: Acknowledgement and Approval

Approvals

Approved by the Tillamook County Board of County Commissioners on this 21st day of December 2011, by Ordinance No. 32.
(OA-11-03)

(absent)
Mark Labhart, County Commissioner

Charles Hurliman, County Commissioner

Tim Josi, County Commissioner

Approved by the City Council for the City of Tillamook City on this 5 day of December 2011, by Ordinance No. 1260.

Mayor

ATTEST:

City Recorder

BEFORE THE BOARD OF COMMISSIONERS

FOR THE COUNTY OF TILLAMOOK IN THE STATE OF OREGON

In the matter of amending the Tillamook County Comprehensive Plan, Ordinance No. 32, amending the Urban Growth Management Agreement with the City of Tillamook	OA-11-03

This matter came before the Tillamook County Board of Commissioners (the "Board") at the request of the City of Tillamook ("City") and the Tillamook County Department of Community Development.

The Board of Commissioners being fully apprised of the City and Department of Community Development staff, and after conducting a joint public hearing with the City Council on November 7, 2011, finds as follows:

1. On or about December 18, 2002, the Board enacted OA-02-07 which amended Ordinance #32 to include an Urban Growth Management Agreement ("UGMA") with the City of Tillamook.

2. The UGMA should be amended to more accurately reflect current Urban Growth area needs and policies.

3. Section 3 of the UGMA provides that it may be amended "At any time by mutual consent of both parties, after public hearing by the City and County."

4. The UGMA should be amended to incorporate the acknowledged Goal 11 (Public Facilities), and Goal 14 (Urbanization) exceptions adopted through OA-02-12B, authorizing extension of sewer service to the lands subject to those exceptions, in accordance with OAR 660-011-0060(9).

5. The UGMA should be amended recognizing the quantity of industrial lands proximate to but outside of the Urban Growth Boundary (UGB) designated by Tillamook County for urban irdustrial use through Goal 11 and Goal 14 exceptions, with the City and County agreeing on the need to evaluate industrial land needs on a regional basis, and further agreeing to prepare a single, coordinated Economic Opportunities Analysis (EOA) for the central Tillamook County region in accordance with OAR 660-009-0030.

6. Based on testimony from the Port of Tillamook Bay, the City Council and Board agreed to eliminate Section 9 of the UGMA which limited commercial zoning in areas outside of the UGB but within five miles of the city.

7. No other testimony was presented at the joint hearing.

8. After reviewing the City and County staff reports, including comments received from the Department of Land Conservation and Development, and written and oral testimony received from the Port of Tillamook Bay, the Board made the following motion:

   a) To approve the proposed amendments contained in Exhibit B of the November 2, 2011 County staff report, and to revise outdated ORS and OAR citations, and to eliminate Section 9 of the *City of Tillamook and Tillamook County Urban Growth Management Agreement (UGMA)*, enacted on or about December 18, 2002, under OA-02-07 which amended Tillamook County Comprehensive Plan Ordinance No. 32. The proposed revisions are intended to recognize acknowledged Goal 11 (Public Facilities) and Goal 14 (Urbanization) exceptions adopted by Tillamook County through OA-02-12B, authorizing extension of sewer service to the Port of Tillamook Bay property and the Tillamook Creamery property; and other revisions proposed to more accurately reflect current intergovernmental coordination and policies within the urban growth area.

The vote on the decision was two in favor, one opposed; with Commissioners Josi and Labhart voting to approve the amendments; Commissioner Hurliman voting nay.

NOW THEREFORE, THE BOARD OF COUNTY COMMISSIONERS OF TILLAMOOK COUNTY, OREGON, ORDERS AS FOLLOWS:

The *City of Tillamook and Tillamook County Urban Growth Management Agreement (UGMA)* is hereby amended as set forth in Exhibit A, which is incorporated herein by reference as though set forth in full.

DATED THIS 30th DAY OF November, 2011.

BOARD OF COUNTY COMMISSIONERS

FOR TILLAMOOK COUNTY, OREGON	Aye	Nay	Abstain	Absent
Charles J. Hurliman, Chair	✓			
Tim Josi, Vice-Chair	✓			
Mark Labhart, Commissioner	✓			

ATTEST: Tassi O'Neil,
County Clerk

Special Deputy

APPROVED AS TO FORM:

William K. Sargent, County Counsel

EXHIBIT 'A'

CITY OF TILLAMOOK AND TILLAMOOK COUNTY

URBAN GROWTH MANAGEMENT AGREEMENT

ORDINANCE NUMBER 1260

WHEREAS, the City of Tillamook City, Oregon, hereinafter referred to as **the City**, and Tillamook County, Oregon, hereinafter referred to as **the County**, are authorized under the provisions of Oregon Revised Statutes Chapter 190.030 to enter into intergovernmental agreements for the performance of any or all functions that a party to the agreement has authority to perform; and

WHEREAS, Oregon Revised Statutes Chapters 195.025, 197.175, 197.250, and Oregon Administrative Rules 660-03-010 and 660-018-0021require counties and cities to prepare and adopt comprehensive plans consistent with statewide planning goals, and to enact ordinances or regulations to implement the comprehensive plans; including joint management agreements, and

WHEREAS, Statewide Planning Goal Number 14 requires that establishment and change of urban growth boundaries shall be a cooperative process between the city and county that surrounds it; and

WHEREAS, the City and County recognize the need for coordination and cooperation in the management of growth in and around the Tillamook Urban Area; and

WHEREAS, this agreement establishes a process for maintaining current and ongoing planning efforts, essential to assure the citizens of the City and County that growth occurs in an orderly and efficient manner; and

WHEREAS, this requires powers and procedures to be put in place by which a plan for the management of the unincorporated area but within the Urban Growth Boundary can be implemented and by which urban growth can be modified; now, therefore,

BE IT AGREED, that the City and the County do hereby enter into this agreement, which shall provide the basis for future intergovernmental planning and regulatory action, and which may be modified as new governmental and procedural modifications warrant.

Section 1: Definitions

Terms contained herein and not defined within this agreement shall be construed as defined within the Statewide Planning Goals, the City Comprehensive Plan and the City Zoning Ordinance.

Party: The applicant, or any person who appears orally or in writing at a public hearing conducted pursuant to the provisions of this agreement, or the City, or the County.

Urban Area: Those lands, which lie within the designated Urban Growth Boundary, either within or outside the City.

Urban Growth Area: That portion of the Urban Area, which is outside of the incorporated limits of the City but inside the Urban Growth Boundary.

Urban Growth Boundary: The line drawn around the Urban Area which separates rural from urbanizable land,

as identified within the Comprehensive Plan for the City.

Urbanizable Land: Urbanizable lands are those lands within the Urban Growth Boundary which are identified and (1) determined to be necessary and suitable for future urban development; and (2) can be served by public facilities and services.

Section 2: Intent of Agreement

1. The City and the County do hereby agree to establish a procedure for the implementation of the Urban Growth Management Agreement through use of land use regulation procedures within the Urban Growth Area. The Comprehensive Plan for the City, hereby referred to as the Plan, shall serve as the plan for Urban Growth Area. City Zoning regulations and Zoning Districts shall apply to all of the area within the City Urban Growth Area and Urban Growth Boundary. All public and private sector land use actions within the Urban Area shall be reviewed for consistency with the City Comprehensive Plan, City zoning, and the provisions of this agreement, as applicable.

2. The provisions of this agreement, as amended, shall establish the procedure for review and action on comprehensive plan amendments, implementing ordinances, land use actions, public improvement projects and other related matters.

3. The adopted Urban Growth Boundary shall define the geographical limits of urbanization.

4. The City and the County shall encourage urbanization to occur in an efficient manner, resulting in a compact and orderly development of the urban area meeting the long-term social, economic, open space, and environmental health needs of the residents of the City. Urbanization within the Urban Growth Area shall be managed and regulated in accordance with the provisions of Section 4.

5. The very nature of planning requires continual refinement of various elements of the planning process. This includes the preparation of implementing ordinances, and the refinement of this Urban Growth Management Agreement. As the plan is implemented, the City and County will work together in a coordinated effort to achieve the goals of these documents.

Section 3: Terms of this Agreement

This agreement becomes effective as of January 1, 2012. This agreement shall be reviewed and may be amended at the time established for review of the Plan, or at any other time by mutual consent of both parties, after public hearing by the City and the County.

Any modifications in this agreement shall be consistent with the City Comprehensive Plan and Section 11 of this agreement.

Section 4: Land Use Regulatory Procedures

The City and County recognize that those unincorporated lands, which are within the Urban Growth Area, could ultimately become part of the City and, until such event occurs, will impact directly upon the existence and the operation of the City. It is the intent of the City and County, therefore, to administer a mutually beneficial policy relating to land use regulation within said unincorporated lands until such time as these lands become urbanized and/or annexed.

The County hereby recognizes the Planning Commission for the City as the official planning commission for purposes of administering the land use provisions of this agreement within the Urban Area.

Also in line with the policy, the City shall serve as the lead agency for all development requests within the Urban Area, and the following procedure shall be adopted:

1. All land use applications for development shall be submitted to the City Planning Department and shall be on a form or forms provided by that Department. The application and all additional required information shall be accompanied by the appropriate City filing fee.

2. Building Permit fees shall be shared between the City and County in such a manner as provided for under separate administrative agreement, incorporated herein by this reference. Such policy may be amended from time to time upon mutual consent of the City and County.

All such applications shall be subsequently reviewed as provided for in the City's Zoning Ordinance and Subdivision Ordinance.

3. For any land action, described in Section (5) below, within the Urban Growth Area that requires adoption by a governing body, the recommendation of the City Planning Commission shall be forwarded to the appropriate governing body for final approval. Within fifteen (15) working days from the date of receipt at the recommendation, the appropriate governing body shall schedule a hearing to review the findings and recommendation of the City Planning Commission.

The appropriate governing body shall conduct a public hearing on the record of the City Planning Commission hearing. The scope of that hearing shall be limited to the record made before the City Planning Commission. If the governing body determines that new testimony shall be taken, it shall refer the matter back to the City Planning Commission. The City Planning Commission shall conduct a public hearing on any additional testimony or evidence, which may be submitted. The City Planning Commission shall report its recommendations back to the appropriate governing body. The decision rendered by that body shall sustain or reverse the recommendation of the City Planning Commission and shall be in writing. The decision shall be announced at that time or within thirty-five days thereof; provided however, the matter may be continued to a future hearing and the decision announced at the close of such hearing. The final decision shall be mailed to the applicant and the other governing body within five days from the date of decision.

4. A decision by the City for any land use action within the Urban Growth Area that does not require final approval by the County may be appealed to the City Council by filing written notice in accordance with the procedures contained within the City Zoning Ordinance.

5. Final approval for any land use action within the Urban Growth Area shall be as follows:

Action	Final Approval
Plan Amendment	Board of Commissioners
Zone Change	City Council
Subdivision/Planned Unit Development	City Planning Commission
Partition *	City Staff/Planning Commission
Conditional Use Permit *	City Staff/Planning Commission
Site Plan Review *	City Staff/Planning Commission
Variance *	City Staff/Planning Commission
Building Permits and Associated Local Permits	City Planning Staff

** Please refer to Zoning Ordinance #979, Section 10, for exceptions to this action*

Section 5: Annexations

1. The City may initiate the land annexation process upon action by the legislative body of the City, on its own motion, or after having received a request for annexation, in the form of a petition to the legislative body of the City by owners of real property in the territory to be annexed, when affirmative findings are made in relation the following:

A. The land is contiguous with the city limits and within the Urban Growth Boundary.

B. The development of the property is suitable for the extension of utilities and roads to the surrounding area.

C. The City is capable of providing and maintaining its full range of urban services to the property without negatively impacting the City's ability to adequately serve all areas within the existing City limits.

D. The proposal is in compliance with the Comprehensive plan of the City.

E. Sanitary sewer shall be extended to all annexation areas, and sewer plant capacity and sources of funding shall be available at the time of annexation.

2. Requests for annexation to the City for areas outside the Urban Growth Boundary shall be considered as a request for an amendment to the Urban Growth Boundary and shall be subject to the approval of the City and County as an amendment pursuant to Section 13 herein.

3. Requests for annexation shall be handled in conformance with the provisions of Oregon Revised Statutes Chapter 222.

Section 6: Urban Services

The City and the Fairview Water District are hereby recognized as the providers of urban water and sewer services within the Urban Area. The City is recognized as the provider of urban sewer services within the Urban Area. To this end the following shall prevail:

1. Extension of water and/or sewer services shall be required when they are consistent with the policies and proposals of the comprehensive plan and with any adopted functional plans for water and/or sewer, which are consistent with the City Comprehensive Plan.

2. Sewer main extensions shall be accomplished in a logical manner, taking into consideration the following factors:

A. serving properties nearest to the City Limits first, after applying geographic limitation and the availability of other public facilities.

B. financing of the facilities through an equitable manner those benefited properties.

3. All City services shall be provided and maintained to City Standards and under the supervision of the City, unless some other arrangement acceptable to the City has been made for the maintenance and supervision of services.

4. Provision of urban services shall occur in areas beyond the Urban Growth Boundary only 1) after a determination by affected agencies that a "danger to public health exists " as defined by Oregon Revised Statutes Chapter 431.705 (5) or 2) a moratorium to construct new and repair septic systems has been declared by the Environmental Quality Commission as mandated by Oregon Revised Statutes, Chapter 454.685, or 3) if the properties to be served have been identified in accord with Tillamook County Goal 11 and 14 exceptions in County OA-02-12B. Intervening non-urban properties not located in such areas may not utilize such sewer line extensions

5. The City and the County shall coordinate the maintenance of utility extension plans. These plans shall provide a basis for the extension of services within the Urban Area as mandated by Oregon Revised Statutes, Chapter 195.065.

6. Approval of on-site sewage disposal permits shall be in conformance with the State Department of Environmental Quality On-Site Sewage Disposal Rules, Chapter 340, Divisions 71 and 73. Permits to construct septic systems shall be issued by the County.

Section 7: Special Districts

Before the County shall create any special districts for the provision of urban services, the County shall first determine the ability of a preferred provider to provide such services. Said provider shall submit to the County an analysis of its abilities to provide the service desired. The County shall review such an analysis and shall incorporate its findings into the decision as to whether or not to create a new district. No district shall be formed unless it is found by the County that the service desired cannot be feasibly provided by any preferred provider.

Section 8: Public Works Construction Standards

1. Public-works construction standards, as adopted by the City, shall be applied within the Urban Growth Area by the County, excepting the existing subdivision known as Colonial Estates, Phases I and II, in which City Public Works Construction Standards shall be applied by the City. These standards shall include, but not be limited to, streets, curbs and sidewalks, water, sewer and storm drainage.

2. No septic system shall be permitted within the Urban Growth Area except as provided for in this section. Septic systems may be permitted for single-family and multi-family residential developments, and commercial development when these developments meet the requirements of the Oregon Department of Environmental Quality On-Site Sewage Disposal Rules, Chapter 340, Divisions 71 and 73. As a sanitary sewer system is extended to an area, in accordance with Section 6 of this Agreement, all development structures discharging sewage wastes to a septic system shall be required to connect to the sanitary sewer system upon failure of the septic system and/or determination by County Sanitarian. Such sanitary sewer services shall be extended only to those areas, which are annexed, except when the Administrative Staff determines it to be in the City's best interest to allow service connections outside of the City's limits. When this is the case, a consent to annex form must be presented to the City as a hookup requirement.

Section 9: Phasing of Development

In order to ensure that development in the Urban Area is timely, orderly and efficient, the City and County shall recognize the following priority lists in their review of development proposals. In all three cases, consideration shall be given to the factors listed in the City Comprehensive Plan.

1. Land currently within the City limits. This land has the highest priority ranking because it is efficiently serviced, and its owners are paying property taxes within the City for the maintenance of City services.

2. Platted land within the Urban Growth Area.

3. Unplatted land within the Urban Growth Area.

In all cases, the City, County and all developers shall assure that development will not over-burden the capacity of public facilities or the carrying capacity of the environment.

Section 10: Special Provisions for Specific Areas and Problems

1.. For agricultural and farming practices surrounding and within the Urban Growth Boundary, including the City, the following policies shall be recognized:

A. It shall be the policy of the City and the County to protect agricultural operations from potential conflicts arising from Highway Commercial activities. Accepted agricultural practices, adjacent to or within the City may create noise, dust, odors or other such inconveniences for the owners or users of the commercials properties. This includes but is not limited to, the spreading of liquid manure on fields in the area when frequent strong winds are likely to carry the resultant odor into areas designated for non-farm development. However, the City does not consider it the agricultural operator's responsibility to modify accepted practices to accommodate Highway Commercial areas. The owners of the Highway Commercial property shall not allow activities on their properties which create management difficulties, fire hazards or increased costs for adjacent agricultural operations, and shall not hold agricultural operators or the City, or the County, responsible for noise, dust, odors or other such inconveniences resulting from those agricultural practices that are not more offensive than what is customarily required to maintain profitable farm operation.

B. The County shall not allow the placement of new agricultural structures closer than 30 feet from a property line, which is also the City limits. This provision shall not apply to the replacement of an existing structure with a new structure.

2. Recognizing the volume of industrial lands identified in accord with Tillamook County Goal 11 and 14 exceptions in County OA-02-12B, the City and County hereby find that the quantity of Light Industrial lands within the UGB are not necessary to satisfy the industrial needs of the region and agree to prepare a single coordinated Economic Opportunities Analysis for the central Tillamook County region in accordance with the OAR 660-009-0030 and redesignate lands in a mutually agreed proportion for the purposes of future City rezoning considerations.

3. In addition to the requirements of the City Zoning Ordinance, the following requirements and procedures shall apply to McCormick Loop and Schild Roads.

A. It shall be the policy of the County and City jointly to work with the developer or developers for the necessary improvement of McCormick Loop Road and Schild Road from Highway 6 south to the UGB, at such time as the properties west of McCormick Loop and Schild Roads are actually developed and the expected increased traffic use or actual increased traffic use is such that said roads should be improved. The design of such improvement shall be based on the expected increased traffic as a result of the development or developments. Responsibility for the costs of the improvements shall be determined at the time the improvement is made.

Section 11: Amendments to the Urban Growth Boundary

1. Purpose

The purpose of revision to the Urban Growth Boundary is to accommodate public necessity, convenience and general welfare and to provide for flexibility within the planning process in response to individual land use changes as a result of changed public needs, and the rate of development in order to carry out the statewide planning goals.

2. Review Process - Individual Request - (Quasi-judicial)

The revision process for the Urban Growth Boundary is a review procedure, which shall result in a decision by the City Planning Commission, the City Council and the Board of County Commissioners on a proposed Urban Growth Boundary revision submitted by the individual property owner.

A. An application for a revision of the Urban Growth Boundary may be initiated by the owner or group of owners of the subject property or their authorized representative.

1. All applications shall be submitted to the City Planning Department and shall be made on a form provided by the Department.

2. The application form and all additional required information shall be accompanied by a filling fee. Such fee shall be an amount agreed upon from time to time by the City and County and adopted by resolution by each governing body. This fee shall be to defray the costs of the review procedures.

B. Within five (5) working days of receipt of a complete application, the City Planning Department shall forward to the County Community Development Department and the State Department of Land Conservation a complete copy of the application, appropriate forms and shall schedule a hearing before the City Planning Commission.

The hearing shall be held no sooner than forty-five (45) days and no later than ninety (90) days after the receipt of the application.

C. Both the City and the County shall prepare a staff report on the proposed Urban Growth Boundary revision. The County shall submit the report no later than thirty (30) days after the receipt of the application.

D. The City Planning Commission shall conduct a public hearing on the request at the time and place designated on the notice of public hearing. After consideration of all pertinent information and testimony, they shall announce a recommendation at that time. The recommendation shall be to approve, conditionally approve, or disapprove the request. Said recommendation shall incorporate findings in support of such recommendation and shall be in writing. A copy thereof shall be mailed to the applicant, the City Council and the Board of Commissioners within fifteen (15) days of the formal recommendation.

E. Within fifteen (15) working days of receipt of the Planning Commission recommendation, the City Council and the Board of Commissioners shall each at their respective public hearing, review the findings and recommendation of the Planning Commission. Each governing body shall either approve or deny the application for a revision of the Urban Growth Boundary within thirty (30) days after the hearing is

conducted.

(1) Denial - If either one of the governing bodies votes to deny the request, the application is denied.

(2) Approval - To approve an application for a revision of the Urban Growth Boundary, both bodies are required to vote to approve the application.

(3) If a revision is approved, the City Planning Department shall revise the Urban Growth Boundary on their comprehensive plan map and issue a copy of the revised map and associated documents to the County and other appropriate agencies.

F. Any Quasi-judicial decision made by either the City Council or by the County Board of Commissioners may be appealed to the State Land Use Board of Appeals, as provided by Oregon Revised Statutes.

G. An appeal will be filed with the jurisdiction which decision is in opposition to the appellant.

3. Review Process - City or County Request - (Legislative)

The revision process for the Urban Growth Boundary is a review procedure, which shall result in a negotiated legislative policy decision by the City Council and the Board of County Commissioners to determine whether the Urban Growth Boundary should be revised.

A. Initiation by the City Council or the Board of County Commissioners - The City Council or the Board of County Commissioners may initiate proceedings for a legislative revision of the Urban Growth Boundary.

(1) The governing body that initiates the procedure for revision shall first declare by resolution at a public meeting the specific and compelling reasons to hold legislative hearings for a revision of the Urban Growth Boundary (2) Within five (5) working days a copy of that resolution shall be sent to the other governing body, the City Planning Department, County Department of Community Development, and other appropriate agencies and groups in accordance with goals one (1) and two (2) of the statewide Goals and Guidelines.

(3) Upon receipt of the resolution a public hearing, will be scheduled within forty (40) working days with both the Board of County Commissioners and the City Council, for a joint session. The 40 working day schedule will allow either jurisdiction the option of sending the request to their respective planning commissions for their consideration and recommendation.

(4) Staff reports, any relevant testimony and general discussion will be heard at the joint sessions.

(5) At the close of testimony, the City and County shall discuss the application in preparation to vote. At the end of discussion, the body that submitted the request shall vote on the matter. Following the completion of this vote, the second body shall vote on the matter.

(6) This vote will either approve or deny the request for the revision of the Urban Growth Boundary.

(a) Denial -If either one of the governing bodies votes to deny the request, the application is denied.

(b) Approval -To approve an application for a revision of the Urban Growth Boundary both bodies

are required to vote to approve the application.

(c) If the request for a revision is approved, the City Planning Department shall revise the Urban Growth Boundary on the comprehensive plan map and issue a copy of the revised map to the County and other jurisdictions and other appropriate agencies.

(7) Each jurisdiction will be subject to their appropriate rules of procedure for public hearings.

4. Review Criteria

Each application for a revision to the Urban Growth Boundary either Quasi-judicial or legislative, shall include sufficient information to make a decision based on the following factors:

A. Compliance with Oregon Statewide Planning Goals;

B. Compatibility with City Comprehensive Plan

Section 12: Acknowledgement and Approval

Approvals

Approved by the Tillamook County Board of County Commissioners on this 30th day of November, 2011, by Ordinance No. OA-11-03.

Mark Labhart, County Commissioner

Charles Hurliman, County Commissioner

Tim Josi, County Commissioner

BOARD OF COUNTY COMMISSIONERS TILLAMOOK COUNTY STATE OF OREGON

Approved by the City Council for the City of Tillamook City on this 5 day of December 2011, by Ordinance No. 1260.

Mayor

ATTEST:

Bernadette M Sorensen
City Recorder

Appendix IX. 1979/1980 Economic Report

PLACEHOLDER

[To be Inserted at a Later Date]

Appendix X. Financial Statement for the City of Tillamook

PLACEHOLDER

[To be Inserted at a Later Date]

Appendix XI. Technical Report

PLACEHOLDER

[To be Inserted at a Later Date]

Appendix XII - City of Tillamook Local Wetlands Inventory, 1997

Wetlands

The Statewide Planning Goals define wetland as "land areas where excess water is the dominant factor determining the nature of soil development and the types of plant and animal communities living at the soil surface."

The following wetlands in Table 5-1, identified in the City of Tillamook Local Wetland Inventory (Wilson et al, 1997) are Significant Natural Resources:

TABLE 5-1: TILLAMOOK SIGNIFICANT WETLANDS

Waterway	LWI wetland code	Waterway	LWI wetland code
Cojack Creek	COJ1	Holden Creek	HOL3
Colby Creek	COL1	Holden Creek	HOL4
Dougherty Slough	DOU1	Holden Creek	HOL5
Hall Slough	HAL1	Holden Creek	HOL6
Hall Slough	HAL2	Hoquarten Slough	HOQ1
Hall Slough	HAL3	Hoquarten Slough	HOQ2
Hall Slough	HAL4	Hoquarten Slough	HOQ3
Holden Creek	HOL1	Hoquarten Slough	HOQ4
Holden Creek	HOL2	Trask River	TRA1

In cooperation with the Oregon Department of Fish and Wildlife, an inventory of Goal 5 Wetlands was completed. Four sites were identified and described in the following analysis:

1) The Meadow Avenue Wetland is generally located south of Meadow Avenue and contains approximately 14 acres. This acreage has multiple owners including private individuals and the Tillamook School District No. 9. It is predominantly a forested wetland with no identified conflicting uses. The City will protect this wetland.

2) The Fairlane Drive Wetland runs immediately parallel to Fairlane Drive and contains approximately two acres. The site is a shrub and forested wetland in association with a small perennial stream. The property is under single ownership with no identified conflicting uses. The City will protect this wetland.

3) The South Highway 101 Wetland is immediately adjacent to Highway 101 upon entering the southern entrance to the City. The site is a shrub and forested wetland containing approximately one acre. The area is within an "open space" district with no conflicting uses identified. The City will protect this wetland.

4) The Fifth Street Wetland is found at the west end of Fifth Street. The site is an emergent wetland containing approximately 1.5 acres. The area is part of a large tract zoned for parks. Carnahan Park is immediately adjacent to the north, but effectively separated by a chain-link fence. No conflicting uses have been identified. The City will protect this wetland. The Map provides the physical location of these wetlands.

Qualifications for significance

To qualify as significant, a wetland must have a high level of function in one of four functional categories (water quality, hydrologic control, fish habitat, or wildlife habitat), and/or be rated in the second highest category for fish habitat and have a direct surface water connection to a stream segment that is mapped by DSL or ODFW as habitat for "indigenous anadromous salmonids." (DSL maps available at http://statelands.dsl.state.or.us/esshabitat.html).

A "high level of function" is defined as "intact" fish habitat, "intact" water quality, "intact" hydrologic control, or "diverse" wildlife habitat, as defined in the Oregon Freshwater Wetland Assessment Methodology ("OFWAM") (DSL, 1996). The "second highest category" for fish habitat is defined as "impacted or degraded" in OFWAM (DSL, 1996).

Wetlands Wildlife

The species listed are typical of wetlands. In addition there are many other species that sometimes frequent wetlands or are benefited by wetland habitat. Several species of bats and swallows feed on insects that breed profusely in wetlands. Many kinds of sparrows, warblers and other songbirds feed and nest in the vegetation in and around wetlands. Several kinds of mice and shrews besides those listed may find wetland habitat to their liking, and various species of hawks and owls often hunt such areas.

TABLE 5-3: WILDLIFE SPECIES THAT UTILIZE WELANDS IN TILLAMOOK COUNTY

Mammals
Roosevelt Elk
Black-tailed Deer
Raccoon
Mink
Short-tailed Weasel
Long-tailed Weasel
Striped Skunk
River Otter
Pacific Water Shrew
Beaver
Muskrat
Townsend Vole
Pacific Jumping Mouse

Reptile and Amphibians
Common Garter Snake
Northwestern Garter Snake
Pacific Tree Frog
Northern Red-legged Frog
Western Toad
Northwestern Salamander
Western Red-backed Salamander

Water Fowl
Mallard
Gadwall
Pintail
American Widgeon
Green-winged Teal
Northern Shoveler
Wood Duck
Ruddy Duck
Common Merganser
Hooded Merganser
Pied-billed Grebe
American Coot

Hawks
Marsh Hawk
Osprey
White-tailed Kite

Wading Birds
Green Blue Heron
Green Heron
Black-crowned Night Heron
Greater Yellowlegs
Lesser Yellowlegs
Willett
American Bittern
Long-billed Dowitcher
Short-billed Dowitcher
Common Snipe
Killdeer

Other Birds
Kingfisher
Red-winged Blackbird
Brewers Blackbird
Long-billed Marsh Wren
Rough Skinned Newt

Appendix XIII - City of Tillamook Riparian Inventory, 1999



In 1999, in conjunction with a Healthy Streams Grant from the Department of Land Conservation and Development the entire UGB land area was, after a completed local wetland inventory, function assessment and evaluated as to water quality and habitat quality. This resulted in the accurate location and listing with analysis, the locally significant wetlands and riparian corridors. These resources were identified and mapped as per requirements in Division 23 of the Oregon Administrative Rule, implementing State Planning Goal 5. According to the study and maps, there are approximately 87 acres of identified significant wetlands within the UGB. These resources are incorporated for adoption in the Water Resources Overlay District, Section 21.1 of the Tillamook City Land Development Code. These significant wetlands are identified on the wetlands map in Chapter 18. The following policies serve to protect the significant wetland and riparian corridor resources listed as locally significant in the City of Tillamook.

The following significant riparian corridors and significant wetlands listed in Table 5-2 have been adopted and are regulated subject to the Water Resources Overlay District Section of the City Zoning Ordinance:

TABLE 5-2: TILLAMOOK SIGNIFICANT RIPARIAN REACHES (FACING DOWNSTREAM)

Waterway	Reach code	Bank (facing downstream)
Cojack Creek	R-COJ1-2	L
Cojack Creek	R-COJ1-3	R&L
Colby Creek	R-COL1-1	R&L
Colby Creek	R-COL1-2	L
Colby Creek	R-COL2-1	R&L
Dougherty Slough	R-DOU0-1	R&L
Dougherty Slough	R-DOU0-2	R&L
Hall Slough	R-HAL0-1	R&L
Hall Slough	R-HAL0-2	R&L
Hall Slough	R-HAL0-3	R&L
Hall Slough	R-HAL0-4	R&L
Hall Slough	R-HAL3-1	R&L
Holden Creek	R-HOL1-1	R&L
Holden Creek	R-HOL1-2	R&L
Holden Creek	R-HOL1-3	R&L
Holden Creek	R-HOL2-1	R&L
Holden Creek	R-HOL3-1	R&L
Holden Creek	R-HOL3-2	R&L
Holden Creek	R-HOL3-3	R&L
Holden Creek	R-HOL4-1	R&L
Holden Creek	R-HOL5-1	R&L
Holden Creek	R-HOL5-2	R&L
Holden Creek	R-HOL6-1	R&L
Hoquarten Slough	R-HOQ1-1	R&L
Hoquarten Slough	R-HOQ1-2	R&L
Hoquarten Slough	R-HOQ1-3	L
Hoquarten Slough	R-HOQ1-4	L
Hoquarten Slough	R-HOQ1-5	L
Hoquarten Slough	R-HOQ3-1	R&L
Hoquarten Slough	R-HOQ3-2	R&L
Jack Creek	R-JAC1-1	R&L
Jack Creek	R-JAC1-2	R&L
Trask River	R-TRA0-1	R
Trask River	R-TRA0-2	R
Wilson River	R-WIL0-1	L
Wilson River	R-WIL0-2	L

Tillamook Water Commission

Water System Master Plan



April 1997

Prepared by

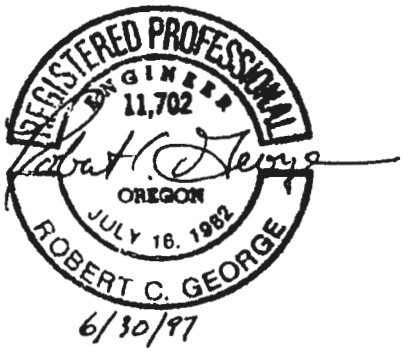
Lee Engineering, Inc.
1300 John Adams Street, Oregon City, OR 97045

TILLAMOOK WATER COMMISSION

WATER SYSTEM MASTER PLAN

December 1996





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TILLAMOOK WATER COMMISSION
WATER SYSTEM MASTER PLAN
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- Comprehensive Performance Evaluation
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C. ISO Report
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F. Water System Inventory
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Separate Volume by Economic Resource Associates, Inc.:

RATE ANALYSIS
SYSTEM DEVELOPMENT CHARGES

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The Tillamook Water Commission was established under the Tillamook City Charter in 1905 as a separate public body with the sole purpose of providing potable water service to residents of the City. In addition, it sells surplus water to the Port of Tillamook Bay and 11 rural water districts located on the south and west sides of the City.

As the Water Commission's 1974 Master Plan is now past its original 20-year study period, and the major capital improvements outlined in it are basically complete, the Commission requested Lee Engineering, Inc., as current Engineer-of-Record, to prepare a new Master Plan to be used as a tool to evaluate the water system and provide a plan for future system replacement, growth and development.

1.2 SCOPE OF STUDY

The goal of this study is to develop a report which evaluates the Tillamook Water Commission's immediate needs, forecasts future growth, and outlines a plan of capital improvements which will economically meet both short and long-term future requirements of the Water Commission in providing potable water to the citizens of the Tillamook area. Therefore, the specific tasks of the study necessary to meet the goal are as follows:

1. Describe the planning period, both short and long-term.

2. Describe the area characteristics.

3. Analyze past trends and project future requirements for water consumption and production as well as fire protection.

4. Describe the existing supply, transmission, storage, and distribution facilities and analyze their capabilities in terms of present and future requirements.

5. Analyze alternatives and prepare cost estimates for supply, transmission, storage, and distribution facilities needed to meet present and future demands.

6. Develop a recommended Capital Improvements Plan.

7. Develop updated maps of the existing system.

8. Review rates and system development charges for adequacy and funding of future needs.

1.3 AUTHORIZATION

Authorization to proceed with work on this project was given by the Tillamook Water Commission at its Board meeting of January 8, 1996. The authorization for work is generally outlined in a letter contract dated January 8, 1996.

1.4 ACKNOWLEDGMENTS

Lee Engineering, Inc. wishes to acknowledge its appreciation to the Tillamook Water Commission and individuals who have had direct involvement in the preparation, review and implementation of this report. They include:

A. Board of Commissioners - Tillamook Water Commission

Robert Dental, President
Charles Farrell, Vice President
Dennis Johnson
Jon M. Burckard
Roger Pye
Dennis Wagner

B. Staff of the Tillamook Water Commission

Arley Sullivan, Superintendent
Jane Leonnig, Office

C. Lee Engineering, Inc.

F. Duane Lee, President
Robert C. George, Project Manager
James R. Shaver, Engineer
Nancy Jelinek, Secretary

D. Economic Resource Associates, Inc.

Carl Goebel, President/Senior Economist

CHAPTER 2

PLANNING PERIOD AND AREA

2.1 PERIOD OF STUDY

For purposes of this study, the planning period will be 20 years and will outline improvements needed to provide for both existing population and projected long-term growth.

2.2 DESCRIPTION OF PLANNING AREA

2.2.1 Existing Service Area

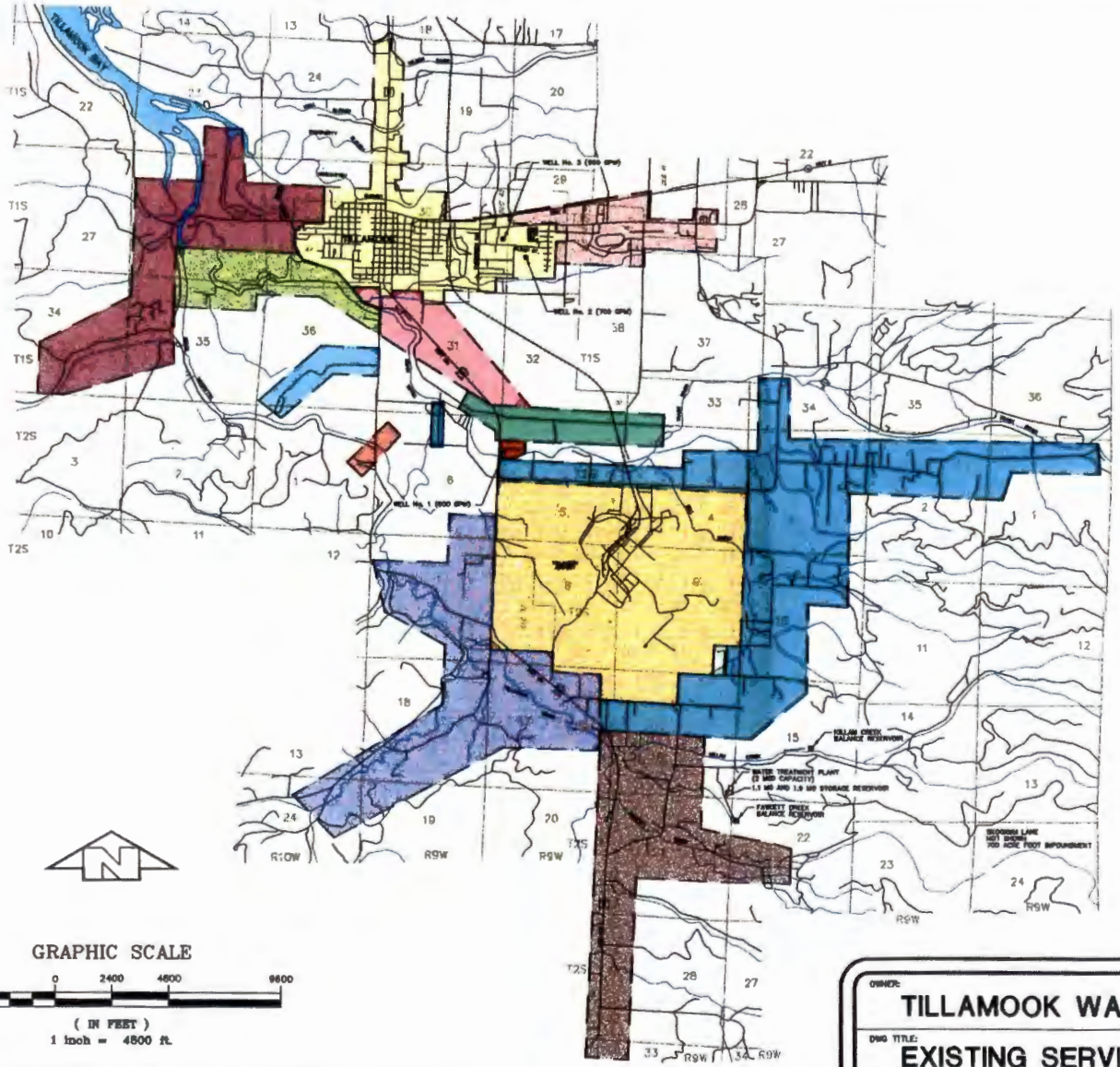
As mandated by the City of Tillamook Charter, the Tillamook Water Commission is responsible for providing water to all users within the city limits. However, the Commission may sell surplus water outside the City limits as long as the practice benefits City customers. The Commission's surface water comes from Fawcett and Killam Creeks, southeast of the City, through approximately six miles of transmission mains. Historically, these supply and transmission facilities have had excess capacity enabling the Commission to sell surplus water to individual customers and rural water districts south, southeast and west of the city limits. As of June 1996 the Commission served 1,634 customers within the City, 75 individual customers outside the City located along the transmission mains, the Port of Tillamook Bay facilities, and 11 rural water districts serving 824 homes and farms. Figure 2.1 is a graphical representation of the area served by the Tillamook Water Commission.

2.2.2 Future Service Area

As annexations occur within the Urban Growth Boundary (UGB), the Water Commission would be required to serve these areas under current guidelines. The most likely place for annexation to occur is east of the City in the Fairview area. A 1989 report by Lee Engineering, Inc. indicated there were approximately 207 services in this area. Although there has been ongoing discussion as to how this area is to be served, no formal agreements have been reached to date. Therefore, for purposes of this report the study area as outlined in Figure 2.1 will include the City of Tillamook city limits and Urban Growth Boundaries as well as the service areas of the Port of Tillamook Bay and 11 rural water districts encompassing a total land area of approximately 23 square miles.

2.2.3 Geographical Description

The study area is located in the northwest coastal area of Oregon just east of the Pacific Ocean and at the southern end of Tillamook Bay. The City of Tillamook on the northern boundary sits on a raised plateau with rich agricultural lands and the lower reaches of the Trask and Tillamook Rivers extending to the south. Elevation ranges from 10 feet along the



WATER USERS

1. CITY OF TILLAMOOK
2. CUSTOMERS OUTSIDE CITY LIMITS
3. PORT OF TILLAMOOK BAY
4. LONG PRAIRIE WATER DISTRICT
5. PLEASANT VALLEY WATER CO.
6. SOUTH PRAIRIE WATER ASSOC.
7. WEST HILLS WATER CO.
8. TONE WATER DISTRICT
9. HUNT WATER DISTRICT
10. ROGER LINE WATER USERS
11. FITZPATRICK WATER DISTRICT
12. TILLAMOOK RIVER WATER DISTRICT
13. HWY 101 S. WATER DISTRICT
14. BASELINE WATER DISTRICT
15. FAIRVIEW WATER DISTRICT WITHIN UGB (CURRENTLY NOT SERVED BY TWC)

GRAPHIC SCALE

4800 0 2400 4800 9600

(IN FEET)

1 inch = 4800 ft.

OWNER: TILLAMOOK WATER COMMISSION

DWG TITLE: EXISTING SERVICE AREA

LEE ENGINEERING, INC.
1300 JOHN ADAMS ST.
OREGON CITY, OR, 97045

DATE: NOV '98
FILE: 1530521C

REVISED:

FIG. 2.1

City's north Highway 101 commercial strip to 170 feet at the southeastern portion of the Pleasant Valley Water District. However, the forested watersheds of Killam and Fawcett Creek extend up to the 3,168-foot high Edwards Butte in the Coast Mountain Range.

The climate of the Tillamook area is typical of western Oregon with mild, wet winters and moderate dry summers. Rainfall is over 90 inches per year with about 70% occurring from November through March. Precipitation averages between 140 - 150 inches at Skookum Lake located in the upper Fawcett Creek watershed.

Land uses within the study area range from the urban central business district within the Tillamook city downtown area, strip commercial development along Highway 101, residential neighborhoods on the east and west sides of the City and rural residential, agricultural and industrial uses south of the city limits. The 1983 Land Use Map for the City's current Urban Growth Boundary is shown in Figure 2.2. The City serves as the governmental, commercial and retail hub of the area and also contains the Tillamook Lumber Mill. The Port of Tillamook Bay's 1,800-acre property to the southeast consists of an air base, one World War II blimp hangar, and an 800-acre industrial park. Agricultural uses around the City and Port boundaries are primarily dairy related.

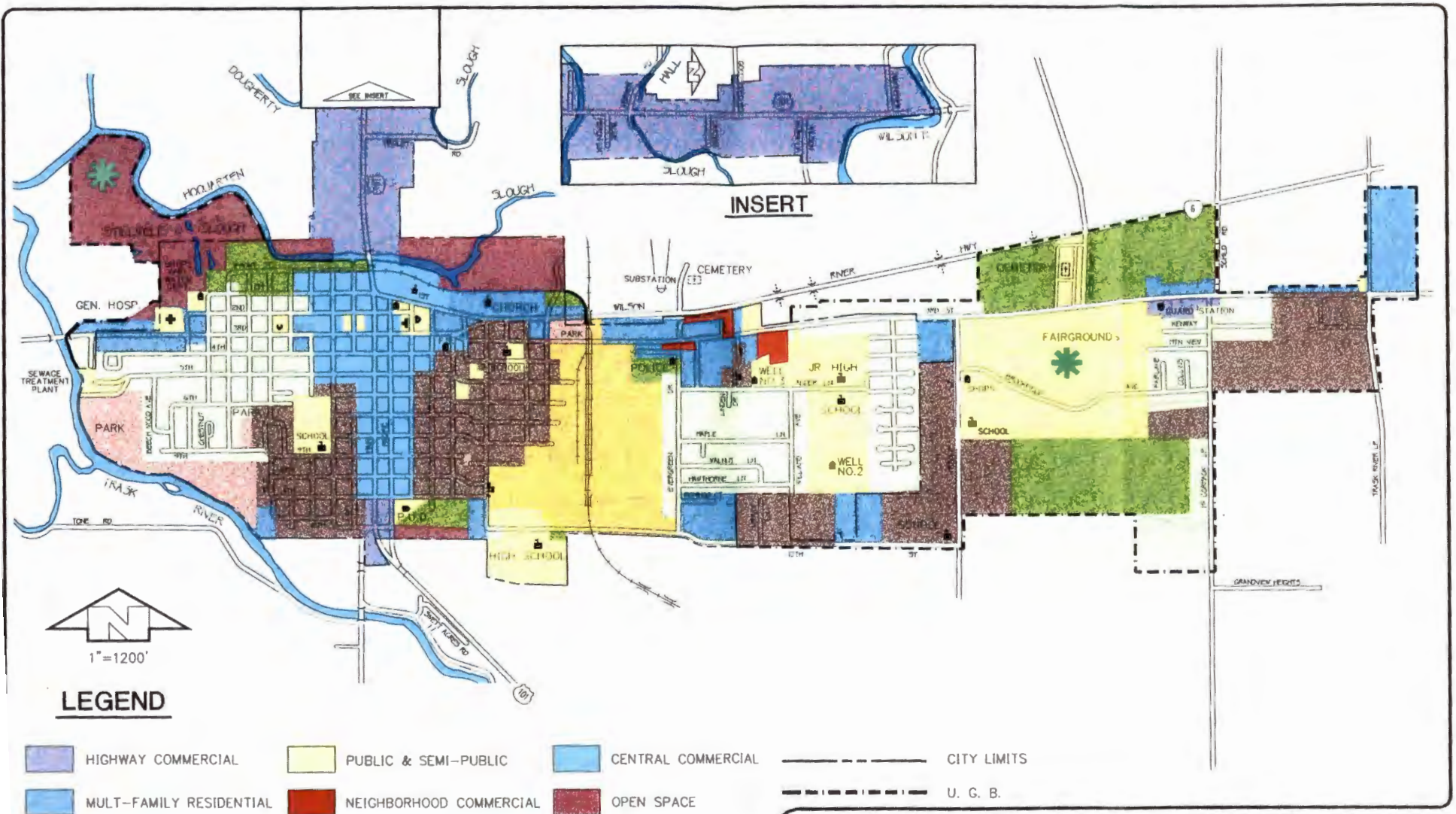
2.3 POPULATION PROJECTIONS

The projection of future water demand in the Tillamook Water Commission service area from now until the end of the study period in the year 2016 is dependent on the rate of growth in population and employment for the same period of time. As was the case when the last report was written in 1989, population and employment are still increasing. Figure 2.3 and Table 2.1 show historical population data from 1950 to 1995, and support the statement that the population is still increasing. Over the past seven years the population of both the City of Tillamook and Tillamook County has grown an average of 1%± annually.

Table 2.2 estimates the current population served by the Tillamook Water Commission based on a count of residences times 2.39 persons per residence in the City and 2.43 persons per residence in the rural areas. In addition, it compares the estimated population served now versus that estimated for 1989. The total 6,784 people presently receiving water from the Commission represent 29.1% of the 1995 Tillamook County population. Since the service area population is such a high percentage of the County's population, it is reasonable to assume that over the next 20 years the service area will experience the same growth as projected for the County. For purposes of this study, this growth is assumed to be the same as the past 6 to 10 years of 1% annually. Table 2.3 shows the estimated population for every year of the study period with a population of 8,280 estimated for the year 2016.

2.3.1. Ultimate Population

Based on City of Tillamook zoning ordinances and existing zoning within the Urban Growth Boundary (UGB) as shown on Figure 5.2, the ultimate population within the Tillamook



OWNER: TILLAMOOK WATER COMMISSION		LEE ENGINEERING, INC. 1300 JOHN ADAMS ST. OREGON CITY, OR. 97045	
DWG TITLE: CITY OF TILLAMOOK ZONING FOR U.G.B.	DATE: 11/18/96 FILE NO: 1530522C	REVISED:	FIG. 2.2

Figure 2.3

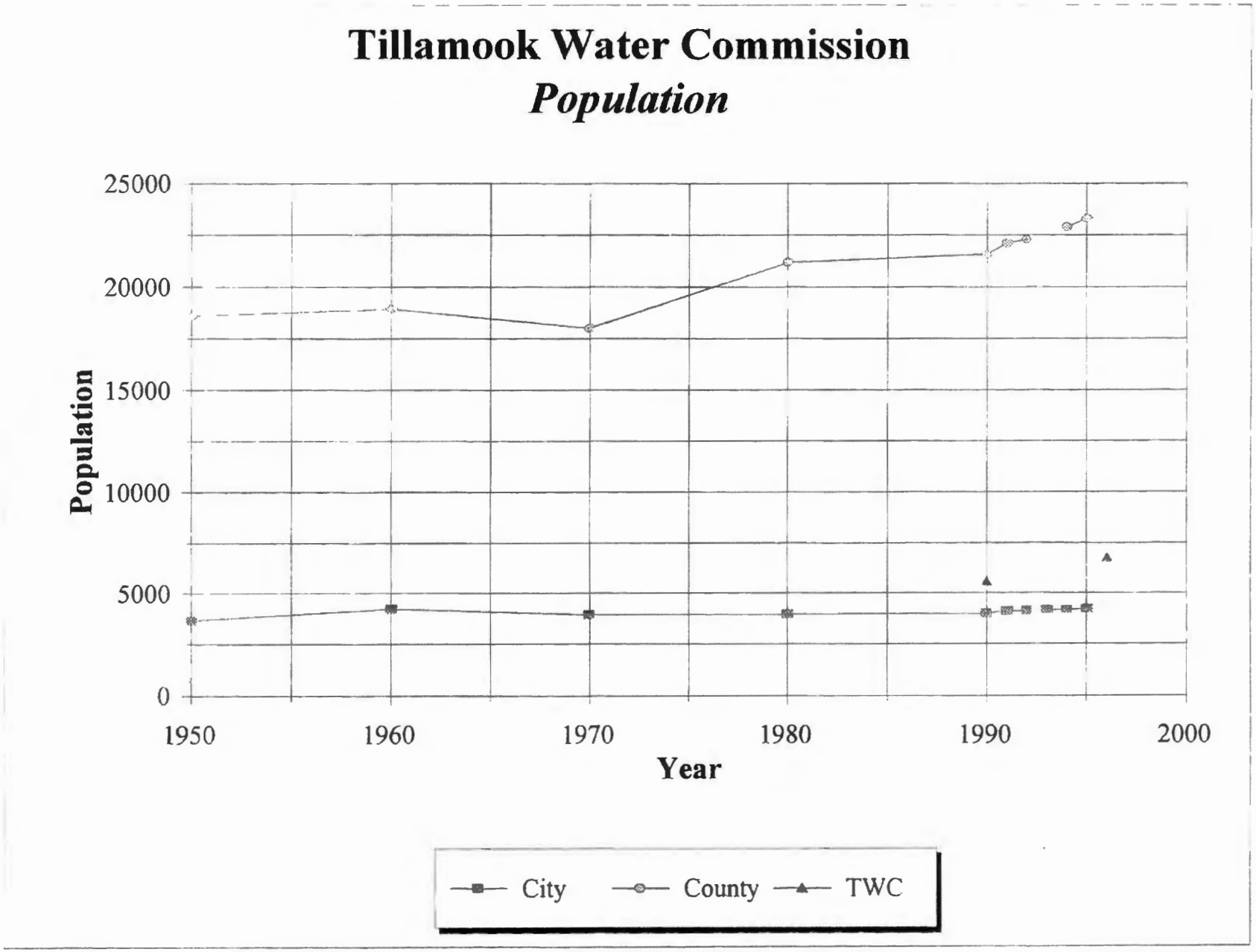

Tillamook Water Commission
Population
25000
20000
15000
10000
5000
0
Population
1950
1960
1970
1980
1990
2000
Year
City
County
TWC

Table 2.1
Tillamook Water Commission Master Plan
Population Data

Year	Population		No. of Res.	Population
	City	County	Meters - TWC	TWC
1950	3,685	18,606		
1960	4,244	18,955		
1970	3,968	18,034		
1980	3,991	21,164		
1990	4,001	21,570	1,320	5,602
1991	4,130	22,116	1,326	
1992	4,145	22,307	1,345	
1993	4,190		1,360	
1994	4,190	22,900	1,377	
1995	4,245	23,300	1,388	
1996			1,397	6,786
% growth (1990 - '95)	6.10%	8.02%	5.15%	21.14% (1990-'96)

per 1990 Census data, persons per household equals: 2.39 (City) & 2.43 (Rural)

Table 2.2

Tillamook Water Commission

Comparison of Estimated Population Served

1989 & 1996

Area	1989		1996		Difference
	Res. Units	Population*	Res. Units	Population**	
City of Tillamook	1,633	3,770	1,835	4,386	616
Outside City	131	303	122	296	(7)
Rural Water Districts:					
Long Prairie	231	534	257	625	91
Pleasant Valley	139	321	175	425	104
South Prairie	96	222	120	292	70
West Hills	91	210	173	420	210
Tone	40	92	32	78	(15)
Hunt	29	67	24	58	(9)
Roger Line	17	39	16	39	(0)
Fitzpatrick	10	23	14	34	11
Tillamook River	4	9	6	15	5
Highway 101, South	3	7	4	10	3
Baseline	2	4	3	7	3
Sub-Total Rural Districts	662	1,529	824	2,002	474
Total Served	2,426	5,602	2,781	6,684	1,184
Fairview Area Within UGB	207	478			
Total Study Area	2,633	6,080	2,781	6,684	604

Notes: * Estimated Population = Res. Units x 2.31 persons/residence

** Estimated Population = Res. Units x 2.39 persons/res. in city + 2.43 persons/res. in rural areas.

Table 2.3
Tillamook Water Commission
Projected Populatin of Service Area

Year	Population
1996	6,786
1997	6,854
1998	6,922
1999	6,992
2000	7,062
2001	7,132
2002	7,203
2003	7,276
2005	7,422
2006	7,496
2007	7,571
2008	7,647
2009	7,723
2010	7,800
2011	7,878
2012	7,957
2013	8,037
2014	8,117
2015	8,198
2016	8,280

growth area would be approximately 9,000 persons, as shown in Table 2.4. At the current growth rate of 1% annually, this would occur at approximately year 2070. This does not take into account the area outside the UGB which is currently being served. As the majority of space outside the UGB is rural farmland, it is not anticipated that much growth would occur unless new customers were added from the existing population. An exception to this could be the Port of Tillamook Bay property south of Tillamook. Several scenarios for this area have been rumored, but nothing official has arisen to date. Any major development which occurs outside the UGB should be reviewed and this master plan updated accordingly.

Table 2.4

Tillamook Water Commission
Water Master Plan
Ultimate Population per Zoning (City UGB)

Zoning	Min. Lot Size	Acres	Acres*0.8	~D.U.'s	Population
Hwy Commercial	0	174.1	139.3	0	0
Multi family Res.	5000	114.3	91.4	797	1,904
S-F & Duplex Res.	5000	248.1	198.5	1,729	4,133
Light Industrial	0	135.7	108.5	0	0
Public & Semi-Public	0	203.4	162.7	0	0
Neighborhood Com.	0	5.4	4.3	0	0
General Industrial	0	93.9	75.1	0	0
Single Family Res	7500	269.4	215.5	1,252	2,991
Central Commercial	0	81.5	65.2	0	0
Open Space	0	159.9	127.9	0	0
Totals		1,485.7	**1,188.6**	**3,777**	**9,028**

Notes:

1. *Population calculated using 2.39 persons per dwelling unit.*
2. *D.U. – dwelling units.*

CHAPTER 3

WATER REQUIREMENTS

3.1 INTRODUCTION

In order to determine the adequacy of the Tillamook Water Commission's existing water supply, distribution, transmission, and storage facilities, the trends in water supply, consumption and loss must be analyzed. Population trends and projections must be examined in conjunction with production and consumption data so that water demand for customers within the Commission's service area can be projected through the year 2016. The Tillamook Water Commission staff has historically maintained records of production from the well and surface water sources. Since completion of the water treatment plant, this data is collected by means of remote terminal units and transmitted to the main terminal unit at the Commission's shop.

Water consumption is monitored through reading user meters once a month. By comparing the metered consumption records with the production records, trends of the Water Commission's system may be analyzed.

3.2 ANALYSIS OF WATER SERVICES BY TYPE AND CONSUMPTION

Table 3.1 provides an analysis of metered service connections by type, meter size, and consumption using January 1995 - December 1995 water consumption information and a June 1996 meter count for active accounts only. Inside the City, 1,626 meters consume 272,009,000 gallons per year, or 66.2% of the total water sold. Of that amount, 48.2% is for residential use, 47.8% is commercial use, 2.6% is for schools, and 1.4% is for farm use. In addition to the billed accounts, there are eight public facilities which receive free water: the City Hall, Fire Station, Sewage Treatment Plant, and one park which are metered, and the Pioneer Museum, City Shop and two parks which are not currently metered. The largest of these is the Sewage Treatment Plant, which uses 22,200,000 gallons per year.

Users outside the City consist of 75 individual accounts along the transmission mains south of town using 27,299,000 gallons per year, or 6.6%, and 11 rural water districts using 111,788,000 gallons per year, or 27.2%. With the exception of the Port of Tillamook Bay, which uses 10.1% of the water sold outside the City, the water is primarily used by residences and farms. In addition to these metered accounts, there are a number of customers connected to the transmission lines who receive free water in exchange for granting easements across their properties for the Commission's transmission mains. Of these, five appear to be metered.

Table 3.1 also shows the average daily use in gallons per day (gpd) per residential unit for the in-City, outside-City, and rural water districts. The 196 gpd and 132 gpd for in-City and outside-City

TABLE 3.1

SUMMARY OF METERED SERVICES
(Active Meter Accounts as of June 1996)

CUSTOMER TYPE	RES UNITS	NUMBER OF METERS BY SIZE 5/8	1	1.5	2	3	4	6	8	10	TOTAL METERS	WATER CONSUMPTION (Jan - Dec 1995) 1000 gal/yr	gal/day	% of total	GPD/R U
A IN CITY															
Residential															
Single Family Homes	1,270	1,253	0	0	0	0	0	0	0	0	1,253	131,207	359,471	31 92%	
Mobile Homes	23	0	0	1	0	0	0	0	0	0	1	0	0	0.00%	
Multi-Family	542	52	3	4	10	0	0	0	0	0	69	0	0	0.00%	
Subtotal Residential	1,835	1,305	3	5	10	0	0	0	0	0	1,323	131,207	359,471	31.92%	196
Farms	1	1	0	0	0	0	0	0	0	0	1	3,812	10,444	0.93%	
Schools	10	0	0	5	3	0	2	0	0	0	10	6,988	19,145	1.70%	
Commercial	524	206	39	19	25	2	0	0	0	1	292	130,002	356,170	31 62%	
*(Tillamook Lumber in Comm.)		(4)			(1)					(1)	(6)				
Subtotal IN CITY	2,370	1,512	42	29	38	2	2	0	0	1	1,626	272,009	745,230	66.17%	314
B OUTSIDE CITY															
Residential															
Single Family Homes	61	60	1	0	0	0	0	0	0	0	61	10,680	29,260	2 60%	
Mobile Homes	52	0	0	0	1	0	0	0	0	0	1	0	0	0 00%	
Multi-Family	9	3	0	0	0	0	0	0	0	0	3	0	0	0 00%	
Long Term Care Home	100	0	0	0	1	0	0	0	0	0	1	0	0	0 00%	
Subtotal Residential	222	63	1	0	2	0	0	0	0	0	66	10,680	29,260	2 60%	132
Farms	7	7	0	0	0	0	0	0	0	0	7	2,628	7,200	0.64%	
Port of Tillamook Bay	17	0	0	0	0	0	0	0	1	1	2	13,991	38,332	3 40%	
Subtotal OUTSIDE CITY	246	70	1	0	2	0	0	0	1	1	75	27,299	74,792	6.64%	304
C RURAL WATER DISTRICTS															
Baseline	3	0	1	0	0	0	0	0	0	0	1	400	1,096	0 10%	
Hwy 101 South	4	0	0	0	1	0	0	0	0	0	1	480	1,315	0 12%	
Fitzpatrick	14	0	0	0	1	0	0	0	0	0	1	902	2,471	0 22%	
Roger Line	16	0	0	0	1	0	0	0	0	0	1	4,001	10,962	0 97%	
Hunt	24	0	0	0	1	0	0	0	0	0	1	7,688	21,063	1 87%	
Tillamook River	6	0	0	0	1	0	0	0	0	0	1	510	1,397	0.12%	
Tone	32	0	0	0	0	0	1	0	0	0	1	9,445	25,877	2.30%	
West Hills	173	0	0	0	1	0	1	0	0	0	2	12,048	33,008	2.93%	
Pleasant Valley	175	0	0	0	0	0	1	0	0	0	1	23,124	63,353	5.62%	
Long Prairie	257	0	0	0	0	0	1	1	0	0	2	32,896	90,126	8.00%	
South Prairie	120	0	0	0	0	0	0	1	0	0	1	20,294	55,600	4 94%	
Subtotal RURAL DIST	824	0	1	0	6	0	4	2	0	0	13	111,788	306,268	27.19%	372
TOTAL	3,440	1,582	44	29	46	2	6	2	1	2	1,714	411,096	1,126,290	100 00%	327

*Note: Tillamook Lumber meters and consumption included in commercial category. Largest user.

GPD/R U = gallons per day per residential unit.

residential users is typical for a single-family home. The 372 gpd average use for the rural water districts reflects not only the large rural lot sizes of the homes, but also the distribution system losses of the individual water districts. System wide use for 1995 was 136 gpd/capita.

3.3 ANALYSIS OF PRODUCTION, CONSUMPTION AND LOSS

Table 3.2 compares the total production of the Commission's well and surface supply to the metered consumption throughout the service area for the period of 1990 through 1996. Since the water treatment plant was completed in the fall of 1994, losses have been less. This could be due to the accuracy of new meters installed at the water treatment plant or the changes which have taken place over the past six years. These changes include a new well, replacement of transmission mains, and installation of a water treatment facility.

Table 3.2 shows that if metered consumption is subtracted from production, the result is unmetered or unaccounted-for water, which is caused by unmetered connections, inaccurate or improperly sized meters, leaks, or water use from fire hydrants.

The results of the computation in Table 3.2 (if extracted out to a full year in 1996) show that unmetered water loss was declining for the calendar years 1994, 1995 and 1996 at 64,782,000 gallons per year, 62,198,000 gallons per year, and 60,840,000 gallons per year, respectively.

The estimated water loss in terms of percent of production was 22.57% in 1994, 15.13% in 1995 and a projected 14.23% for 1996. It should be noted that water production and loss may be higher than normal in the spring of 1996 due to the extensive cleanup required after the severe flooding which took place in February. The peak daily demand (to date) of 2.327 million gallons per day (MGD) took place in March instead of July or August, as is typical.

As the annual loss is declining and Commission staff has been working on repairing piping, the primary cause of lost water appears to be from leaks. This appears probable when considering the age and condition of the steel pipes which make up the majority of the transmission system between the water treatment plant and the City. The annual loss of approximately 15% (60,000,000 gallons per year) is high for a system of this type. The American Water Works Association Leak Detection and Water Accountability Committee recommends a goal of less than 10% for unaccounted-for water. Another way to look at water loss is to visualize it in terms of dollars spent. Using an assumed cost of production of $.70 per 1,000 gallons yields a loss to the Water Commission of $42,000 ± per year. Another way to look at it is in terms of lost revenue. Assuming an average cost of $1.85 per 1,000 gallons, 60,000,000 gallons results in lost revenue of $111,000±. Of course, not all water is billable, but this demonstrates a value for unaccounted-for water to the Commission.

In order to reduce losses to the AWWA recommended level of 10% or less, the following steps are recommended:

TABLE 3.2
Tillamook Water Commission
Water Master Plan Update
Consumption & Production Comparison

Year	Production 1000's gal	Metered Consumption 1000's gal	Unaccounted Water (loss) 1000's gal	Loss As a % of Production	ADD gallons	PDD gallons	Pkg Factor
1990	604,026	439,545	164,481	37.42%	1,204,233	3,150,000	2.62
1991	586,972	469,081	117,891	25.13%	1,285,153	2,540,000	1.98
1992	582,988	453,262	129,726	28.62%	1,241,814	2,110,000	1.70
1993	545,956	445,065	100,891	22.67%	1,219,356	2,387,000	1.96
1994	568,719	459,669	109,050	23.72%	1,259,367	2,264,000	1.80
1995	473,294	411,096	62,198	15.13%	1,126,290	2,071,552	1.84
1996	162,832	142,552	20,280	14.23%	1,187,933	2,327,309	1.96

1996 values for period of January through April only.
1996 PDD to date was on March 12.
ADD = average daily demand.
PDD = peak daily demand

1. All "free" connections should be metered and the consumption entered into the monthly totals in order to provide an accurate "water-loss" accounting.

2. Meters larger than 3/4" should be tested on a revolving 2 - 3 year cycle in order to eliminate the possibility of non-registering or under-estimating meters.

3. The Commission should continue an annual minimum budgetary expenditure of $40,000 to $50,000 to upgrade the distribution system by replacing undersized and leaking waterlines.

4. The old steel transmission lines should be prioritized for replacement or lining.

5. The Commission should begin, or continue, an education program for users of fire hydrants showing the importance of notifying the Commission of specific fire hydrants used and the duration of use. This is especially important for non-emergency users such as construction and clean up crews and fire fighter training.

3.4 PROJECTION OF FUTURE WATER DEMAND

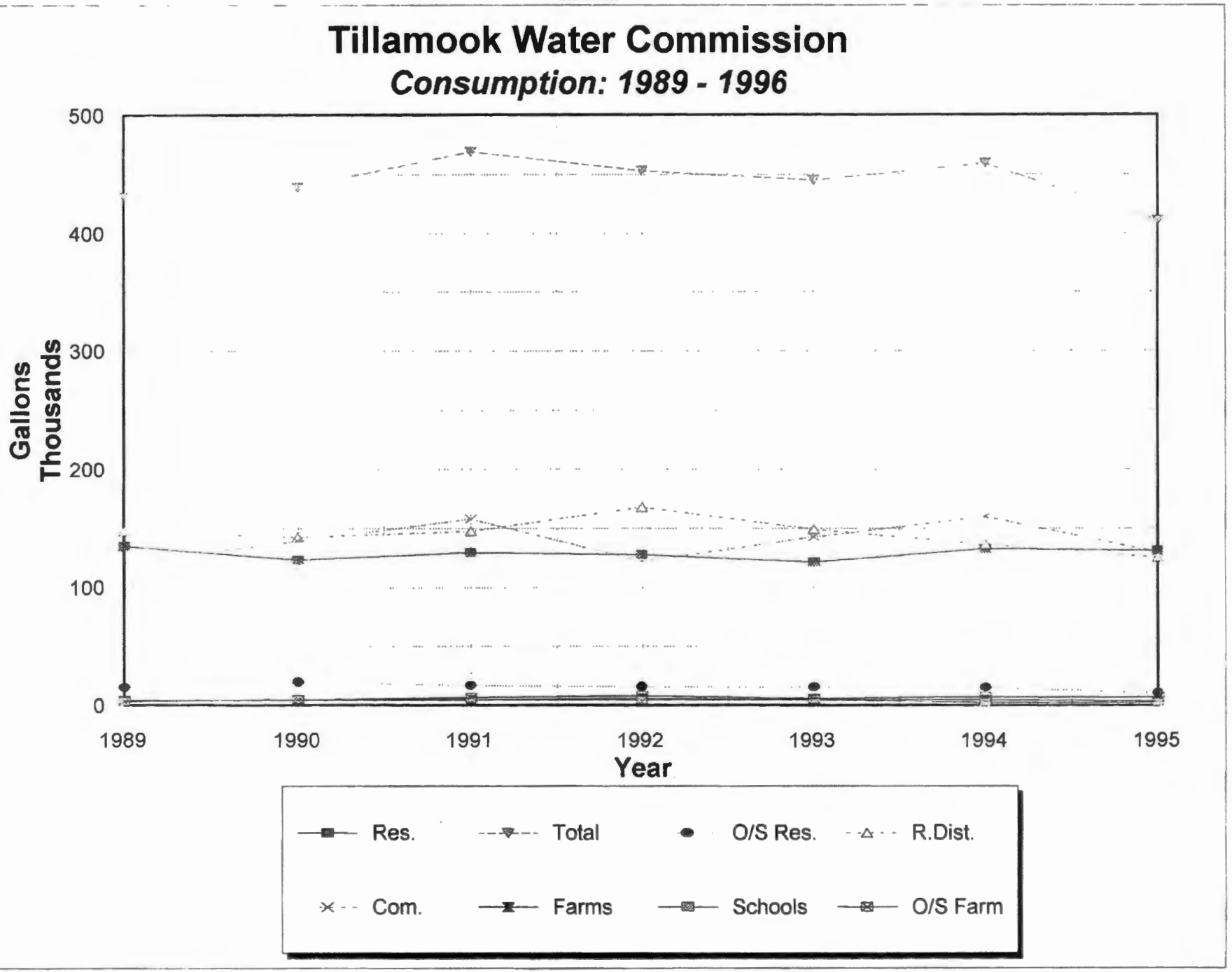
The projection of water demand in the study area from now to year 2016 depends on past trends and future growth in population, employment and water consumption patterns not only within the City of Tillamook Urban Growth Boundary, but also outside the City service area.

Table 3.3 shows the projected average daily demand throughout the study period assuming an annual 1% growth in population as discussed in Chapter 2. Although the region has the potential to attract intensive water using industry, Figure 3.1 shows that commercial use over the past eight years is cyclical with periods of economic ups and downs. For this reason, we project an average 1% annual increase in consumption is reasonable for the study period. Table 3.2 also compares average daily and peak daily demand in million gallons per day for the years 1990 - 1996. The table shows that peak day demand is approximately 2.0 times average daily demand. This ratio is fairly consistent, with the exception of 1990 which had a peak day demand of 3.15 MGD in December. However, this is an unusual circumstance and appears to be related to a combination of factors, including a large blimp hangar fire at the Port of Tillamook Bay facilities and a broken water main. For purposes of this study, we will use a peaking factor of 2.0. Table 3.3 uses the growth factors and peaking factor discussed above to estimate future consumption within the study area. Year 2016 average daily demand (ADD) is estimated to be 1.656 MGD and the peak daily demand (PDD) is estimated to be 3.312 MGD compared with the year 1995 ADD of 1.126 MGD and PDD of 2.072 MGD. Assuming leaks are reduced to approximately 10% by the end of the study period, the peak daily production capability required will be 3.643 MGD and the average daily production required will be 1.822 MGD.

3.5 CITY OF TILLAMOOK FIRE PROTECTION REQUIREMENTS

Fire protection for areas within the Tillamook Water Commission service boundaries is provided by

Fig. 3.1


Tillamook Water Commission
Consumption: 1989 - 1996
500
400
300
200
100
0
Gallons
Thousands
1989
1990
1991
1992
1993
1994
1995
Year
Res.
Total
O/S Res.
R.Dist.
Com.
Farms
Schools
O/S Farm

Projected Average Daily Demand at 200 gpd/person

YEAR	ADD	PDD
1996	1,126,476	
1997	1,370,772	2,741,544
1998	1,384,480	2,768,959
1999	1,398,325	2,796,649
2000	1,412,308	2,824,616
2001	1,426,431	2,852,862
2002	1,440,695	2,881,390
2003	1,455,102	2,910,204
2004	1,469,653	2,939,306
2005	1,484,350	2,968,699
2006	1,499,193	2,998,386
2007	1,514,185	3,028,370
2008	1,529,327	3,058,654
2009	1,544,620	3,089,240
2010	1,560,066	3,120,133
2011	1,575,667	3,151,334
2012	1,591,424	3,182,847
2013	1,607,338	3,214,676
2014	1,623,411	3,246,823
2015	1,639,645	3,279,291
2016	1,656,042	3,312,084

gpd = gallons per day
ADD = average daily demand
PDD = peak daily demand

organization which has developed a rating system for community fire protection systems. Ratings range from Class 10 for no protection to Class 1 for the best possible protection. The rating is the major criteria used in setting fire insurance premiums for individual buildings. The City's current rating (given in 1991) is 5.

Approximately 40% of the rating is based on the adequacy of the water system. Tillamook's water system was credited with 11.3 deficiency points out of a possible 40. Most of the deficiency points related to adequacy and arrangement of distribution mains and distribution of hydrants. Since the 1991 rating, reservoir capacity has been added, a third well has been constructed, and the transmission system has been updated.

The amount of water used for fire fighting in comparison to total yearly water consumption is negligible, but high flow rates required for fighting potential major fires greatly influences the design of distribution systems and storage reservoirs. Some Insurance Service Office recommended fire flows and the duration of time for which they must be provided are listed below.

Type of Building	Location	Required Fire Flow @20 psi (GPM)	Duration (Hours)
Residential	11th & Laurel	1,000	2
Residential	9th & Cedar	1,000	2
Hospital (fully sprinklered)	3rd & Ash	4,000	4
School	5th & Miller	4,000	4
High School	12th & Miller	5,000	4
Jr. High School	Alder & Spruce	5,000	4
Business District	2nd & Ivy	5,500	4
Commercial	3rd & Ivy	3,500	3

The transmission and distribution mains should be designed to deliver these fire flows during the peak day demand condition while maintaining a minimum 20 psi pressure throughout the distribution system. The storage reservoirs should have adequate capacity to hold the maximum fire flow for its indicated duration (5,500 gpm for four hours = 1,320,000 gallons) plus three times the average day consumption amount.

Chapter 6 includes further discussion of storage capacity now and for the next 20 years.

CHAPTER 4 - SUPPLY SYSTEM

4.1 HISTORY AND DESCRIPTION OF EXISTING SUPPLY SYSTEM

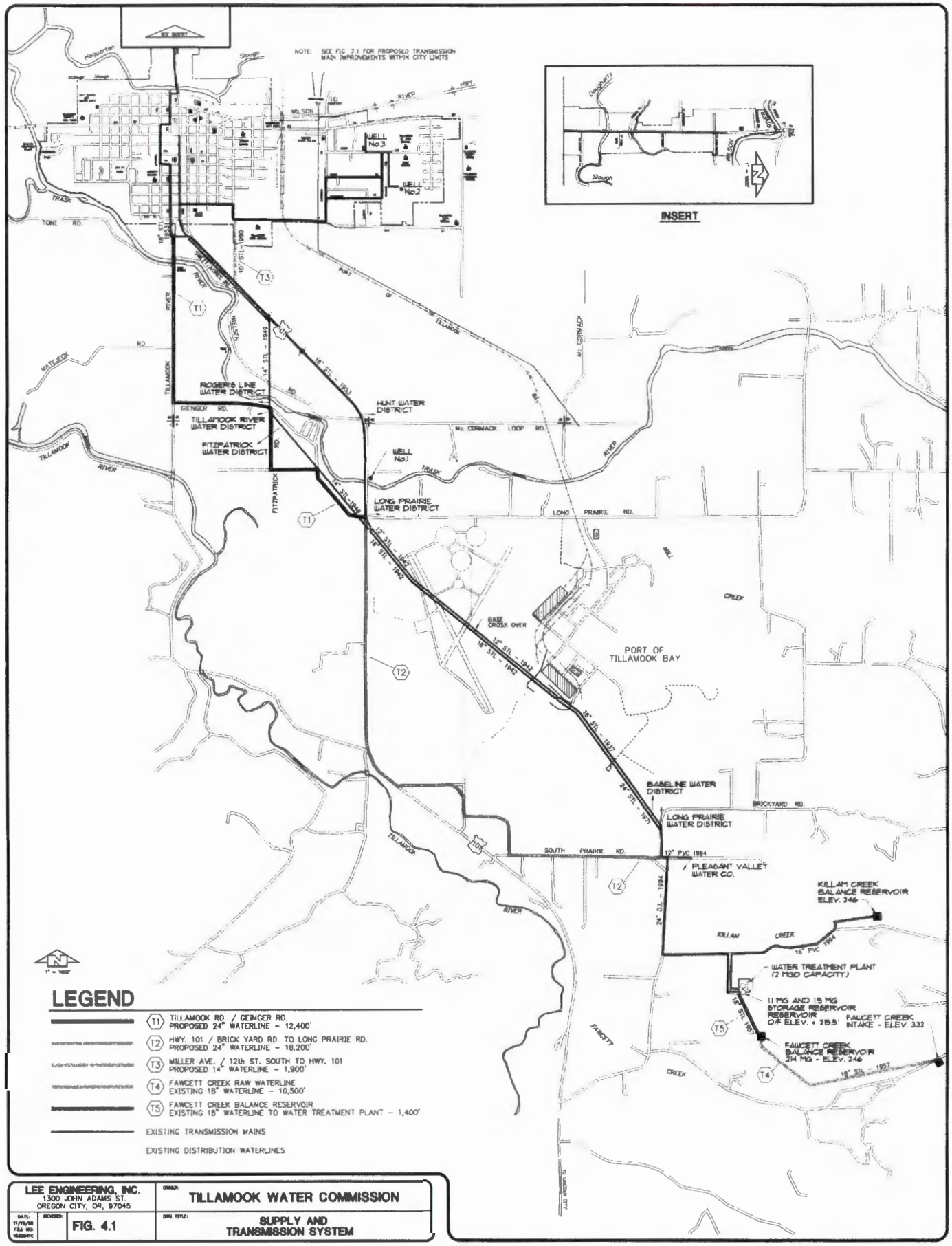
The Commission's water supply consists of filtered surface water from Killam and Fawcett Creeks located southeast of the City as shown in Figure 4.1, and groundwater from two wells located on the east side of the City. A third well is located near the Highway 101 crossing of the Trask River. Water from the two surface sources is treated and delivered entirely by gravity to all customers. Historically, surface water has been the primary supply. Well water is used during the winter when surface water turbidity exceeds acceptable limits and during the summer when peak demand exceeds the surface supply capacity.

The original diversion of Fawcett Creek began prior to the turn of the century by a private water company. In 1895, four years after it was chartered, the City of Tillamook took over the Fawcett Creek supply. In 1905, the Tillamook Water Commission was chartered. Approximately five years later, diversion of Killam Creek began. Wood stave pipe was used to transport water from each creek intake into town. In the 1920's, diversion dams and 200,000 gallon impoundments were constructed at each intake. The low dam structures divert a portion of the creek flows into the impoundments which provide settling prior to the water's entering the screened concrete intakes. Since the Killam Creek intake is located at elevation 246 ft. and the Fawcett Creek intake at elevation 332 ft., a 200,000 gallon uncovered concrete equalization basin was constructed on the Fawcett Creek pipeline to compensate for the higher elevation and provide additional storage.

In order to supplement the flows of Fawcett Creek, Skookum Reservoir was constructed in 1965, three miles upstream of the intake. The 700 acre-foot impoundment has a 37 foot high earth fill dam and a concrete spillway at elevation 1,193 feet above sea level. The drainage area to this impoundment is approximately 2.2 square miles or 1,408 acres. Water is collected in the reservoir during the rainy months and released during the dry summer months of June through October via a slide gate over the outlet pipe at the bottom of the dam.

In 1994, a 2.0 mgd package filtration plant was completed which allows the Water Commission to treat, disinfect and store the surface water prior to delivering it to town. The headworks of the plant is designed to allow water from each surface intake to enter into the treatment plant as a combined flow or singularly. Treated water is then stored in 3.0 million gallons of on-site storage prior to being delivered to town. This provides the Water Commission with adequate chlorine contact time and reserve capacity for existing conditions.

From the water treatment plant site, water flows by gravity to the city limits through six miles of parallel transmission mains, varying in size from 12" to 24" in diameter. The original wood stave pipes were replaced with steel primarily between 1937 and 1959. In 1994, a 24" ductile iron main was constructed to replace the separate 18" diameter mains from each source which joined together at the old master meter and chlorination building location south of town just off South Prairie Road near the southeast corner of the air base. This 24" main extends from the reservoirs to this location.



LEE ENGINEERING, INC. 1300 JOHN ADAMS ST. OREGON CITY, OR, 97045	OWNER: TILLAMOOK WATER COMMISSION	
DATE: 11/19/98 F2.1 RD 1626WC	REVISED:	FIG. 4.1
	DRG TITLE: SUPPLY AND TRANSMISSION SYSTEM	

Starting in the late 1950's, efforts were made to supplement the surface water with groundwater which could act as an alternative source during periods of high turbidity and low stream flow. In 1958, the Commission drilled its first well, known today as Well No. 1. It is located two miles south of town along the 18" transmission main just northeast of the Highway 101 bridge over the Trask River. The 140 ft. deep well was test pumped at 1,160 gpm, but was developed to a production capacity of only 600 gpm. A second well was drilled in 1960 on Gienger Road, approximately 1.5 miles south of town near the 14" transmission main which follows the old Highway 101 right-of-way. It had a capacity of 450 gpm and is presently out of service. The water from both wells has a high iron content. Consequently, Well No. 1 is only used during emergency conditions to supply fire flows or peak day demands.

Beginning in 1980, efforts to develop an alternate groundwater supply began. Drilling focused on the east side of town where wells of proven quality and quantity exist. In 1981, a 125 ft. deep well was drilled on the southwest corner of the East Elementary School property just east of Maple Street and Williams Avenue. It was test pumped at 1,100 gpm for 43 hours with 72 ft. of draw down and produced good quality water. Consequently, it was developed to a full production well with a 75 hp vertical turbine pump which produces approximately 700 gpm at the normal system pressure of 90 psi. Today it is known as Well No. 2.

In order to bring the well water to the Ivy Avenue transmission system, approximately 2,600 ft. of 12" PVC main was installed in 1981 from the well north to Alder Street, south along Williams Avenue and east on a portion of 12th Street in front of the high school.

Because of the successful development of Well No. 2, during July 1986 another well was drilled at the southern end of Williams Avenue approximately 600 ft. south of Well No. 2. The well was drilled to 150 ft. and initially yielded only 50 gpm. Development work increased the yield to 250 gpm, but the water contained high amounts of sand, turbidity, iron and manganese. Associated with the iron and manganese were serious taste and odor problems. Consequently, the well was abandoned in August 1986.

In response to this unsuccessful drilling experience, a groundwater supply study was performed by Lee Engineering during October 1986. The study inventoried existing wells in the area bounded by the city limits on the south, Highway 101 on the west, and the Wilson river on the north. An analysis of the water quality and quantity and water-bearing formations of these wells leads to the conclusion that good quality groundwater can most likely be found in wells drilled over 120 ft. deep and located north of a line formed by 9th and Walnut Streets. Based on that conclusion and proximity to existing 10' and 12" transmission mains, four test well sites were proposed:

- S.E. corner of the East Elementary School property due east of Well No. 2

- Northwest corner of the Junior High School property at Alder Lane and Williams Avenue

- Goodspeed Park near 3rd Street and Miller Avenue

- Wilson School near 5th Street and Miller Avenue

During July 1987, drilling of a test well at the first site began. However, at a depth of 120 ft., the hole caved in. The driller lost some of his tools and later abandoned the hole. The Commission subsequently contracted with another driller to drill a new test hole at the same site beginning in the spring of 1988.

However, during the week of December 7, 1987, a slide occurred in Fawcett Creek midway between the intake and Skookum Lake. It was caused by the Oregon State Forestry Department's blasting activity in a borrow pit located on the south side of the watershed. Heavy rains lubricated the soils and washed much mud and debris into the creek. Consequently, the Fawcett Creek water supply became so turbid that it could not be used. Since the Pleasant Valley Water District took its water directly from the Fawcett Creek transmission line ahead of the balance reservoir, this rural district was left without a water supply. The remaining customers of the Commission had to be served by Well No. 2 and Killam Creek. During periods of high turbidity resulting from normal winter storms, Killam Creek also could not be used. This left the Commission with a 1 mgd well supply inadequate to meet the normal production requirement of 1.6 mgd.

As a result of the emergency caused by the slide, the Commission took immediate steps to increase its well supply. Drilling of the test well at the East Elementary School began immediately. By the end of January 1988, an 8" diameter, 133 ft. well was completed. Test pumping for two hours indicated a yield of 58 gpm of good quality water. As a result, the Commission decided to proceed with drilling a production well at this site and an 8" test well at the northwest corner of the Junior High School while at the same time pursuing avenues to finance this and other capital improvements through a cost-of-service rate study and the FmHA grant and loan program.

During August 1988, a 12" production well was drilled at the East Elementary School site to a depth of 123 ft. However, the water-bearing zone encountered was only estimated to be able to produce 100 - 150 gpm. Since a minimum 300 gpm well was anticipated based on the results of the test well drilling, the production well was abandoned in October 1988.

The 6" diameter test well at the Junior High School, drilled to 205 ft. during August, 1988 proved much more promising. It was test pumped at 500 gpm for 12 hours with a draw down of only 35.5 ft. Based on this information, a 12" production well was completed in September 1993 which will produce 900 gpm.

The December 1987 Fawcett Creek slide demonstrated the vulnerability of the existing surface supply and the inadequacy of the well supply capacity at that time. Consequently, the Commission drilled

drilled production Well No. 3 at the Junior High School site. In addition, the regulations adopted as a result of the 1986 Safe Drinking Water Act Amendments specifying the need for filtration of the Fawcett and Killam Creek supplies led the Commission to its long-range goal of increasing the capacity of its well supply and to improve its existing surface source in conformance with new regulations.

4.2 EVALUATION OF GROUNDWATER SUPPLY

Presently, Wells No. 2 and 3 are the Commission's only source of good quality groundwater. Their 1,600 gpm combined capacity is adequate to provide the average daily demand of in-city customers. There are other potentially good drilling sites on the east side of town as previously mentioned in Section 4.1. In addition, a fifth stage pump and a larger motor could be installed in the Well No. 2 pump to increase its capacity to 1,000 gpm.

In order to make the combined 2,200 gpm well supply (Wells 1, 2 and 3) function properly, transmission main improvements, disinfection system modifications, and control system improvements were constructed. A 12" diameter main was extended westward to bring well water to the 18" Ivy Avenue main which transmits water north and south through the downtown core. In addition, the 10" steel sections of the transmission system were increased in order to handle the 2,200 gpm combined well output. Additional transmission main improvements on the east and west sides of town will allow any combination of sources to serve the area and will be discussed in a later chapter.

4.3 EVALUATION OF SURFACE WATER SUPPLY

4.3.1 Quantity

The Commission's existing surface water supply must be evaluated in terms of available quantity to meet present and future demands, and in terms of water quality, watershed control and treatment methods to meet the regulations of the Enhanced Surface Water Treatment Rule (ESWTR) resulting from the 1996 Safe Drinking Water Act (SDWA) amendments.

In terms of quantity, the Commission has water rights certificates to withdraw 6 cfs (3.88 mgd) from Killam Creek and 26 cfs (16.80 mgd) from Fawcett Creek, as shown in Table 4.1. The combined total of 20.68 mgd is more than enough to meet the year 2016 projected average daily and summer peak production requirements of 1.822 and 3.643 mgd, respectively. However, the availability of water to be withdrawn fluctuates greatly as shown in Table 4.2. The winter maximums for each creek are more than the 6 cfs limit, but the lowest combined summer minimum for the period 1976-1984 totals approximately 4.6 cfs, or about 3 mgd. Because of minimum stream flow requirements in Fawcett Creek set by the Fish and Wildlife Commission to insure fish migration, the total amount which can be withdrawn from the two creeks drops to approximately 3.34 cfs (or 1,500 gpm and 2.1 mgd) during the late summer and early fall. Because 1,500 gpm is slightly more than the water treatment plant capacity and is insufficient to meet the 1,700 gpm present peak day demand, Well No. 2 and/or No. 3 must be used during this low flow period.

The combined 1,500 gpm surface flow, 700 gpm Well No. 2 output and 900 gpm Well No. 3 output are adequate to meet the projected year 2016 peak of 2,300 gpm.

Alternatives for providing the extra 800 gpm (1.8 cfs) necessary to make the surface supply the sole source include increasing Skookum Lake storage to augment Fawcett Creek flow, constructing a dam on Killam Creek to augment that creek's summer flow, or developing a supply from Simmons Creek immediately south of Fawcett Creek. As shown in Table 4.1, the Commission has a water rights permit for 2 cfs of Simmons Creek water. Although current minimum stream flow records are not available, the previous reports indicate that the stream could yield as much as Killam Creek. These alternatives must be compared with the use of present and future groundwater supplies once the other aspects of the surface water supply are discussed below. It is important to remember that an increase in surface water supply will require additional treatment plant capacity beyond what currently exists.

4.3.2 Quality

The Water Commission treats the combined surface flow of Fawcett and Killam Creeks by rapid sand filtration and chlorine disinfection at the 2.0 mgd water treatment facility which was completed in 1994. Since completion of the treatment facility, water quality has met all Federal and State guidelines.

4.3.3 Watershed Control

The watersheds for Fawcett and Simmons Creeks are located on a mix of privately owned land and lands controlled by the Oregon State Forestry Department. The majority of the Killam Creek drainage is owned by the City of Tillamook, which owns approximately 2,400 acres. The private timber lands belong to Publishers Paper Company.

The Tillamook Water Commission owns approximately 640 acres in the Killam and Fawcett Creek watersheds, including the land around both intakes and surrounding Skookum Lake. All logging roads into the Fawcett and Killam Creek watersheds are gated and remain locked except for logging activities. All other activities are restricted by unwritten cooperative agreement between private land owners, the City of Tillamook, Tillamook Water Commission, and the Oregon State Forestry Department.

A formal partnership arrangement should be investigated which covers the concerns of all property owners and includes maintenance of future water quality. The 1996 SDWA Amendments outline a Source Water Petition Program which specifically addresses this issue. In addition, the Commission should consider membership in watershed and/or estuary groups to ensure a voice in management of these resources.

4.3.4 Future Requirements

To ensure an adequate supply of water beyond the period of the Master Plan, and due to the fact that there is not enough water to fulfill the Commission's surface water rights, the Commission should

TABLE 4.1
TILLAMOOK WATER COMMISSION
WATER RIGHTS INFORMATION

SOURCE		AMOUNT	PRIORITY DATE	APPLICATION NO.	PERMIT NO.	CERT. NO.
A.	**SURFACE WATER AND RESERVOIRS**					
1.	Killam Creek	6 cfs	5/22/10	S-698	S-439	2388
2.	Fawcett Creek	6 cfs	11/23/32		S-10790	33251
	Fawcett Creek	20 cfs	3/13/24	S-9415	S-6673	_____
	Intake Reservoir	.666 ac.ft.	8/20/26	R-11037	R-661	49474
	Skookum Lake Res. (allowed 40' high)	700 ac. ft.	2/25/65	R-40641	R-4532	
	Skookum Lake Water (water from impound-ment)	6 cfs/12 cfs	2/25/65	S-40642	S-30192	
3.	Simmons Creek	2 cfs	8/22/75	S-53575	S-41438	
B.	**GROUND WATER**					
1.	Well No. 1	1.56 cfs	6/04/58	G-990	G-842	32234
2.	Old Well No. 2 (Abandoned)	1.03 cfs	7/25/60	G-1807	G-1652	35782
3.	Well No. 2	2.7 cfs	7/14/82	G-10574	G-9829	
4.	Well No. 3	2 cfs 0.23 cfs	8/04/91 7/15/92	G-12443	G-11784	

1530\table4.1

TABLE 4.2
TILLAMOOK WATER COMMISSION
STREAMFLOW RECORDS FOR KILLAM AND FAWCETT CREEKS

KILLAM CREEK
(From continuous reading gauge located above diversion dam)

WATER YEAR	MEAN CFS	MAX. CFS	MIN. CFS	ANNUAL ACRE FT.
1976	37.0	507	1.7	26,860
1977	15.1	103	1.2	10,950
1978	41.1	782	2.3	29,770
1979	24.1	280	2.0	17,470
1980	24.8	265	2.0	17,990
1981	29.0	308	2.3	20,990
1982	35.3	296	2.5	25,560
1983	38.9	343	4.2	28,200
1984	33.0	241	3.7	23,880
1985 - on				

FAWCETT CREEK
(Monthly measurements at diversion dam)

YEAR	MAX. CFS	DATE	MIN. CFS	DATE
1975	70.20	12/30/75	2.35	6/26/75
1976	155.00	3/25/76	2.95	8/30/76
1977	84.60	11/28/77	3.87	7/26/77
1978	77.70	12/05/78	4.76	10/26/78
1979	115.00	2/26/79	2.77	8/01/79
1980	44.40	2/26/80	2.39	10/30/80
1981	50.30	11/20/81	6.30	7/29/81
1982	45.40	4/07/82	3.99	9/01/82
1983 - on N/A	-----	-----	-----	----

CFS = cubic feet per second

pursue options available to increase future water availability. These include perfecting the Simmons Creek source, studying the potential of raising the dam on Skookum Lake, and combining the original Well No. 2 groundwater right with that from Well No. 1. In addition, metering stations should be installed on Fawcett and Simmons Creeks to measure the actual water available during varying flow conditions.

4.4 WATER TREATMENT SYSTEM

4.4.1 Surface Water

Two 1 MGD automatic package water treatment units and related appurtenances are installed in the water treatment plant building, located south and east of Tillamook. The two units are controlled by a single plant controller, with the chemical feed system for both units automatically controlled by a single coagulant controller.

The following items are included in the water treatment system.

a. Factory built steel modular tanks, each designed using an upflow adsorption clarifier followed by a downflow gravity filter with mixed media directly retained by the underdrain system.

b. A complete treatment system including chemical injection equipment, adsorption clarification, filtration, automatic process valves, controllers, adsorption clarifier media, mixed media, direct retention underdrains, and microprocessor based plant control and coagulant control systems.

c. An air scouring system including air blowers and automatic valves for the operation of this system to flush the adsorption clarifier and to aid in the filter backwash.

d. Filters with mixed media and a direct retention underdrain system. The underdrain system provides media support and effective air/water backwashing without the use of support gravel. The underdrain system is capable of simultaneous air/water washing. This system provides more effective cleaning at reduced backwash water volumes than the conventional water/water backwash system and eliminate the potential for filter bed upsets.

   The package water treatment system is provided with an alum tank, propeller flow meters, a backwash water pump, backwash water pond decant pump system, potable water pump, gas chlorination equipment, instrument air supply system, telemetry system, and controls to form a complete and operational water treatment system.

4.4.1.1 Design and Operating Criteria

The package water treatment plant (PWTP) units, the plant control system and the coagulant control system are designed to perform according to the following design and operating criteria:

a. Raw Water

Raw water is provided from two sources: Fawcett and Killam Creeks. Both have raw water quality typical of that for small Pacific Northwest coastal streams. Turbidities normally range from 1 to 3 NTU with spikes of up to 40 NTU in Killam Creek and 70 NTU in Fawcett Creek which last less than 24 hours. Fawcett Creek has a higher clay content in its turbidity due to greater unstable soil conditions in its watershed. In addition, during the warmer months of July through November, small amounts of stringy brown algae appear in Fawcett Creek and small round clumps of green algae appear in Killam Creek. However, the manually cleaned screens at the intakes for both sources are effective in removing the algae.

b. Recycled Water

A third source of influent flow is recycled water pumped from the backwash water ponds by the decant pumps. However, this source should only be used on an emergency basis. It should not be used when adequate raw water is available.

c. Influent Head

Because of the fixed available head from the Killam and Fawcett Creek gravity sources, the water treatment facilities are operated by gravity. Therefore, at a design flow of 1400 gpm, only 14 feet of head (measured from the top of the water treatment plant base) is available at the point where the influent plant piping splits from one common 16" diameter line to two 8" diameter pipes entering each of the two PWTP units. This head is sufficient to operate the treatment units entirely by gravity flow without pumping except for the effluent turbidimeter sample pumps, backwashing and in-plant use.

d. Raw Water Source Control

Each day while checking the water treatment plant, the operator selects the desired combination of raw water sources and manually adjust influent flows to obtain a total flow up to 1,400 gpm, which is the plant capacity. At the telemetry panel in the water treatment plant building he observes the flow rates from Killam and Fawcett Creek supplies as registered by two remote flow meters in the headworks vault. By operating the remote electric butterfly valve actuators on the two supply lines in the headworks vault, the desired flow rates from each creek supply are obtained.

e. Chemical Feed System

i. Chemicals

The chemicals to be used in the treatment process are undiluted liquid alum (5.25 lbs. of dry alum per gallon) for coagulation; soda ash for pH adjustment at an average

ratio of 1 ppm per 2 ppm of alum; polymer as a filter conditioner; and chlorine gas for both pre- and post-disinfection.

f. Performance Criteria

The package water treatment system is capable of reliably producing finished water quality that meets the criteria established by the Environmental Protection Agency (EPA) in the National Primary Drinking Water Regulations (NPDWR) for Filtration, Disinfection, Turbidity, Giardia lamblia, Viruses, Legionella, and Heteratrophic Bacteria; Final Rule. This rule is more commonly called the Surface Water Treatment Rule (SWTR), promulgated on June 29, 1989. Specifically, the finished water turbidity shall be less than 0.5 NTU 95% of the time, less than 5 NTU at all times, and less than 0.2 NTU when raw water NTU is 1.0 or less. In addition, the EPA must be satisfied that contaminant removal efficiencies for the upflow clarification/filtration process only are as follows:

Contaminant	Log removals
Giardia lamblia cysts	2.5
Viruses	2
Total and fecal coliform	>3

Removal of between 75% and 95% of turbidity and Giardia lamblia shall be done by the upflow clarifier only.

The disinfection process following filtration will provide at least 0.5 log inactivation of Giardia lamblia cysts, and 2.0 inactivation of viruses.

4.4.2 Groundwater

The wells can be operated at the same time as the water treatment plant. Because the groundwater and surface water may be mixed, each well is equipped with a chlorinator to provide residual disinfection.

CHAPTER 5

TRANSMISSION AND DISTRIBUTION SYSTEM

5.1 DESCRIPTION AND EVALUATION OF EXISTING SYSTEM

5.1.1 Transmission System

Raw water is transported from the Fawcett Creek intake north to the water treatment plant through 10,500 feet of 18" steel waterline constructed in 1957 and from Killam Creek to the water treatment plant through 5,300 feet of 16" PVC waterline constructed in 1994.

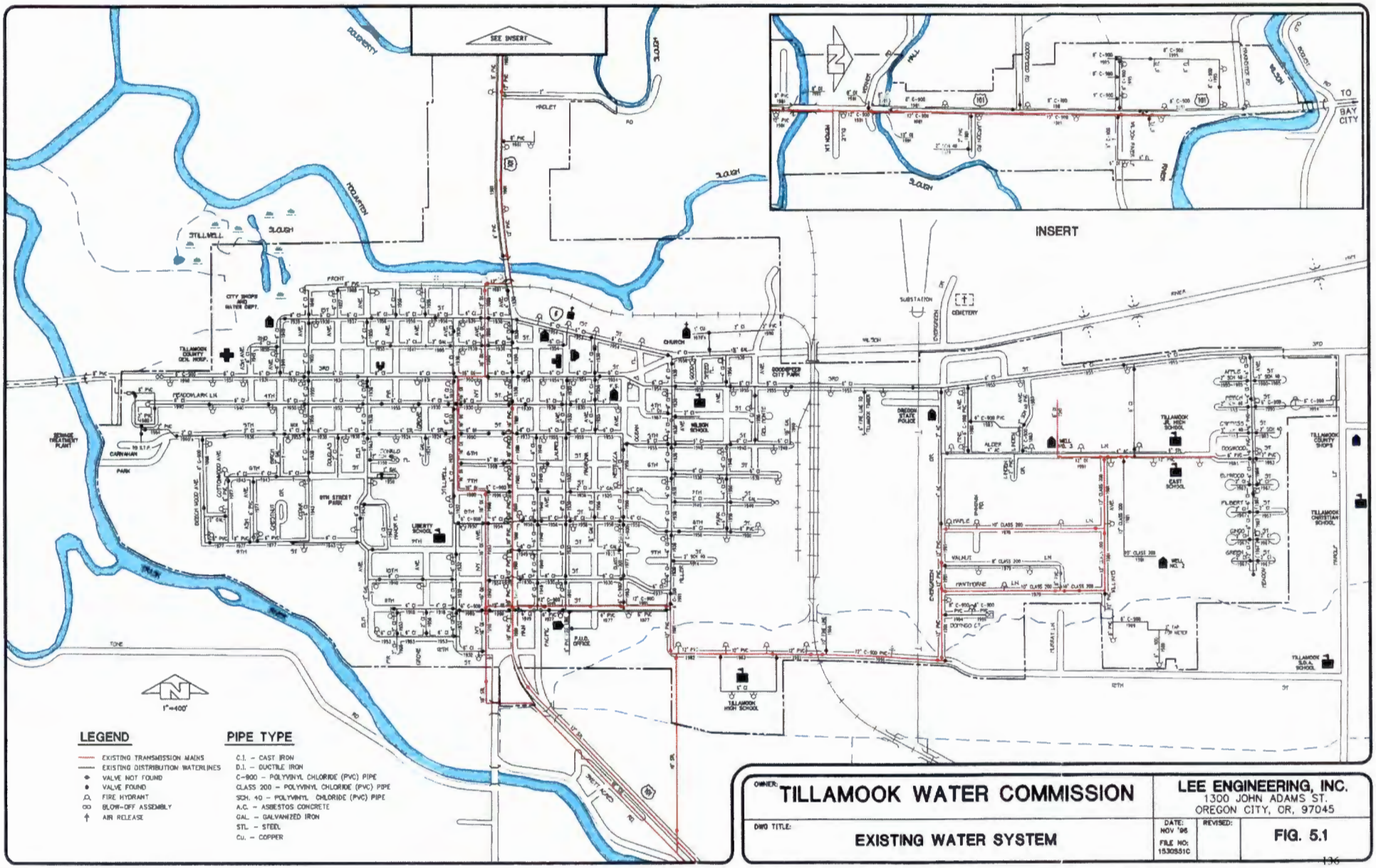
From the reservoirs at the treatment facility the treated water flows by gravity to the Tillamook city limits through approximately six miles of parallel transmission mains ranging in size from 12" to 24" diameter and in age from 35 to 60 years old. These transmission mains are mostly steel. Figure 4.1 shows the location, size and date of installation of the various transmission main segments.

Within the city limits the transmission system consists of mains running north-south through the center of town and east along the southern city limits to Well No. 2 and the Junior High and East Elementary Schools. In 1981, 2,800 ft. of 10" PVC were installed on Main Avenue between 4th and 12th Streets. Also during the same year, the Ivy Avenue main was extended north along Highway 101 to Hadley Road with the installation of 1,525 ft. of 12" PVC and 325 ft. of 12" D.I. Since that time the 12" PVC has been extended north another 3,600 ft. to the Wilson River Loop Road just south of the city limits.

The transmission system extending to the east consists of 3,000 ft. of 10" PVC installed in 1977-78 and 2,500 ft. of 12" PVC installed in 1981 to bring Well No. 2 water west to the 6" distribution system beginning at Miller Avenue. Approximately 1,500 ft. were installed from Well No. 2 north to Alder Lane, west to Williams Avenue and south to Hawthorne. Another 1,000 ft. were installed on 12th Street in front of the High School. The 10" PVC was installed on Hawthorne and Maple to form a loop with the 12" PVC on Evergreen between these two streets.

5.1.2 - Distribution System

The Tillamook Water Commission's distribution system within the City of Tillamook is reasonably laid out, and for the most part was constructed of long lasting, appropriately sized pipe for providing adequate looping and fire flow. Figure 5.1 shows the location, size and date of installation of the various distribution system components. The majority of the system is 6" cast iron and some PVC. Most of the steel distribution piping has been replaced, leaving a small amount of asbestos cement and galvanized iron piping. Leaking, undersized and out-of-date piping has been identified in previous reports, with most of the leaking pipe repaired, replaced or taken out of service. However, undersized pipe and pipe which had a shorter life span such as galvanized iron is still in place and



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FIG. 5.1

should be replaced to improve reliability, looping and fire flow capability. These pipes will be identified in the Capital Improvements Plan as needing replacement.

5.2 Surges

Surges are phenomena within hydraulic systems which tend to suddenly increase pressures when the velocity in a pipeline changes rapidly. For example, if a fire hydrant is opened and flowing 1,000 gpm and then quickly shut off, surges may be added to the system which will significantly raise the pressure (double, triple and sometimes worse). The surges can be of such an extent that they break pipes or sever joints.

Other sources of surges are improperly operating regulating or relief valves and/or pumps. Since there are no regulating or relief valves in the system, the main sources of surges will be the opening and closing of fire hydrants and isolating valves, and the operation of the pumps associated with the City's three wells. A pressure surge will result any time a sudden change is made in the velocity of the fluid column. It may be the result of stopping or slowing down a moving water column, or accelerating a stationary water column, such as a pump cycling off and on. For every foot per second sudden change in the fluid's velocity, a pressure surge of approximately 50 to 60 psi can result. For example, suddenly stopping a water column moving at 5 feet per second could result in a pressure surge of approximately 250 to 300 psi, depending on the pipe material and wall thickness. Different materials have different wave speeds and rigidity, which ultimately affect the magnitude of the surge. To minimize surges, all flow stoppages should be made in a time period greater than one surge period, and usually over several surge periods. The "surge period" or "critical period" of the pipe is the length of time it takes for the surge wave to travel from one end of the pipe to the other and back again (one round trip). A very simplified example would be a 10,000 foot long PVC pipe with a wave velocity of 1,000 ft./sec. The surge period would be 2* 10,000/1,000 = 20 seconds.

In the case of a pump shutting down immediately or tripping out, the initial surge at that location is a down surge due to the momentum change at the pump. The surge then travels up the pipe at its surge wave velocity to the end of the pipe, then returns to the beginning point a surge of the opposite magnitude.

The key is to minimize surges by gradual changes in flow, thereby eliminating problems before they begin. This can be accomplished through the use of pump control valves or power operated check valves which gradually open and close, allowing for smooth startups and shutdowns. As a backup against sudden failures, a number of methods can be used to deal with the resulting high pressure such as surge tanks, surge relief valves, and surge anticipator valves. The City's wells currently are operated with pump control valves to deal with this issue.

5.3 Cross-Connections

A cross-connection is defined by Chapter 333 of the Oregon Administrative Rules (OAR) as "...any link or channel between the piping which carries drinking water and the piping or fixtures which carry

carry other water or substances." Effectively, this means anyone who has a well plumbed to their house or is connected to an irrigation system as well as any commercial/industrial type user with any type of process water or fire system must have an approved backflow prevention device to protect the City's potable water system from contamination of any type.

OAR Chapter 333-61-070 requires that the water supplier identify and evaluate all potential cross-connections and deny or discontinue service to those premises where the potential cross-connection exists until an appropriate backflow prevention device is installed or until the cause of the hazard is eliminated. Also, since the City has more than 300 services, at least one person on the staff is to be certified in cross-connection control inspection.

The Tillamook Water Commission has taken the steps necessary toward compliance with this regulation and has a cross-connection program in place. A copy of the City ordinance (13.04.140) and a list of potential cross-connections ***(to be provided by TWC staff)*** is included in the Appendix.

5.4 Hydraulic Analysis of Distribution System - Computer Model

In order to analyze the capacity of the existing system, as well as project future needs of the system, a computer model was developed. The hydraulic analysis was performed on the computer using Waterworks, Version 1.35, developed by Synex Systems Corporation of Vancouver, British Columbia. The software by Waterworks is a LOTUS 1-2-3 add-in used for the design and analysis of water pipe networks. This program is suitable for IBM-compatible desktop computers and has capabilities in terms of data input and graphic viewing of results which make it quick and simple to model a variety of conditions.

A modeled water system is based on a skeleton system consisting of nodes connected to pipe sections. Pipe sections are constant diameter pipes which can contain fittings such as bends, valves, pumps, fire hydrants, and other systems. The end points of the pipe sections are called nodes, which act as places in the network where flow may either enter or leave the distribution system. There are two types of nodes modeled in the program. A junction node is a point where two or more pipes meet. Most commonly, it serves as a location where customers take water at a given flow rate. The computer program calculates the resulting pressure based on the specified elevation and demand at the node. A source node is a point in the system where both pressure and elevation are specified and the computer program calculates the resulting flow in or out of the system. Examples of source nodes are reservoirs and/or master meters connected to large pipelines. A source node can also be used at a point where the available fire flow is to be calculated at a standard residual pressure of 20 psi.

All nodes and pipe sections are linked together by a set of equations which obey the following physical rules.

1. The sum of all flows into and out of a junction node is zero.

2. The sum of all pressure drops around any closed loop in the network must be zero. Pipe

sections are modeled using the Hazen-Williams equation which relates flow to pressure drop through a length of pipe. The diameter, length, and friction factor for each pipe section must be input in the model. For a pressure reducing valve, the computer program compares the upstream pressure, the downstream pressure and the valve pressure setting. If the upstream pressure is greater than the valve pressure setting, the pressure out of the valve is reduced to the setpoint. If the downstream pressure is greater than the valve setpoint, there is no flow through the valve. If the upstream pressure is greater than the downstream pressure but less than the set point, the valve opens all the way and acts like a pipe.

The output from each computer run is a listing of flow, velocity and pressure loss through each pipe section and the elevation, pressure and flow into or out of each node. Sample input data and output results are shown in the Appendix.

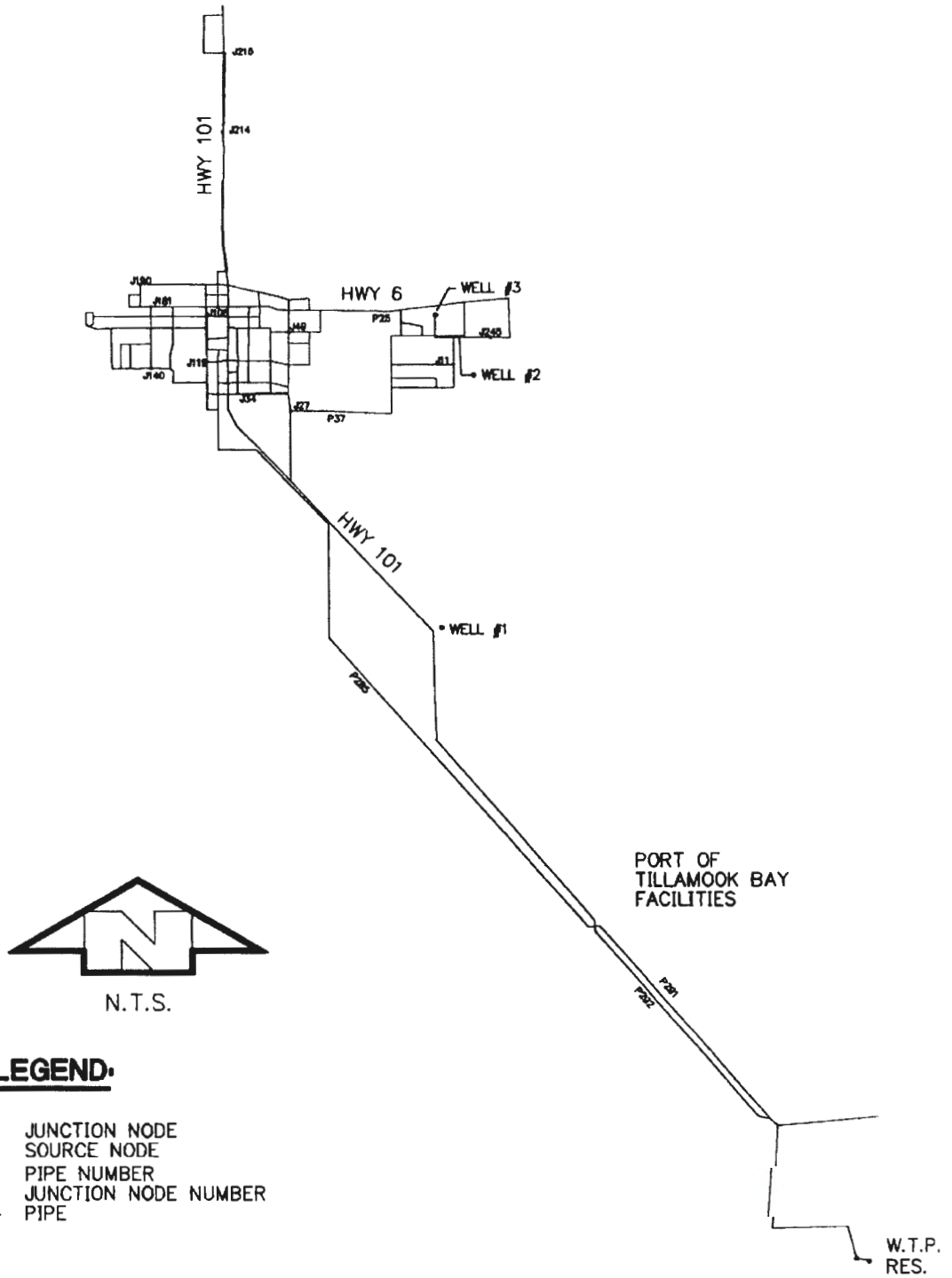
The Waterworks program also generates a plot file which is converted into a pipe network CADD (Computer Aided Drafting and Design) file. When plotted, the file graphically displays the flows and pressures at selected points in the piping system. The program was used to create a network schematic of the water system pipes modeled in this hydraulic analysis. Figure 5.2 shows the schematic for the existing system model.

When constructing a hydraulic model of a water system, much information is required. One must know the configuration of the system; the size, length and hydraulic condition (or smoothness) of each pipe modeled; the elevation of each node; the characteristics of the water sources; and the demand patterns of the customers. The following narrative discusses the sources of information and the assumptions made to construct the computer model.

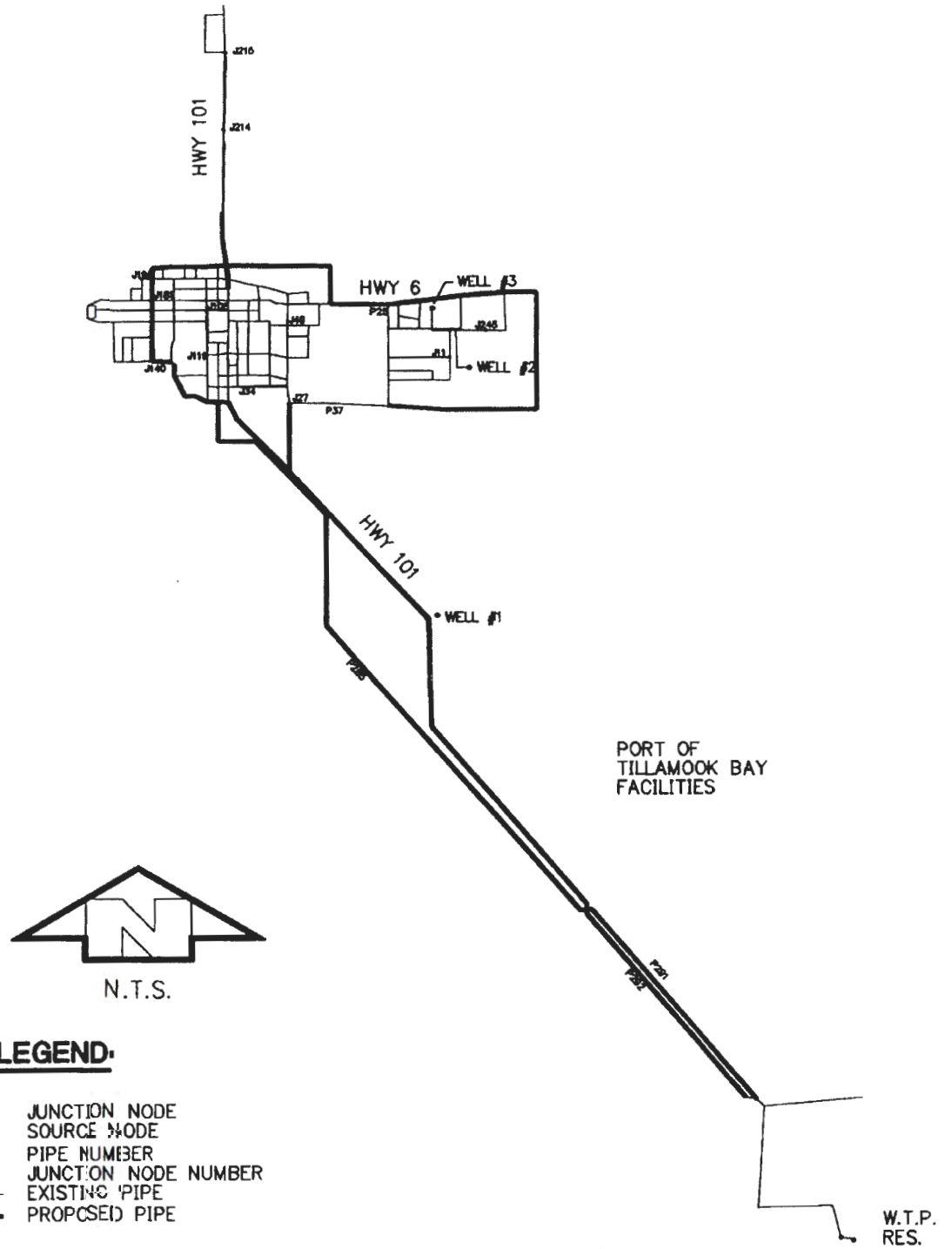
The distribution system configuration was obtained from the Commission's master map, updated as of January 1989 and various conversations with Commission personnel. The major problem in modeling the system was selecting the most important pipes so that the computer program was reasonably uncomplicated, yet was sufficiently accurate in predicting system performance. Pipes smaller than 6 inches were assumed to make no meaningful contribution toward moving water through the system and to function only as local distribution laterals. Therefore, 4 inch and smaller mains were eliminated unless they completed an important loop or otherwise were significant due to their location.

The resulting model of 253 junction nodes, 3 source nodes and 299 pipes is shown schematically in Figure 5.2. Figure 5.3 schematically shows the proposed system modeled for the CIP plan. Elevations for the junction and source nodes were taken from U.S. Geological Survey quadrangle maps.

In addition to system configuration, the model requires input data for each line consisting of length, diameter and friction factor. The individual line lengths were scaled from the Commission's master map. This map also shows line size. The larger pipes are either PVC, ductile iron, steel, or asbestos cement. Most have been installed within the last 35 years. The roughness coefficient or Hazen-



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DWG TITLE: EXISTING SYSTEM HYDRAULIC MODEL SCHEMATIC	DATE: 12/08/98 FILE NO: 1530S52	REVISED:	FIG. 5.2



OWNER: TILLAMOOK WATER COMMISSION		LEE ENGINEERING, INC. 1300 JOHN ADAMS ST. OREGON CITY, OR, 97045	
DWG TITLE: PROPOSED SYSTEM HYDRAULIC MODEL SCHEMATIC	DATE: 12/06/96 FILE NO: 1530S53	REVISED	FIG. 5.3

Williams "C" factor for each pipe was set as follows: PVC, C=150, AC, C = 140; steel, C=90; new piping and ductile iron, C= 135, unlined cast iron, C= 90.

Water demand was estimated from the Commission's meter consumption records. Using this data, the total annual water consumption by meter size was computed. The results are listed in Chapter 3.

The peak day demand was assumed to be 1,660 gpm, which is 2.0 times the average day demand of approximately 830 gpm. Fire flow demands were obtained from the Tillamook Fire District.

According to accepted engineering practice and Oregon State Health Division requirements, a distribution system must be able to supply peak day demand plus fire flow while maintaining a minimum 20 psi pressure throughout the system. Thus, for purposes of this study, the supply sources and transmission system must be able to meet that criteria. The Commission attempts to maintain a 500 foot spacing between fire hydrants. Figure 5.4 shows the existing fire hydrant spacing.

After all network elements and node demands were defined and input into the computer, the model was verified against actual field test records provided by the Tillamook Fire Department from tests run in 1990 by the ISO. It should be noted that conditions have changed since that time as the water treatment plant, reservoirs and Well No. 3 have been constructed since the tests were run.

Table 5.1 describes the fire hydrant data, and locations are shown on Figure 5.4. This verified model is then used for modeling any capital improvement projects or changes in conditions. Pipe sizes and ages were also discussed with Tillamook Water Commission staff and it is believed the model closely represents actual field conditions.

Table 5.1

Tillamook Water Commission

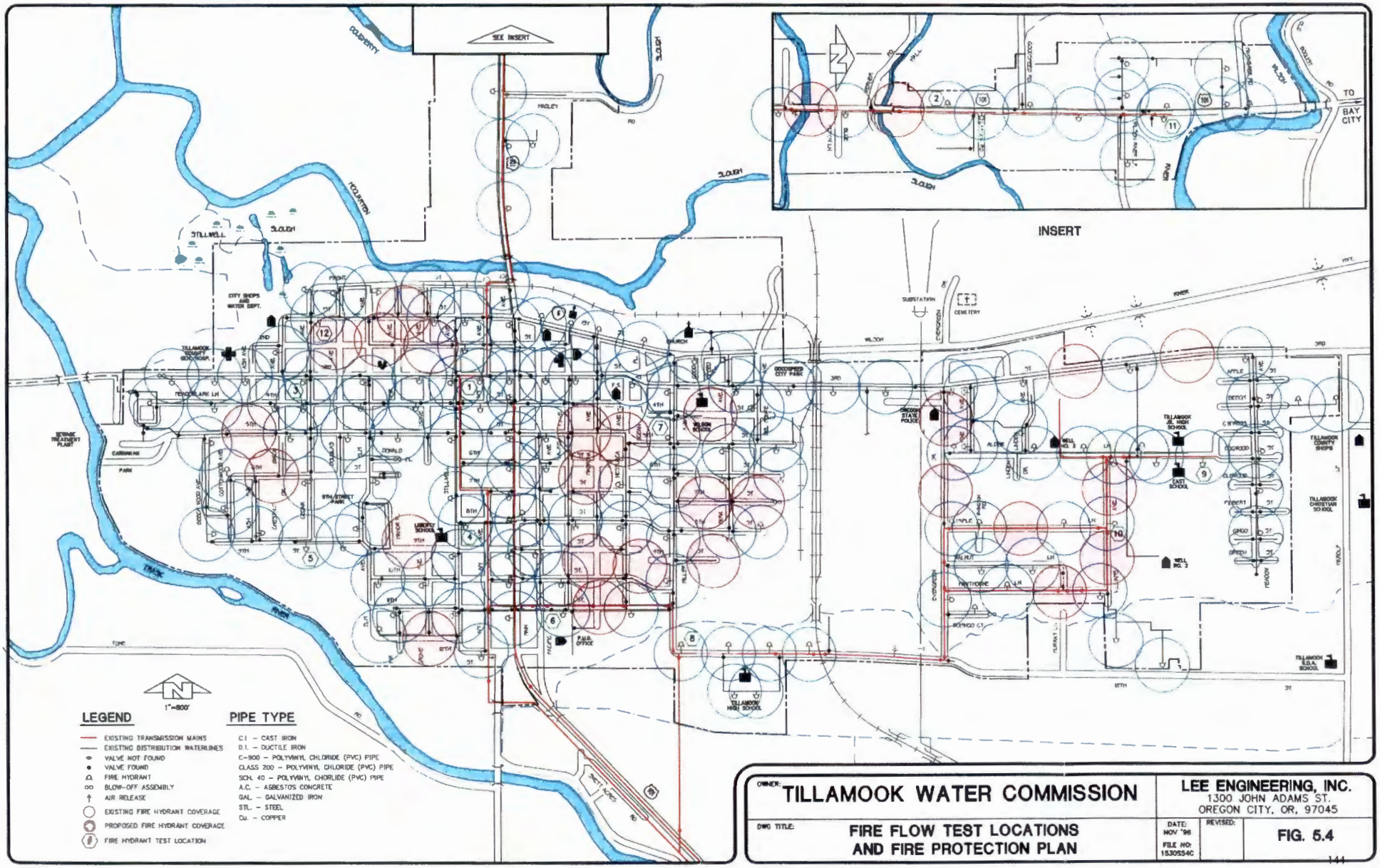
Hydraulic Analysis Fire Flow Review

Model	Static Pres. @ Demand		1996 ADD + Fire		Res. Pressure given 2016 MDD + Fire Flow of				
	ADD-1996	MDD-2016	flow, gpm	res. psi	500 gpm	1000 gpm	1500 gpm	2000 gpm	max @ 20
I.S.O. Field Tests of October 3, 1990.									
1 Library vicinity	89		1740	52					
2 Safeway	96		1760	56					
3 2 Blocks east of Hospital	93		1160	66					
4 Liberty School	91		1760	62					
5 Park @ 9th & Alder	93		1380	37					
6 PUD	96		1660	64					
7 Wilson School	87		1640	56					
8 High School	91		1760	62					
9 Jr. High School	86		1640	47					
10 Maple & Williams	87		1660	50					
11 Fred Meyer vicinity	97		1280	45					
12 1 Block east of City Shops	89		1400	50					
Model 1530-100 is base model of existing system as of 1996.									
1530-100									
1 Library vicinity	84	83	4100	52	77	73	69	64	5200
2 Safeway	85	84	2100	56	76	69	59	47	2900
3 2 Blocks east of Hospital	84	82	1000	66	69	55	35	11	1830
4 Liberty School	84	83	2100	62	76	71	63	54	3400
5 Park @ 9th & Alder	84	82	1225	37	64	38	1	-46	1250
6 PUD	84	83	2300	64	77	73	67	60	4000
7 Wilson School	84	83	2000	56	76	69	59	47	2850
8 High School	84	83	3250	62	77	74	70	65	5300
9 Jr. High School	80	79	2500	47	72	66	58	48	3100
10 Maple & Williams	80	79	2600	50	72	67	60	52	3450
11 Fred Meyer vicinity	85	84	2500	45	76	69	59	47	2900
12 1 Block east of City Shops	84	83	1025	50	67	42	6	-40	1325
Model 1530-500 is model of proposed system.									
1530-500									
1 Library vicinity	84	80	4350	52	77	74	70	66	5500
2 Safeway	85	81	1960	56	76	67	55	40	2550
3 2 Blocks east of Hospital	84	80	2800	66	77	74	69	64	5000
4 Liberty School	84	80	2150	62	77	72	64	56	3500
5 Park @ 9th & Alder	84	80	4850	37	77	74	69	64	4950
6 PUD	84	80	2300	64	77	73	67	60	4050
7 Wilson School	84	80	2050	56	76	69	60	48	2950
8 High School	84	80	3400	62	78	74	71	66	5500
9 Jr. High School	80	76	3150	47	73	68	63	56	3900
10 Maple & Williams	80	76	3400	50	73	69	64	58	4350
11 Fred Meyer vicinity	85	81	2200	45	76	67	55	40	2550
12 1 Block east of City Shops	84	80	4100	50	77	74	69	64	5050

Notes

1. *Modelled using Waterworks vs. 1.35 by Synex*
2. *MDD = average day demand*
3. *PDD = peak day demand*
4. *ADD = 825 gpm (1996)*
5. *Peaking factor = 2.0*
6. *Yr. 2016 PDD = 2,240 gpm*
7. *Reservoir full*
8. *Res. fire flow req'd = 1000 gpm, max. fire flow req'd = 5,500 gpm*

Model Node	Line Hyd.	Location	Type
108	1	Library vicinity	Com
215	2	Safeway	Com
181	3	2 Blocks east of Hospital	Res
139	4	Liberty School	
140	5	Park @ 9th & Alder	Res
34	6	PUD	Com
19	7	Wilson School	
27	8	High School	
245	9	Jr. High School	
11	10	Maple & Williams	Res
215	11	Fred Meyer vicinity	Com
190	12	1 Block east of City Shops	Com/Res



OWNER: TILLAMOOK WATER COMMISSION

DWG TITLE: FIRE FLOW TEST LOCATIONS AND FIRE PROTECTION PLAN

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DATE: NOV '96
FILE NO: 1530S54C
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FIG. 5.4

CHAPTER 6

WATER STORAGE

6.1 STORAGE REQUIREMENTS

6.1.1 Existing Storage

The Tillamook Water Commission currently has 3.0 million gallons (MG) of reservoir storage located at the water treatment plant site, consisting of a 1.1 MG ground level steel tank baffled for disinfection contact time followed by a 1.9 MG ground level steel tank. A typical standard in engineering practice is to provide storage equal to three times the average daily demand, plus fire reserve equal to the largest fire flow for its recommended duration. Based on the Commission's average daily demand for 1996 of approximately 1.2 MG and a fire flow of 5,500 gpm for a duration of 4.0 hours to meet the Uniform Fire Code requirements, the recommended storage capacity is 4.9 MG. See Table 6.1. This is higher than what the Commission currently has available, but there are circumstances where this is acceptable. In the Tillamook Water Commission's case there are multiple sources of supply. In addition to water flowing from the reservoir, the wells can be activated, providing additional flow during a fire. Also, in the worst case scenario of a power failure during a fire, the water treatment plant is equipped with an emergency generator which will allow the reservoirs to be filling at the same time as they are emptying. For these reasons, 3.0 MG of storage may be acceptable for the existing conditions. It is advisable to have further reservoir capacity closer to town and on another side of the system. As previously stated, all existing storage is located on the extreme south end of the system. Future reservoir capacity should be constructed to the north, east, or west of the system to provide back up storage with an alternate route to the system in case of a transmission main failure.

6.1.2 Future Storage

Based on the formula for recommended storage capacity described previously, and the year 2016 projected average daily demand of 1.656 MG, required storage at the end of the 20-year study period, as shown in Table 6.1, is 6.3 MG. It is recommended that an additional 2.0 - 3.0 MG of storage be provided either to the north, east or west of the City of Tillamook by the end of the study period.

6.2 ALTERNATIVES FOR MEETING STORAGE REQUIREMENTS

Alternatives for increasing storage capacity include additional ground level tanks or elevated tanks outside of the existing service area or elevated tanks. If storage is sited within the Tillamook Urban Growth Boundary, an elevated storage tank would be required to achieve the appropriate water surface elevation, as the terrain is quite level and at low elevation. The following alternatives were reviewed:

Tillamook Water Commission
Water Master Plan
Recommended Reservoir Capacity - 1996

A. Minimum storage = peak day demand + required fire flow (Q for 4 hours)

*B. Recommended storage - 3 * average day demand + required fire flow (Q for 4 hours)*

C. Existing storage = 3,000,000 gallons = 3.0 MG

Peaking factor = 2.00

Avg Q, (gpm)	Avg Q (MGD)	3*Avg (MGD)	Peak Q, (MGD)	Fire Q (gpm)	Fire Reserve (MG)*	*Reservoir Capacity Required* A. (MG)	*B. (MG)*	Additional Storage Req'd
825	1.188	3.564	2.376	500	0.060	2.436	*3.624*	0.624
				1000	0.120	2.496	*3.684*	0.684
				1500	0.180	2.556	*3.744*	0.744
				2000	0.240	2.616	*3.804*	0.804
				2500	0.300	2.676	*3.864*	0.864
				3000	0.540	2.916	*4.104*	1.104
				3500	0.630	3.006	*4.194*	1.194
				4000	0.960	3.336	*4.524*	1.524
				4500	1.080	3.456	*4.644*	1.644
				5000	1.200	3.576	*4.764*	1.764
				5500	1.320	3.696	*4.884*	1.884

****Note: Fire flows < 3000 gpm need only a 2 hour duration; 3000 - 4000 gpm = 3 hr's & > 4000 gpm = 4 hr's.***

*****Note: This chart for EXISTING conditions only.***

Recommended Reservoir Capacity - 2016

A. Minimum storage = peak day demand + required fire flow (Q for 4 hours)

*B. Recommended storage = 3 * average day demand + required fire flow (Q for 4 hours)*

C. Existing storage = 3,000,000 gallons = 3.0 MG

Peaking factor = 2.00

Avg Q, (gpm)	Avg Q (MGD)	3*Avg (MGD)	Peak Q, (MGD)	Fire Q (gpm)	Fire Reserve (MG)*	*Reservoir Capacity Required* A. (MG)	*B. (MG)*	Additional Storage Req'd
1150	1.656	4.968	3.312	500	0.060	3.372	*5.028*	2.028
				1000	0.120	3.432	*5.088*	2.088
				1500	0.180	3.492	*5.148*	2.148
				2000	0.240	3.552	*5.208*	2.208
				2500	0.300	3.612	*5.268*	2.268
				3000	0.540	3 852	*5.508*	2.508
				3500	0.630	3.942	*5.598*	2 598
				4000	0.960	4.272	*5.928*	2.928
				4500	1.080	4.392	*6.048*	3.048
				5000	1.200	4.512	*6.168*	3.168
				5500	1.320	4 632	*6.288*	3.288

****Note: Fire flows < 3000 gpm need only a 2 hour duration; 3000 - 4000 gpm = 3 hr's & > 4000 gpm = 4 hr's.***

1. Ground level tank east of Fairview.

2. Ground level tank west of Tillamook.

3. Ground level tank north of Tillamook.

4. Elevated tank within Tillamook City limits.

Alternative 1 involves constructing a reservoir with an overflow elevation of 215 feet near the Sunset Memorial Gardens southeast of the Fairview area. Approximately 15,000 feet of transmission main would be needed to bring flow from the reservoir to near Well No. 3 on Alder Lane.

Alternative 2 involves constructing a reservoir with an overflow elevation of 215 feet west of Tillamook in the hills just west of the Tillamook River and south of Cape Meares Road. Approximately 13,500 feet of transmission main would be needed, along with bridge crossings of the Tillamook and Trask Rivers, to bring flow into the system at 3rd and Ash Streets.

Alternative 3 involves constructing a reservoir with an overflow elevation of 215 feet north of Tillamook in the vicinity of the Cheese Factory. Approximately 7,000 feet of transmission main would be needed, along with a bridge crossing of the Wilson River, to bring flow into the existing system near Highway 101 and Wilson River Loop.

Alternative 4 involves constructing an elevated steel tank within the City of Tillamook. Advantages of this alternative are that the storage is placed closer to demand and would not require extensive transmission main construction. Disadvantages are constructing a tower 150 to 175 feet tall and a much higher construction and maintenance cost.

No matter which option is chosen, land will need to be purchased and telemetry installed, leaving cost comparisons on the ground level tanks to site work and distribution system differences.

CHAPTER 7

RECOMMENDED CAPITAL IMPROVEMENTS

7.1 GENERAL

Based on the evaluation of the water supply, treatment, transmission/distribution and storage facilities contained in Chapters 4, 5 and 6, a Capital Improvements Program is recommended as outlined in Tables 7.1 and 7.2 and shown on Figures 4.1 and 7.1. This chapter will summarize the recommended improvements, set priorities, and give an approximate timeline for implementation.

In addition, a separate document listing all of the proposed Capital Improvements Projects has been provided. The listing of projects is in loose leaf form so that they can be prioritized and adjusted to meet the needs of the Commission as time and circumstances dictate. Cost estimates given herein are of a very preliminary nature. No attempt was made to develop projects to a level of preliminary engineering. Rather, standard cost guidelines were used when they were appropriate, and are intended to be conservative. In other cases, information was taken from similar projects in the Pacific Northwest and costs were adjusted to take into account the location at Tillamook.

The Engineer has no control over the costs of labor, materials, equipment or services furnished by others; the Contractor's methods of determining prices; and competitive bidding or market conditions; consequently, the Engineer's opinions of probable costs provided are made on the basis of the Engineer's experience and qualifications and represent the Engineer's best judgment as an experienced and qualified professional engineer familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual project costs or construction costs will not vary from the opinions of probable costs prepared.

There are three stages of cost estimates made during a project. The Master Plan estimate is done first when the requirements of the project are outlined. This cost estimate is a general overview and may be plus or minus 20% on equipment. The preliminary design phase is next, where it is determined how the work is actually to be done. A preliminary estimate is normally plus or minus 10% in accuracy. The last cost estimate is done after the project is designed and before it goes to construction. At that point, the cost estimate should be plus or minus 5% in accuracy since all the equipment and materials have been identified.

7.2 SOURCE IMPROVEMENTS

At this time, it appears as if the Tillamook Water Commission has adequate sources of supply to provide the projected flows to the end of the study period. However, due to the dynamic nature of the coastal hills, as evidenced by recent slides and damage caused by the strong storms in February of 1996, it is not too early to begin preparing for adding further supply capacity. This can be done by providing metering stations on Fawcett and Simmons Creeks to collect minimum stream flow

Table 7.1
TILLAMOOK WATER COMMISSION
Water System Master Plan
CIP Schedule
Lee Engineering, Inc.

Priority	CIP No.	Location	Justification	Length (feet)	OLD Diameter (inches)	OLD PIPE MAT'L	NEW Diameter (inches)	Estimated Cost			Lgth to Cplt. Lp
								Construction	Engr'g, conting. & administration	Total	
		DISTRIBUTION MAINS									
1	A	2nd St. - Elm Ave., 2nd to 1st St.	FF/MR	250	2	CI	6	$11,250	$3,375	*$14,625*	0
19	B	4th St. east of Miller Ave.	FF/MR	300	2	CI	6	$13,500	$4,050	*$17,550*	0
3	C	4th St. west of Miller Ave.	MR	850	1	CU	6	$38,250	$11,475	*$49,725*	0
4	D	5th St. - Elm to Stillwell Ave.	FF/MR	800	4	STL	6	$36,000	$10,800	*$46,800*	0
5	E	5th St. - Meadowlark to Birch Ave.	FF/MR	1300	2	CI/PVC	8	$65,000	$19,500	*$84,500*	0
20	F	5th St. east of Del Monte	MR	300	1.5	Gal	2	$8,400	$2,520	*$10,920*	0
15	G	6th St. and Elm Ave.	MR	300	1	GAL	2	$8,400	$2,520	*$10,920*	0
6	H	7th St. and Madrona Ave	FF/MR	750	2	GAL/CI	6	$33,750	$10,125	*$43,875*	0
12	I	7th St. east of Miller Ave.	FF/MR	1000	2	GAL/CI	6	$45,000	$13,500	*$58,500*	0
20	J	7th St. east of Nestucca to Miller Ave.	MR	500	1	GAL	6	$22,500	$6,750	*$29,250*	0
21	K	9th St. - Beech Wood to Cottonwood Ave.	MR	250	2	GAL	6	$11,250	$3,375	*$14,625*	0
14	L	9th St. and Nestucca to Laurel Ave.	MR	800	2/.75	GAL	6	$36,000	$10,800	*$46,800*	200
2	M	Cedar Ave., 1st to 3rd.	MR	540	2	CI	6	$24,300	$7,290	*$31,590*	0
17	N	Douglas Ave. - 5th to 6 th St.	MR	400	2	CI	6	$18,000	$5,400	*$23,400*	0
22	O	Fir Ave., 11th to 12th St.	FF/MR	270	2	CI	6	$12,150	$3,645	*$15,795*	0
21	P	Fir Ave., 12th St. south	MR	100	2	GI	4	$3,500	$1,050	*$4,550*	0
13	Q	Grove Ave., 11th to12th St.	FF/MR	230	2	CI	2	$6,440	$1,932	*$8,372*	0
11	R	Grove Ave., 5th to 6th St.	MR	280	2	GI	2	$7,840	$2,352	*$10,192*	0
10	S	Laurel Ave., 10th to 11th St.	MR	250	2	CI	6	$11,250	$3,375	*$14,625*	0
16	T	Linden Ave.	FF/EH	500	2	PVC	6	$22,500	$6,750	*$29,250*	180
8	U	Manor Place	FF/MR	900	2	CI	6	$40,500	$12,150	*$52,650*	0
18	V	Miller Ave., 3rd thur 10th	MR	2175	6	CI	6	$97,875	$29,363	*$127,238*	0
9	W	Del Monte., 3rd St. North	EH/FF	800	1.5	GAL	8	$40,000	$12,000	*$52,000*	0
7	X	Hoquarten west Bridge crossing	EH/FF	200	4	STL	8	$10,000	$3,000	*$13,000*	0
23	Y	Front St., Cedar to Douglas Ave.	FH	250	-	-	6	$11,250	$3,375	*$14,625*	250
24	Z	Front St., Elm to Grove Ave.	FH	550	-	-	6	$24,750	$7,425	*$32,175*	550
25	A1	Elm Ave., 11th to 12th St.	FH	400	-	-	2	$11,200	$3,360	*$14,560*	400
			SUBTOTAL (ft)	15,245				***$670,855***	***$201,257***	***$872,112***	

Table 7.2
TILLAMOOK WATER COMMISSION
Water System Master Plan
CIP Schedule
Lee Engineering, Inc.

Priority	CIP No.	Location	Justification	Length (feet)	OLD Diameter (inches)	OLD PIPE MAT'L	NEW Diameter (inches)	Estimated Cost: Construction	Estimated Cost: Engr'g, contng. & administration	Estimated Cost: Total	Lgth to Cplt. Lp
		CITY TRANSMISSION MAINS									
2	1	Evergreen Ave. / Maple to 3rd & Alder Ln.	EH/FF/MR	2400	4	AC	12	$163,200	$48,960	*$212,160*	0
9	2	Rail Road Ave./ 3rd ST. to Hwy 101	EH/FF	4800	none	-	12	$326,400	$97,920	*$424,320*	4800
3	3	2nd St. / Stillwell to Birch to 4th	EH/FF	3000	2 & 6	Gal/CI	12	$204,000	$61,200	*$265,200*	1150
10	4	Birch / Elm Ave.	FH/MR	4150	2 & 6	Gal/CI	12	$282,200	$84,660	*$366,860*	350
1	5	Highway 101 North	HWY RECON.	15290	8 & 12	PVC	12	$770,000	$400,000	*$1,170,000*	1000
11	6	3rd St. / Evergreen to Meadow Ave.	FH	3000	6	CI	12	$204,000	$61,200	*$265,200*	0
13	7	12 th St. / Evergreen east	FH	2100	none	-	12	$142,800	$42,840	*$185,640*	2100
12	8	12th St. / Mardolf Lp. / 3rd St.	FH	5700	none	-	12	$387,600	$116,280	*$503,880*	5700
			SUBTOTAL (ft)	40,440				***$2,480,200***	***$913,060***	***$3,393,260***	
		RURAL TRANSMISSION MAINS									
4	T1	Tillamook Rd. / Gienger Rd.	MR	12400	14	STL	18	$1,240,000	$372,000	*$1,612,000*	0
5	T2	Hwy 101 / Brick Yard Rd. to Long Prairie Rd.	MR	18200	24/14/12	STL	24	$2,184,000	$655,200	*$2,839,200*	0
6	T3	Miller Ave , / 12th St. south to Hwy 101	MR	1900	10/12	STL	12	$123,500	$37,050	*$160,550*	0
			SUBTOTAL (ft)	78,640				***$3,547,500***	***$1,064,250***	***$4,611,750***	
		RAW WATER TRANSMISSION MAINS									
7	T4	Fawcett Creek intake north to Balance Reservoir	MR	10500	18	STL	18	$1,050,000	$315,000	*$1,365,000*	0
8	T5	Fawcett Creek Balance Reservoir to W.T.P.	MR	1400	18	STL	18	$140,000	$42,000	*$182,000*	0
			SUBTOTAL (ft)	11,900				**$1,190,000**	**$357,000**	**$1,547,000**	
						TOTAL		***$7,217,700***	***$2,334,310***	***$9,552,010***	
		RESERVOIR TRANSMISSION MAINS									
1*	S1	Reservoir located north of Wilson River	FF/FH	7000	none	-	16	$588,000	$176,400	*$764,400*	0
2*	S2	Reservoir located east of Fairview	FF/FH	15000	none	-	18	$1,500,000	$450,000	*$1,950,000*	0
3*	S3	Reservoir located west of Tillamook River	FF/FH	13500	none	-	18	$1,350,000	$405,000	*$1,755,000*	0
			SUBTOTAL (ft)					***$2,850,000***	***$855,000***	***$3,705,000***	

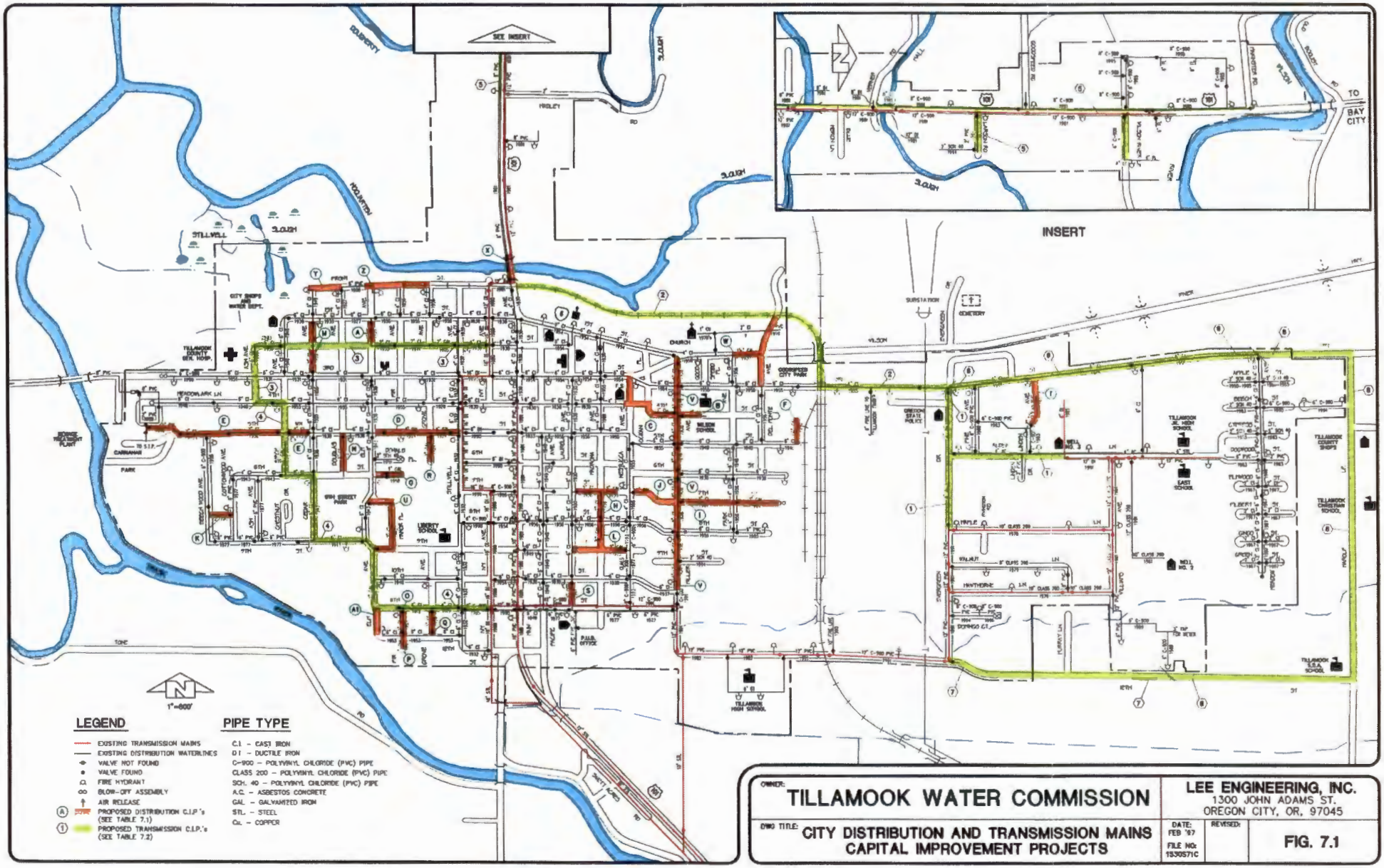
* 2 to 3 MG of Additional Storage Required by the year 2016 It is recommend that T.W.C. consider the option that the total recommended storage being equally divided between sites S1 and S2

Existing Hydraulic Deficiency - EH

Future Hydraulic Deficiency - FH

Fire Flow Deficiency - FF

Material Replacement - MR



OWNER: **TILLAMOOK WATER COMMISSION**

LEE ENGINEERING, INC.
1300 JOHN ADAMS ST.
OREGON CITY, OR, 97045

DWG TITLE: **CITY DISTRIBUTION AND TRANSMISSION MAINS CAPITAL IMPROVEMENT PROJECTS**

DATE: FEB '97
FILE NO: 1S30571C
REVISED:

FIG. 7.1

so that accurate supply availability can be determined. In addition, studies should begin on how best to collect water from Simmons Creek and transport it to the water treatment plant. Also, Skookum Lake Dam should be studied to determine the feasibility of raising it and increasing raw water storage capacity, as well as the need for dredging to maintain existing capacity. In addition, the groundwater right from original Well No. 2 should be transferred to the site of Well No. 1 and plans developed to allow the combined water rights to be withdrawn as an emergency source.

7.3 TREATMENT SYSTEM IMPROVEMENTS

As the water treatment plant is relatively new (constructed in 1994), no improvements have been outlined. As data on minimum stream flows becomes available in the future and Simmons Creek becomes an additional source of supply, preliminary planning should begin on how best to expand the existing facility to treat all available flow.

7.4 TRANSMISSION SYSTEM IMPROVEMENTS

Refer to Figure 4.1 for illustration of the various mains.

7.4.1 Raw Water Transmission Mains

As part of the treatment plant work done in 1994, the Killam Creek raw water intake line was replaced. The Fawcett Creek intake line was not replaced at that time and is now nearly 40 years old. As it is a steel waterline with an average life expectancy of around 50 years, it will need replacement by the end of the study period. Table 7.2 provides information on the cost of replacement.

In addition, plans should be started for a Simmons Creek raw water intake line once sufficient stream flow data is collected and a feasibility study performed.

7.4.2 Rural Transmission Mains

The steel transmission mains from the water treatment plant site into town are 40 to 60 years old, with a history of leaks in some areas. As this is the only route to and from the Commission's existing storage facilities, it is important that these pipes be analyzed to determine when and how best to replace them. Cost estimates have been provided for full replacement, but it may be feasible to do extensive potholing and analysis of the existing pipes to determine if there are areas which can be maintained. This will allow the Commission to expend resources replacing the most critical areas first and come back to the less critical areas as funding allows.

7.4.3 City Transmission Mains

It is recommended that the transmission system be reinforced in Tillamook and the system looped. This will allow water from all sources and existing and proposed storage facilities access to the main distribution system as well as provide the needed redundancy in case of emergency.

7.5 DISTRIBUTION SYSTEM IMPROVEMENTS

Table 7.1 lists the needed distribution system improvements, many of which were identified in the Commission's prior Master Plan published in 1974. Although the main distribution system is solid and well looped, smaller diameter and aged, leaking pipe should continually be upgraded and replaced. Table 7.1 is a manageable improvement list and an annual replacement amount should be budgeted toward this list.

7.6 STORAGE IMPROVEMENTS

As discussed in Chapter 6, additional storage of 2.0 to 3.0 million gallons should be provided to safeguard the system from potential problems between the water treatment plant and town. Table 7.3 identifies the costs associated with these improvements. The transmission mains discussed previously in this chapter should receive a higher priority, as the entire system depends on the treated surface water supply, but additional storage capacity should be constructed prior to the end of the study period.

TABLE 7.3
RESERVOIR COST AND VALUATION

Reservoir Capacity MG	Steel Tank*	Concrete Tank*
0.5	$213,000	$307,000
1.0	$327,000	$457,000
2.0	$539,000	$653,000
3.0	$724,000	$854,000

*Does not include cost of land.
See Table 7.2 for reservoir transmission main costs.

Future reservoirs can be constructed of either concrete or steel. There is an ongoing debate within the professional trade as to which has more advantage. Generally, concrete tanks are anticipated to last longer and require less maintenance. Steel tanks are expected to require more maintenance, but their initial cost is less. Tanks with capacities of 0.5 to 2.0 million gallons generally show no particular advantage one way or the other. Therefore, it is recommended that plans and specifications be developed that allow for either steel or concrete tanks to be constructed. Specifications should be developed in such a way that the additional maintenance costs of steel tanks are taken into account in the bidding and award of the projects. That is, additional costs should be added to the bid price for steel constructed tanks to take into account the life cycle costs of their additional maintenance.

A rough estimate of the anticipated costs, whether the tanks are steel or concrete, is in Table 7.3. Note that this is the cost of the reservoir materials and construction only. Land purchase and waterline installation is additional and would be developed per project.

7.7 FUNDING

As part of the Tillamook Water Commission Water Master Plan, a Cost of Service Rate report was prepared by Economic Resource Associates. This separate report utilitizes data collected for the Master Plan to assist the Tillamook Water Commission in setting Cost of Service Rates for the years 1997 - 1998 through 2002 - 2003.

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APPENDIX A

Permit A—425—5-64

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* TILLAMOOK CITY WATER COMMISSION

of Tillamook *, State of* Oregon *, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* Fawcett Creek and water stored in reservoir constructed under Application No. 11037, Permit No. R-661 *a tributary of* Tillamook River *for the purpose of* municipal

under Permit No. 10790 *of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from* November 23, 1932;

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 6.0 cubic feet per second

or its equivalent in case of rotation, measured at the point of diversion from the stream The point of diversion is located in the $NW\frac{1}{4}$ $NW\frac{1}{4}$, Section 22, T. 2 S., R. 9 W., W. M.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to - - - - - - - - of one cubic foot per second per acre, and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

$W\frac{1}{2}$
Section 30
T. 1 S., R. 9 W., W. M.

$E\frac{1}{2}$
Section 25
T. 1 S., R. 10 W., W. M.

NOTE: Certificate of water right issued to Tillamook City Water Commission and recorded at page 10198, Volume 9, State Record of Water Right Certificates, confirms a right to the use of 11.8 cubic feet per second of water for municipal use. Subsequently, the right to the use of 5.8 cubic feet per second of water was canceled by order of the State Engineer entered March 29, 1966. This certificate is issued to confirm the remaining right to the use of water for municipal and supersedes the certificate heretofore issued to Tillamook City Water Commission.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this date. July 19, 1966

CHRIS L. WHEELER
State Engineer

Recorded in State Record of Water Right Certificates, Volume 25 *, page* 33251

V RL

STATE OF OREGON

WATER DIVISION NO. 1 COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

(For rights perfected under original, enlargement or secondary permits)

This is to Certify, *That* TILLAMOOK CITY

of Tillamook , *State of* Oregon 9114/ , *has made proof to the satisfaction of the STATE WATER BOARD of Oregon, of a right to the use of the waters of* Killam Creek , *a tributary of* Trask River and Tillamook River , *for the purpose of* Municipal supplies

under Permit No. 439 *of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon and duly confirmed by order of the STATE WATER BOARD of Oregon, made and entered of record in the Record of Proceedings of said Board, at Salem, in Volume* 1 , *at page* 329 , *on the* 28th *day of* July, 1919 ; *that the priority of the right hereby confirmed dates from* May 22, 1910 ; *that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 6.00 *cubic feet per second.*

A description of the lands under such right, and to which the water hereby confirmed is appurtenant, or, if for other purposes, the place where such water is put to beneficial use, is as follows: Tillamook City, in Tillamook County, Oregon.

~~All the right hereby confirmed is restricted to the waters of said stream except as hereinafter described.~~

Rights to the use of water for power purposes are limited to a period of forty years from the date of priority of the right, as herein set forth, subject to a preference right of renewal under the laws existing at the date of the expiration of the right for power purposes, as hereby confirmed and limited.

Witness *the seal and signature of the STATE WATER BOARD affixed this* 1st *day of* August , 191 9.

STATE WATER BOARD

(SEAL OF STATE WATER BOARD)

By PERCY A. CUPPER
State Engineer, President

Attest: R. W. POTTER
Secretary

Recorded in State Record of Water Right Certificates, Volume 3 , *Page* 2388

STATE OF OREGON

COUNTY OF TILLAMOOK

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

TILLAMOOK WATER COMMISSION
PO BOX 99 503-842-2343
TILLAMOOK, OREGON 97141

to use the waters of A WELL in the TRASK RIVER BASIN for MUNICIPAL USE.

This permit is issued approving Application G-12443. The dates of priority are MARCH 8, 1991 for 2.0 CUBIC FEET PER SECOND (CFS) and JULY 15, 1992 for 0.23 CFS. The use is limited to not more than 2.23 CFS, or its equivalent in case of rotation, measured at the well.

The well is located as follows:

NE 1/4 SE 1/4, SECTION 30, T 1 S, R 9 W, W.M.; 3296 FEET SOUTH AND 82 FEET WEST FROM THE NE CORNER OF SECTION 30.

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the proposed place of use under this permit is as follows:

TILLAMOOK WATER COMMISSION
SERVICE AREA

The well shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

Measurement, recording and reporting conditions:

A. Before water use may begin under this permit, the permittee shall install a meter or other suitable measuring device as approved by the Director. The permittee shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may require the permittee to report general water use information, including the place and nature of use of water under the permit.

B. The permittee shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

Actual construction work shall begin on or before July 25, 1995 and shall be completed on or before October 1, 1996. Complete application of water shall be made on or before October 1, 1997.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for beneficial use of water without waste. The water user is advised that new regulations may require use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water shall be limited when it interferes with any prior surface or ground water rights.

The Director of the Water Resources Department has found that the proposed use of water described by this permit, as conditioned, will not impair or be detrimental to the public interest.

Issued this date, July 25, 1994.

/s/ A. REED MARBUT

Water Resources Department
for Martha O. Pagel
Director

STATE OF OREGON

TILLAMOOK COUNTY

PERMIT TO APPROPRIATE THE PUBLIC WATERS

This is to certify that I have examined APPLICATION G-10574 and do hereby grant the same SUBJECT TO EXISTING RIGHTS and the following limitations and conditions:

This permit is issued to Tillamook Water Commission of 1902 Third Street, Tillamook, Oregon 97141, phone 842-2463, for the use of the waters of one well, for the PURPOSE of municipal use; that the PRIORITY OF THE RIGHT dates from July 14, 1982, and is limited to the amount of water which can be applied to beneficial use and shall not exceed 2.7 cubic feet per second measured at the point of diversion from the well, or its equivalent in case of rotation with other water users.

The well is to be LOCATED: 1,210 feet North and 660 feet East from the Southwest Corner of Section 29, being within the SW 1/4 SW 1/4 of Section 29, Township 1 South, Range 9 West, WM, in the County of Tillamook.

A description of the PLACE OF USE under the permit, and to which such right is appurtenant, is as follows:

G 9829

Township 1 South	Range 9 West, WM	Section 19	All		Municipal Use
		Section 20	All		
		Section 21	All		
		Section 22	All		
		Section 26	W 1/2	All	
		Section 27	All		
		Section 28	All		
		Section 29	All		
		Section 30	All		
		Section 31	All		
		Section 32	All		
		Section 33	All		
		Section 34	All		
	Range 10 West, WM	Section 23	All		
		Section 24	All		
		Section 25	All		
		Section 26	All		
		Section 34	All		
		Section 35	All		
		Section 36	All		
Township 2 South	Range 9 West, WM	Section 3	All		
		Section 4	All		
		Section 5	All		
		Section 6	All		
		Section 7	All		
		Section 8	All		
		Section 9	All		
		Section 10	All		
		Section 15	All		
		Section 16	All		
		Section 17	All		
		Section 18	All		
		Section 20	All		
		Section 21	All		

Township 2 South	Range 9 West, WM	Section 22	All
		Section 28	All
		Section 29	All
Township 2 South	Range 10 West, WM	Section 1	All
		Section 13	All
		Section 24	All

The well shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon.

The works constructed shall include an air line and pressure gauge or an access port for measuring line, adequate to determine water level elevation in the well at all times.

The permittee shall install and maintain a weir, meter, or other suitable measuring device, and shall keep a complete record of the amount of ground water withdrawn.

Actual construction work shall begin on or before August 31, 1983 and shall thereafter be prosecuted with reasonable diligence and be completed on or before October 1, 1983. Extended to October 1, 1989 extended to 10-1-99, 10-1-99

Complete application of the water to the proposed use shall be made on or before October 1, 1984. Extended to October 1, 1989, extended to 10-1-99, 10-1-99

WITNESS my hand this 31st day of August, 1982.

/s/ JAMES E. SEXSON

WATER RESOURCES DIRECTOR

APPLICATION G-10574

PERMIT G 9829

Permit A-2—1M—8-53

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

This Is To Certify, That TILLAMOOK WATER COMMISSION of Tillamook, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of Well No. 2 a tributary of Trask River for the purpose of municipal use under Permit No. G-1652 of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from July 25, 1960;

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1.03 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SE¼ SW¼, Section 31, T. 1 S., R. 9 W., W. M. Well located: 392.40 feet North and 189.77 feet West from the S¼ Corner, Section 31.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to _ _ _ _ _ _ _ _ _ of one cubic foot per second per acre, and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

S½ NW¼
SW¼
Section 29

S½ NW¼
S½
Section 30

S½
Section 31

S½ SW¼
S½ SE¼
Section 32
T. 1 S., R. 9 W., W. M.

$S\frac{1}{2}$ $NE\frac{1}{4}$
$S\frac{1}{2}$ $NW\frac{1}{4}$
$S\frac{1}{2}$
Section 25

$S\frac{1}{2}$ $NE\frac{1}{4}$
$S\frac{1}{2}$ $NW\frac{1}{4}$
$SW\frac{1}{4}$
$N\frac{1}{2}$ $SE\frac{1}{4}$
Section 26

$S\frac{1}{2}$
Section 34

All
Section 35

All
Section 36
T. 1 S., R. 10 W., W. M.

$S\frac{1}{2}$
Section 4

$S\frac{1}{2}$
Section 5

$N\frac{1}{2}$
$E\frac{1}{2}$ $SE\frac{1}{4}$
Section 6

All
Section 7

All
Section 8

All
Section 9

$N\frac{1}{2}$ $NW\frac{1}{4}$
Section 16
T. 2 S., R. 9 W., W. M.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed

this 28th *day of* February , *19* 69.

CHRIS L. WHEELER
State Engineer

Recorded in State Record of Water Right Certificates, Volume 27 *, page* 35782

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

This Is to Certify, That TILLAMOOK CITY WATER COMMISSION

of Tillamook, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of a well

a tributary of Trask River for the purpose of municipal

under Permit No. G-842 of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from June 4, 1958

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1.56 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream The point of diversion is located in the SW¼ NW¼, Section 5, T. 2 S., R. 9 W., W. M. Well located 1410.54 feet S. and 53.62 feet E. from NW corner of Section 5.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to - - - - - - - -of one cubic foot per second per acre,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

S½ NW¼	S½ NE¼	N½
SW¼	S½ NW¼	E¼ SE¼
Section 29	SW¼	Section 6
S½ NW¼	N½ SE¼	all
S½	Section 26	Section 7
Section 30	S½	all
S½	Section 34	Section 8
Section 31	all	all
S½ SW¼	Section 35	Section 9
S½ SE¼	all	N½ NW¼
Section 32	Section 36	Section 16
T. 1 S., R. 9 W., W. M.	T. 1 S., R. 10 W., W. M.	T. 2 S., R. 9 W., W. M.

S½ NE¼	S½
S½ NW¼	Section 4
S½	S½
Section 25	Section 5

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this date. May 24, 1965

.....
State Engineer

Recorded in State Record of Water Right Certificates, Volume 24, page 32234

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* TILLAMOOK CITY WATER COMMISSION

of Tillamook , *State of* Oregon 97141 , *has made*

proof to the satisfaction of the Water Resources Director, of a right to store the waters of Fawcett Creek, tributary of Tillamook River, appropriated under Permit No. 10790

for the purposes of

municipal

under Reservoir Permit No. R-661 , *and that said right to store said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from* August 20, 1926

that the amount of water entitled to be stored each year under such right, for the purposes aforesaid, shall not exceed 2/3 acre foot

The reservoir is located in

NW¼ NW¼
Section 22
T. 2 S., R. 9 W., W. M.

Fawcett Creek Diversion - SE¼ NE¼, Section 22, T. 2 S., R. 9 W., W. M.

This certificate is issued to supersede certificate of water right recorded at page 10144, Volume 9, State Record of Water Right Certificates, so as to correctly describe the location of the reservoir.

The issuance of this superseding certificate does not confirm the status of the water right in reference to ORS 540.610.

WITNESS the signature of the Water Resources Director, affixed this date. September 4, 1980

James E. Sexson
Water Resources Director

Recorded in State Record of Water Right Certificates, Volume 43 , *page* 49474

8M-4

Permit No. 30192

RECEIVED
FEB 25 1965
STATE ENGINEER
SALEM, OREGON

*APPLICATION FOR PERMIT

To Appropriate the Public Waters of the State of Oregon

I, Tillamook Water Commission, City of Tillamook
(Name of applicant)

of City Hall, Tillamook,
(Mailing address)

State of Oregon, do hereby make application for a permit to appropriate the following described public waters of the State of Oregon, SUBJECT TO EXISTING RIGHTS:

If the applicant is a corporation, give date and place of incorporation Tillamook, Oregon 28 February 1891

1. The source of the proposed appropriation is Skookum Lake Reservoir
(Name of stream)
constructed on Fawcett Creek, a tributary of Tillamook River

2. The amount of water which the applicant intends to apply to beneficial use is 700 acre-feet ~~cubic feet per second~~. (Maximum rate of use will be approx. 6.0 cfs initially and 12.0 cfs ultimately)
(If water is to be used from more than one source, give quantity from each)

**3. The use to which the water is to be applied is municipal, domestic, and industrial
(Irrigation, power, mining, manufacturing, domestic supplies, etc.)
water supply.

4. The point of diversion is located 2113.46 ft. N. (N. or S.) and 2300.67 ft. W. (E. or W.) from the S.E. corner of Section 19, Tp 2S, R8W, W. M. Where the water is discharged from the reservoir into Fawcett Creek during periods of low natural flow downstream, the water will be diverted from Fawcett Creek at the existing diversion structure which is described in previous permits. The outlet from the reservoir
(If preferable, give distance and bearing to section corner)

(If there is more than one point of diversion, each must be described. Use separate sheet if necessary)

being within the NW 1/4 of SE 1/4 (Give smallest legal subdivision) of Sec. 19, Tp. 2S (N. or S.),
R. 8W (E. or W.), W. M., in the county of Tillamook

5. The outlet pipe (Main ditch, canal or pipe line) to be 210 feet (Miles or feet)
in length, terminating in the NW 1/4 of SE 1/4 (Smallest legal subdivision) of Sec. 19, Tp. 2S (N. or S.),
R. 8W (E. or W.), W. M., the proposed location being shown throughout on the accompanying map.

DESCRIPTION OF WORKS

Diversion Works—

6. (a) Height of dam 40 feet, length on top 600 feet, length at bottom 50 feet; material to be used and character of construction homogeneous earth dam of
(Loose rock, concrete, masonry,
sandy clay silt, the spillway will be around the dam through the south abutment
rock and brush, timber crib, etc., wasteway over or around dam)

(b) Description of headgate One 30-inch diameter slide gate mounted in a concrete
(Timber, concrete, etc., number and size of openings)
intake structure will regulate the flow through the dam outlet

(c) If water is to be pumped give general description
(Size and type of pump)

(Size and type of engine or motor to be used, total head water is to be lifted, etc.)

*A different form of application is provided where storage works are contemplated.

**Application for permits to appropriate water for the generation of electricity, with the exception of municipalities, must be made to the Hydroelectric Commission. Either of the above forms may be secured, without cost, together with instructions by addressing the State Engineer, Salem, Oregon.

Municipal or Domestic Supply—

30192

10. (a) To supply the city of Tillamook and suburban districts

Tillamook (Name of) County, having a present population of 5,000

and an estimated population of 5,500 in 1985.

(b) If for domestic use state number of families to be supplied .....

(Answer questions 11, 12, 13, and 14 in all cases)

11. Estimated cost of proposed works, $ 115,000

12. Construction work will begin on or before 1 July 1965

13. Construction work will be completed on or before 15 November 1965

14. The water will be completely applied to the proposed use on or before 1 July 1966

L. E. Irwin
(Signature of applicant)

President, Tillamook Water Commission

Remarks: The water from Skookum Lake Reservoir will be released during the summer and fall to supplement the normal creek flow. The water will flow down the Fawcett Creek about 3.3 miles where it will be picked up by the existing diversion structure. A map of the existing distribution system and the service area has been previously filed.

STATE OF OREGON, }
County of Marion, } ss.

This is to certify that I have examined the foregoing application, together with the accompanying maps and data, and return the same for .....

In order to retain its priority, this application must be returned to the State Engineer, with corrections on or before ....., 19.....

WITNESS my hand this ..... day of ....., 19.....

.....
STATE ENGINEER

By .....
ASSISTANT

30192

Canal System or Pipe Line— See Remarks.

7. (a) Give dimensions at each point of canal where materially changed in size, stating miles from headgate. At headgate: width on top (at water line) ..... feet; width on bottom ..... feet; depth of water ..... feet; grade ..... feet fall per one thousand feet.

(b) At ..... miles from headgate: width on top (at water line) ..... feet; width on bottom ..... feet; depth of water ..... feet; grade ..... feet fall per one thousand feet.

(c) Length of pipe, ... ft.; size at intake, ... in.; size at ..... ft. from intake ..... in.; size at place of use ..... in.; difference in elevation between intake and place of use, ... ft. Is grade uniform? ..... Estimated capacity, ... sec. ft.

8. Location of area to be irrigated, or place of use Tillamook and suburban districts including areas of possible future expansion

Township North or South	Range E. or W. of Willamette Meridian	Section	Forty-acre Tract	Number Acres To Be Irrigated
1 South	9W	19, 29, 30 31, 32, 33		
1 South	10 W	24, 25, 26 34, 35, 36		
2 South	10 W	3, 13, 24		
2 South	9W	4, 5, 6, 7, 8, 9, 10,		
		16, 17, 18 20, 21, 28		
		29		

(If more space required, attach separate sheet)

(a) Character of soil .....

(b) Kind of crops raised .....

Power or Mining Purposes—

9. (a) Total amount of power to be developed ..... theoretical horsepower.

(b) Quantity of water to be used for power ..... sec. ft.

(c) Total fall to be utilized ..... (Head) feet.

(d) The nature of the works by means of which the power is to be developed .....

.....

(e) Such works to be located in ..... (Legal subdivision) of Sec. ....., Tp. ..... (No. N. or S.), R. ..... (No. E. or W.), W. M.

(f) Is water to be returned to any stream? ..... (Yes or No)

(g) If so, name stream and locate point of return .....

....., Sec. ....., Tp. ..... (No. N. or S.), R. ..... (No. E. or W.), W. M.

(h) The use to which power is to be applied is .....

(i) The nature of the mines to be served .....

PERMIT

STATE OF OREGON, }
County of Marion, } ss.

This is to certify that I have examined the foregoing application and do hereby grant the same, SUBJECT TO EXISTING RIGHTS and the following limitations and conditions:

The right herein granted is limited to the amount of water which can be applied to beneficial use 700.0 acre feet stored water only *and shall not exceed* ~~cubic foot per second~~ *measured at the point of diversion from the stream, or its equivalent in case of rotation with other water users, from* Skookum Lake Reservoir to be constructed under application No. R-40641, permit No. R-4532

The use to which this water is to be applied is municipal

If for irrigation, this appropriation shall be limited to - - - - - ~~cubic foot per~~ *second or its equivalent for each acre irrigated*

and shall be subject to such reasonable rotation system as may be ordered by the proper state officer.

The priority date of this permit is February 25, 1965

Actual construction work shall begin on or before April 16, 1966 *and shall thereafter be prosecuted with reasonable diligence and be completed on or before October 1, 19*67

*Complete application of the water to the proposed use shall be made on or before October 1, 19*68

WITNESS my hand this 16th *day of* April, *19*65

STATE ENGINEER

Application No. R40641
Permit No. 30192

PERMIT
TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF OREGON

This instrument was first received in the office of the State Engineer at Salem, Oregon, on the 25th day of February, 1965, at 2:20 o'clock P. M.

Returned to applicant:

Approved:
April 16, 1965

Recorded in book No. ..... of Permits on page 30192

CHRIS L. WHEELER, STATE ENGINEER

Drainage Basin No. 1 page 18A
Fees $12.50

*Permit No. 6673

APPLICATION FOR A PERMIT

To Appropriate the Public Waters of the State of Oregon

I, Tillamook City (Name of Applicant)

of Tillamook, Ore. (Postoffice), County of Tillamook,

State of Oregon, do hereby make application for a permit to appropriate the following described public waters of the State of Oregon subject to existing rights:

If the applicant is a corporation, give date and place of incorporation .....

1. The source of the proposed appropriation is Fawcett Crk. (Name of stream)

tributary of Tillamook River

2. The amount of water which the applicant intends to apply to beneficial use is 20 cubic feet per second.

3. The use to which the water is to be applied is (Irrigation, power, mining, manufacturing, domestic supplies, etc.) Municipal supplies

4. The point of diversion is located (Give distance and bearing to section corner)

Project #2 also SE¼ of SE¼ 19 2 South

being within the #1 Lot 1(NW¼ NW¼) (Give smallest legal subdivision) of Sec. 23, Tp. 2 South (No. N. or S.)

R. 8 West 9 West (No. E. or W.), W. M., in the county of Tillamook

5. The Pipe line & Flume (Main ditch, canal or pipe line) to be # 1 6 miles (4 " built) # 2 9 miles (5 miles built) miles

in length, terminating in the SW¼ (Smallest legal subdivision) of Sec. 25, Tp. 1 South (No. N. or S.)

R. 10 West (No. E. or W.), W. M., the proposed location being shown throughout on the accompanying map.

6. The name of the ditch, canal or other works is Tillamook City Water Supply

DESCRIPTION OF WORKS

DIVERSION WORKS—

7. (a) Height of dam 13 feet, length on top 60 feet, length at bottom ..... feet; material to be used and character of construction (Loose rock, concrete, masonry, rock and brush, timber crib, etc., wasteway over or around dam) Concrete

(b) Description of headgate 1-24" concrete. (Timber, concrete, etc., number and size of openings)

Hydraulic Gradient - 5 ft. per thousand.

* A different form of application is provided where storage works are contemplated. These forms can be secured without charge, together with instructions, by addressing the State Engineer, Salem, Oregon.

CANAL SYSTEM—

8. (a) *Give dimensions at each point of canal where materially changed in size, stating miles from headgate. At headgate: Width on top (at water line)* ..... *feet; width on bottom* ..... *feet; depth of water* ..... *feet; grade* ..... *feet fall per one thousand feet.*

(b) *At* ..... *miles from headgate. Width on top (at water line)* ..... *feet; width on bottom* ..... *feet; depth of water* ..... *feet; grade* ..... *feet fall per one thousand feet.*

FILL IN THE FOLLOWING INFORMATION WHERE THE WATER IS USED FOR:

IRRIGATION—

9. *The land to be irrigated has a total area of* ..... *acres, located in each smallest legal subdivision, as follows:* .....
(Give area of land in each smallest legal subdivision which you intend to irrigate)

(If more space required, attach separate sheet)

POWER, MINING, MANUFACTURING, OR TRANSPORTATION PURPOSES—

10. (a) *Total amount of power to be developed* ..... *theoretical horsepower.*

(b) *Total fall to be utilized* ..... *feet.*
(Head)

(c) *The nature of the works by means of which the power is to be developed* .....

(d) *Such works to be located in* ..... *of Sec.*.....,
(Legal subdivision)
Tp......, *R.*....., *W. M.*
(No. N. or S.) (No. E. or W.)

(e) *Is water to be returned to any stream?* .....
(Yes or No)

(f) *If so, name stream and locate point of return* .....

....., *Sec.*....., *Tp.*....., *R.*....., *W. M.*
(No. N. or S.) (No. E. or W.)

(g) *The use to which power is to be applied is* .....

(h) *The nature of the mines to be served* .....

6673(b)

MUNICIPAL SUPPLY—

11. *To supply the city of* Tillamook, Ore.
Tillamook *County, having a present population of* 5000
(Name of)
and an estimated population of 8000 *in 19*30.

(Answer questions 12, 13, 14 and 15 in all cases)

12. *Estimated cost of proposed works, $* 50,000.00

13. *Construction work will begin on or before* .....

14. *Construction work will be completed on or before* .....

15. *The water will be completely applied to the proposed use on or before* .....

Duplicate maps of the proposed ditch or other works, prepared in accordance with the rules of the State Water Board, accompany this application.

TILLAMOOK CITY, OREGON.
(Name of applicant)

(CORPORATE SEAL)

J. Merrel Smith, Mayor.

Ira W. White, Recorder.

Signed in the presence of us as witnesses:

(1) A. A. Hall, (Name) Tillamook, Ore. (Address of Witness)

(2) E. D. Hoag, (Name) " " (Address of Witness)

Remarks: .....

STATE OF OREGON,
County of Marion, } *ss.*

This is to certify that I have examined the foregoing application, together with the accompanying maps and data, and return the same for correction or completion, as follows:

.....

In order to retain its priority, this application must be returned to the State Engineer, with corrections, on or before .....

WITNESS my hand this ..... *day of* .....

State Engineer

6673(c)

1

Application No. 9415

Permit No. 6673

PERMIT

TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF OREGON

District No.

This instrument was first received in the office of the State Engineer at Salem, Oregon, *on the* 13 *day of* March, 192 4 *at* 1:30 *o'clock* P.M.

Returned to applicant for correction

Corrected application received

Approved:

February 28, 1925

Recorded in Book No. 23 *of Permits, on Page* 6673

RHEA LUPER

State Engineer.

1 map ER

$8.00

STATE OF OREGON, }
County of Marion, } *ss.*

This is to certify that I have examined the foregoing application and do hereby grant the same, subject to the following limitations and conditions: If for irrigation, this appropriation shall be limited to one-eightieth of one cubic foot per second, or its equivalent, for each acre irrigated, and shall be subject to such reasonable rotation system as may be ordered by the proper state officer.

The right herein granted is limited to the appropriation of water from Fawcett Creek for municipal purposes.

The amount of water appropriated shall be limited to the amount which can be applied to beneficial use and not to exceed 20.0 *cubic feet per second, or its equivalent in case of rotation. The priority date of this permit is* March 13, 1924.

Actual construction work shall begin on or before February 28, 1930 *and shall thereafter be prosecuted with reasonable diligence and be completed on or before* February 28, 1930.

Extended to Oct. 1, 1941 Extended to Oct. 1, 1947 Extended to Oct. 1, 1959 Extended to October 1, 1988

Extended to Oct. 1, 1953

Complete application of the water to the proposed use shall be made on or before February 28, 1931.

Extended to Oct. 1, 1941 Extended to Oct. 1, 1947 Extended to Oct. 1, 1959 Extended to October 1, 1988

Extended to Oct. 1, 1953

WITNESS my hand this 28th *day of* February, 1925

Rhea Luper,

State Engineer.

Permits for power development are subject to the limitation of franchise as provided in Section 6726, Oregon Laws, and the payment of annual fees as provided in Section 5803, Oregon Laws.

This form approved by the State Water Board, March 11, 1909.

RECEIVED
AUG2 2 1975
WATER RESOURCES DEPT.
SALEM, OREGON

Permit No. [illegible]

APPLICATION FOR PERMIT*

To Appropriate the Public Waters of the State of Oregon

I, Tillamook Water Commission (Name of applicant)

of City Hall (Mailing address), Tillamook (City),

State of Oregon, 97141 (Zip Code), do hereby make application for a permit to appropriate the following described public waters of the State of Oregon, SUBJECT TO EXISTING RIGHTS:

If the applicant is a corporation, give date and place of incorporation N/A

1. The source of the proposed appropriation is Simmons Creek (Name of stream), a tributary of Tillamook River

2. The amount of water which the applicant intends to apply to beneficial use is 2.0 cubic feet per second (If water is to be used from more than one source, give quantity from each)

3. The use to which the water is to be applied is Quasi-Municipal (Irrigation, power, mining, manufacturing, domestic supplies, etc.)

4. The point of diversion is located 2288 ft. S (N. or S.) and 3344 ft. E (E. or W.) from the NW corner of Section 27 (Section or subdivision)

(If preferable, give distance and bearing to section corner)

(If there is more than one point of diversion, each must be described. Use separate sheet if necessary)

being within the SW 1/4 of NE 1/4 (Give smallest legal subdivision) of Sec. 27, Tp. 2S (N. or S.), R. 9W (E. or W.), W. M., in the county of Tillamook

5. The Pipe Line (Main ditch, canal or pipe line) to be 2.0 miles (Miles or feet) in length, terminating in the NW 1/4 of NW 1/4 (Smallest legal subdivision) of Sec. 22, Tp. 2S (N. or S.), R. 9W (E. or W.), W. M., the proposed location being shown throughout on the accompanying map.

DESCRIPTION OF WORKS

Diversion Works—

6. (a) Height of dam 3 feet, length on top 20 feet, length at bottom 15 feet; material to be used and character of construction timber crib w/concrete (Loose rock, concrete, masonry, rock and brush, timber crib, etc., wasteway over or around dam) sidewall and foundation

(b) Description of headgate Timber crib w/concrete foundation and sidewalls (Timber, concrete, etc., number and size of openings)

(c) If water is to be pumped give general description N/A (Size and type of pump)

(Size and type of engine or motor to be used, total head water is to be lifted, etc.)

* A different form of application is provided where storage works are contemplated. Such forms can be secured without charge, together with instructions, by addressing the State Engineer, Salem, Oregon 97310

3444

41438

nal System or Pipe Line—

7. (a) Give dimensions at each point of canal where materially changed in size, stating miles from headgate. At headgate: width on top (at water line) ..... feet; width on bottom ..... feet; depth of water ..... feet; grade ..... feet fall per one thousand feet.

(b) At ..... miles from headgate: width on top (at water line) ..... feet; width on bottom ..... feet; depth of water ..... feet; grade ..... feet fall per one thousand feet.

(c) Length of pipe, 10,560 ft.; size at intake, 10 in.; size at ..... ft. from intake ..... in.; size at place of use 10 in.; difference in elevation between intake and place of use, 60 ft. Is grade uniform? No Estimated capacity, 2.23 sec. ft.

8. Location of area to be irrigated, or place of use ALSO SEE ATTACHED SHEETS

Township North or South	Range E or W. of Willamette Meridian	Section	PART OF SECTION Forty-acre Tract	USER Number Acres To Be Irrigated
T. 1 S.	R. 10 W.	13	S 1/2	Wilson River W. D.
T. 1 S.	R. 10 W.	14	S 1/2	Wilson River W. D.
T. 1 S.	R. 10 W.	22	NE 1/4	Wilson River W.D.
T. 1 S.	R. 10 W.	23	All except SW 1/4	Wilson River W.D.
T. 1 S.	R. 10 W.	24	All	Wilson River W.D.
T. 1 S.	R. 10 W.	25	All	City of Tillamook
T. 1 S.	R. 10 W.	26	All except NW 1/4	West Hills W.D.
T. 1 S.	R. 10 W.	34	S 1/2	West Hills W. D.
T. 1 S.	R. 10 W.	35	All	West Hills W. D.
T. 1 S.	R. 10 W.	36	All	Rodgers Water Assoc.
T. 1 S.	R. 9 W.	16	SW 1/4	Wilson River W. D.
T. 1 S.	R. 9 W.	17	SE 1/4	Wilson River W. D.

(If more space required, attach separate sheet) PLEASE SEE ATTACHED SHEETS

(a) Character of soil N/A

(b) Kind of crops raised N/A

Power or Mining Purposes—

9. (a) Total amount of power to be developed N/A theoretical horsepower.

(b) Quantity of water to be used for power N/A sec. ft.

(c) Total fall to be utilized N/A (Head) feet.

(d) The nature of the works by means of which the power is to be developed N/A

(e) Such works to be located in N/A (Legal subdivision) of Sec. ....., Tp. ..... (No. N. or S.), R. ..... (No. E. or W.), W. M.

(f) Is water to be returned to any stream? N/A (Yes or No)

(g) If so, name stream and locate point of return N/A

....., Sec. ....., Tp. ..... (No. N. or S.), R. ..... (No. E. or W.), W. M.

(h) The use to which power is to be applied is N/A

(i) The nature of the mines to be served N/A

TOWNSHIP	RANGE	SECTION	PART OF SECTION	USER
T. 1 S.	R. 9 W.	18	SW 1/4	Wilson River W. D.
T. 1 S.	R. 9 W.	19	All	Wilson River W. D.
T. 1 S.	R. 9 W.	20	All	Fairview W. D.
T. 1 S.	R. 9 W.	21	All	Fairview W. D.
T. 1 S.	R. 9 W.	22	S 1/2	Fairview W. D.
T. 1 S.	R. 9 W.	23	S 1/2	Fairview W. D.
T. 1 S.	R. 9 W.	26	All	Fairview W. D.
T. 1 S.	R. 9 W.	27	All	Fairview W. D.
T. 1 S.	R. 9 W.	28	All	Fairview W. D.
T. 1 S.	R. 9 W.	29	All	Fairview W. D.
T. 1 S.	R. 9 W.	30	All	City of Tillamook
T. 1 S.	R. 9 W.	31	All	City of Tillamook
T. 1 S.	R. 9 W.	32	All	City of Tillamook
T. 1 S.	R. 9 W.	33	All	City of Tillamook
T. 1 S.	R. 9 W.	34	W 1/2	Fairview W. D.
T. 2 S.	R. 9 W.	2	NW 1/4	Long Prairie W. D.
T. 2 S.	R. 9 W.	3	All	Long Prairie W. D.
T. 2 S.	R. 9 W.	4	All	Long Prairie W. D.
T. 2 S.	R. 9 W.	5	All	Long Prairie W. D.
T. 2 S.	R. 9 W.	6	All	City of Tillamook
T. 2 S.	R. 9 W.	7	All except SW 1/4	South Prairie W. D.
T. 2 S.	R. 9 W.	8	All	Port of Tillamook Bay

Permit [illegible]

TOWNSHIP	RANGE	SECTION	PART OF SECTION	USER
T. 2 S.	R. 9 W.	9	All	Port of Tillamook Bay
T. 2 S.	R. 9 W.	10	W 1/2 NE 1/4	Long Prairie W. D.
T. 2 S.	R. 9 W.	15	NW 1/4	Long Prairie W. D.
T. 2 S.	R. 9 W.	16	All	Pleasant Valley W. D.
T. 2 S.	R. 9 W.	17	N 1/2	South Prairie W. D.
T. 2 S.	R. 9 W.	18	All except NW 1/4	South Prairie W. D.
T. 2 S.	R. 9 W.	19	Part of NW 1/4	South Prairie W. D.
T. 2 S.	R. 9 W.	20	E 1/2	Pleasant Valley W. D.
T. 2 S.	R. 9 W.	21	All except SE 1/4	Pleasant Valley W. D.
T. 2 S.	R. 9 W.	22	W 1/2	Pleasant Valley W. D.
T. 2 S.	R. 9 W.	28	W 1/2	Pleasant Valley W. D.
T. 2 S.	R. 9 W.	29	E 1/2	Pleasant Valley W. D.
T. 2 S.	R. 9 W.	32	NE 1/4	Pleasant Valley W. D.
T. 2 S.	R. 9 W.	33	NW 1/4	Pleasant Valley W. D.
T. 2 S.	R. 10 W.	1	All except SW 1/4	
T. 2 S.	R. 10 W.	12	Part of NE 1/4	
T. 2 S.	R. 10 W.	13	Part of SE 1/4	South Prairie W. D.
T. 2 S.	R. 10 W.	24	Part of NE 1/4	South Prairie W. D.
T 2 S.	R. 10 W.	2	Part of NE 1/4	

unicipal or Domestic Supply— 41438

10. (a) To supply the city of Tillamook and surrounding area,

Tillamook (Name of) County, having a present population of 5,269 (area wide)

and an estimated population of 7,450 in 19 75

(b) If for domestic use state number of families to be supplied

(Answer questions 11, 12, 13, and 14 in all cases)

11. Estimated cost of proposed works, $ 335,000

12. Construction work will begin on or before 1980

13. Construction work will be completed on or before 1981

14. The water will be completely applied to the proposed use on or before

See Below

(Signature of applicant)

Remarks: The intent of this application is to reserve for future quasi-municipal use all water in Simmons Creek except those waters with prior appropriated rights.

STATE OF OREGON, } ss.
County of Marion, }

This is to certify that I have examined the foregoing application, together with the accompanying maps and data, and return the same for correction and completion.

In order to retain its priority, this application must be returned to the State Engineer, with corrections on or before April 11, 19 77
May 10 77
June 6, 1977

WITNESS my hand this 16th day of February, 19 77.
10th March 77
6th day of April 1977

JAMES E. SEXSON
Director ~~STATE ENGINEER~~

By

PERMIT

41438

STATE OF OREGON, } ss.
County of Marion, }

This is to certify that I have examined the foregoing application and do hereby grant the same, SUBJECT TO EXISTING RIGHTS and the following limitations and conditions:

The right herein granted is limited to the amount of water which can be applied to beneficial use and shall not exceed 2.0 cubic feet per second measured at the point of diversion from the stream, or its equivalent in case of rotation with other water users, from Simmons Creek

The use to which this water is to be applied is municipal purposes

If for irrigation, this appropriation shall be limited to ..... of one cubic foot per second or its equivalent for each acre irrigated .....

and shall be subject to such reasonable rotation system as may be ordered by the proper state officer.

The priority date of this permit is August 22, 1975

Actual construction work shall begin on or before April 27, 1978 Extended to Oct. 1 1980 and shall thereafter be prosecuted with reasonable diligence and be completed on or before October 1, 1978 Extended to Oct. 1 1980

Complete application of the water to the proposed use shall be made on or before October 1, 1979 10-1-94

WITNESS my hand this 27th day of April 1977 10-1-94

Irene E. Gilkey
WATER RESOURCES DIRECTOR

Application No. S 35755

Permit No. 41438

PERMIT

TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF OREGON

This instrument was first received in the office of the State Engineer at Salem, Oregon, the 22 day of July, 19 75, at 8 o'clock A. M.

Returned to applicant:

Approved:

Recorded in book No. ..... of permits on page 41438

STATE ENGINEER

Drainage Basin No. 1 page 18B

Maps .....

APPENDIX B

(503)731-4317
FAX (503)731-4077
TDD-Nonvoice (503) 732-4031

Oregon

DEPARTMENT OF
HUMAN
RESOURCES

HEALTH DIVISION

November 21, 1994

NOV 22 1994

Mr. Richard Adams
Water Superintendent
Tillamook Water Commission
P.O. Box 99
Tillamook, Oregon 97141

Dear Mr. Adams:

On November 14, 1994, Bonnie Waybright and I conducted a **Comprehensive Performance Evaluation (CPE)** of the new 2 million gallon per day (MGD) water treatment plant which provides drinking water for the **City of Tillamook** and the surrounding purchasing water systems. I wish to thank you for all your help and assistance during the review. I have enclosed a copy of the report for the Commission's records. Please review the report carefully and notify me of any errors or changes that should be made.

As you know, the Health Division began enforcement of new federal regulations for water supplies without any filtration treatment of surface water sources January 1992. The Tillamook Water Commission was one of the original 48 unfiltered water systems to receive a **Notice of Violation and Remedial Order** January 8, 1992 directing the Commission to either install filtration treatment or develop an alternate source of supply. Since that time, the Commission investigated slow sand filtration before settling on constructing a conventional package treatment plant. Now that the treatment plant has been completed and is on-line, the Health Division conducted the CPE to determine how well the new treatment plant is able to meet the new regulations for filtered water systems as well as how effectively (or to what degree) the treatment plant is able to remove particulate matter (including *Giardia lamblia* cysts) in the treated water.

The treatment plant was evaluated for each of the three unit processes that comprise the total treatment train (flocculation/coagulation/-sedimentation, filtration, and disinfection) and for the filter's ability to produce treated water following a backwash of the filter media. The major unit process evaluation was done by comparing calculated theoretical operating flows that would provide optimized treatment (the ability of the treatment process to produce 0.1 NTU or less treated water on a consistent basis) against actual peak operating flows measured and recorded at the treatment plant. The filtered water

Barbara Roberts
Governor

800 NE Oregon Street# 21
Portland, OR 97232-1
(503) 731-4030 Emergency
(503) 252-7978 TDD
Emergency

turbidity profile was made by monitoring the finished water turbidimeter downstream of Filter #2 immediately after the filter was returned to service following a backwash cycle.

A summary of the CPE findings is as follows:

1. The flocculation/coagulation/sedimentation stage provided by the adsorption clarifier was determined to be capable of optimized treatment at theoretical flow rates up to 1443 GPM (2.07 MGD) when evaluated against a hydraulic loading rate of 10 GPM/FT^2. This flow rate essentially the same as the maximum operating flow rate of 1400 GPM (2.0 MGD).

2. The filtration stage was evaluated against a filtration rate of 6.0 GPM/FT^2 (typical of medium bed depth multi-media filters with excellent flocculation and sedimentation capabilities) and was found to be capable of providing optimized treatment at treatment plant flow rates up to 1854 GPM (2.67 MGD).

4. Data generated by the filtered water turbidity profile after backwashing Filter #2 show that the filter is able to meet the minimum treatment level of 0.5 NTU at all times after that filter has returned to on-line service. In addition, the filter was able to meet the health goal treatment level (0.1 NTU) for filtered water after about 20 minutes following the conclusion of the backwash cycle. However, the three turbidity grab samples that were collected from the filter-to-waste line did not correlate at all with the on-line continuous turbidimeter, so calibration of one or both of the turbidimeters may be in order. A graphical display of the continuous turbidity profile is included with this report.

5. The amount of disinfection contact time available through the new finished water reservoirs prior to the first user is more than sufficient to meet at least a 1.0-log reduction of *Giardia lamblia* through disinfection alone. The amount of available contact time was estimated using the USEPA SWTR Guidance Manual method of "Rule-of-Thumb" determination. The available contact time (686 minutes through both reservoirs) can provide (at 1400 GPM) a minimum of 7.3-log inactivation. A tracer study should be done, however, to determine the actual amount of available contact time through both of the reservoirs.

As a result of the CPE findings, the Health Division has the following comments and recommendations:

1. After surveying the results of the major unit process evaluations at a peak demand capacity of 1400 GPM (2.0 MGD), the Health Division concludes that the treatment plant operates like a conventional filtration treatment plant. That is, optimum treatment occurs throughout the different stages of the treatment process.

2. The turbidity profile data indicates that the treatment plant is capable of providing turbidity removal that would meet the minimum treatment standards (0.5 NTU) as well as meet the health goals for optimum treatment standards (0.1 NTU) after the first few minutes of a filter run. However, the submitted plans for the treatment plant included grab sample taps on each filter to monitor filtered effluent water quality. These taps should be installed on the filter effluent lines.

3. One unknown variable is related to the recycled backwash water line at the raw water inlet. The Health Division highly recommends chemical feed capabilities on the recycled line separate from the existing raw water chemical feed point. In addition, there is a growing amount of national research that points to particle size monitoring and even occasional microscopic particulate analyses for the recycled water line prior to convergence with the raw water line.

4. As a result of this report, the treatment plant is credited with a 2.5-log reduction of particulate matter for flow rates up to 1400 GPM (2 MGD). The disinfection process is estimated to be capable of a 7.3-log reduction during worst case scenario conditions (peak demand during cold weather water quality conditions). Overall, a 3.0-log reduction is required for the entire process (treatment plus disinfection). As a result, the treatment process can currently achieve a 9.8-log reduction under peak demand conditions, and thus the treatment plant can meet the filtration treatment requirements.

Finally, and most importantly, the addition of the new water treatment plant satisfies the terms of the **Notice of Violation/Remedial Order** issued January 8, 1992. All conditions of the Order have been met,

and it is my pleasure to inform you and the Commission that the water system has Returned to Compliance. The citizens of Tillamook and surrounding purchasing water systems should be very proud of the great work that you and your staff have accomplished over the past two years with this project (not to mention the work done by your consulting engineers).

Again, I wish to thank you for assisting us in the evaluation. If you have any questions about the CPE or any of its findings, please contact me.

Sincerely,

Michael W. Grimm, P.E.
Regional Manager
Drinking Water Section

enc.

cc: Mary Alvey, R.S.; Mgr., Monitoring-Compliance: OHD-DWS
Duane Lee, P.E.; Lee Engineering, Inc.
Caryn Backman, R.S.; Tillamook County Health Dept.

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FAX (503) 731-4077
TDD-Nonvoice (503) 732-4031

Oregon

DEPARTMENT OF
HUMAN
RESOURCES

HEALTH DIVISION

August 1, 1995

DEC

Rich Adams
Tillamook Water Commission
PO Box 99
Tillamook, OR 97141

Dear Rich:

Thank you for your assistance during the sanitary survey of the Tillamook Water Commission water system on November 14, 1994. The report has been completed and is enclosed for your records. Please review it and let me know if any corrections are needed.

The operation and maintenance of this water system are very good, and no deficiencies were found in these areas. A few problems were noted regarding future planning, monitoring and certification, and these items are detailed below.

Requirements

1. Master Plan - Currently there is no master plan guiding the system. A twenty year master plan prepared by an engineer registered in Oregon is required. This master plan must be submitted to the Oregon Health Division for plan review.

2. Monitoring - Inorganic and Nitrate tests are overdue for the surface water entry point. Quarterly nitrate testing is required for surface water sources, but may be reduced to annually upon request if four consecutive test results are below 50% of the maximum contaminant level.

   Sodium testing is overdue for both surface and groundwater entry points.

3. Certification - As you know, certification at the WT 2 level is required for this water system.

John A. Kitzhaber
Governor

800 NE Oregon Street # 2
Portland, OR 97232-216
(503) 731-4030 Emergenc
(503) 252-7978 TDD
Emergency

Recommendations

1. Watershed Control Program - Efforts to establish a watershed control program are underway, and the Health Division encourages you to continue in this area.

If you have any questions about this report or any of the requirements, please give me a call.

Sincerely,

Bonnie Waybright

Bonnie Waybright, P.E.
Regional Engineer
Cross Connection Program Coordinator
Drinking Water Program

enclosure

Oregon Health Division
Drinking Water Section
731-4381

Simplified Chemical Monitoring for Community WS*

For Jan. 1993 to Dec. 1995

Chemicals		Surface Water	Ground Water
Inorganics		Yearly	One
Sodium		Yearly	One
Nitrate (Testing starts 1/93)		Quarterly	Yearly
Nitrite		One	
Asbestos	AC Pipe	One	
	Source	Yearly	One
Synthetic Organics		4 quarters	
Unregulated SOC		4 quarters	
Volatile Organic		4 quarters	
Unregulated VOC		4 quarters	One
Trihalomethane		Quarterly	Quarterly
Radiological		every 4 years	every 4 years
Lead and Copper Rule		Semi Annually	

*** This table describes the monitoring you must do. Waivers, reductions, vulnerability, or detections will affect sampling requirements. You will find details on number, location and timing of samples in the rule book.**

Beginning monitoring: You must begin monitoring between Jan. 93 and Dec. 93 if your population is greater than 299; between Jan. 94 and Dec. 94 if your population is 100-299; and between Jan. 95 and Dec. 95 if your population is 25-99.

Beginning Lead & Copper monitoring: You must start Lead and Copper Rule monitoring by Jan. 92 if your population is 50,000 or over; by July 92 if your population is 3,300 or over; and by July 93 if your population is 25 or over.

Monitoring Trihalomethanes: Trihalomethanes are monitored only by systems with a population of 10,000 or more.

Unregulated Chemicals: Systems with fewer than 150 connections are not required to test for unregulated synthetic or unregulated volatile organics if a waiver is requested in writing.

Testing for SOCs, Unregulated SOCs, VOCs, and Unregulated VOCs: Systems having a population smaller than 3,300 may take 1 sample for SOCs, Unregulated SOCs, VOCs, and Unregulated VOCs to satisfy monitoring requirements. If there are detections of any chemicals further sampling will be required. Sample must be collected before Oct. 1993.

4 Quarters: test on a quarterly schedule for one year for a total of 4 tests.

This table supersedes previous editions. Rev 7/1/93

Contaminants and Maximum Levels

Inorganic	mg/l
Antimony Total†	0.006
Arsenic	0.05
Asbestos	7 MFL[1]
Barium	2
Beryllium Total†	0.004
Cadmium	0.005
Chromium	0.1
Copper	1.3*
Cyanide†	0.2
Fluoride	4.0
Lead	0.015*
Mercury	0.002
Nickel†	0.1
Nitrate	10
Nitrate-Nitrite	10
Nitrite	1
Selenium	0.05
Sodium	
Sulfate	
Thallium Total†	0.002

Volatile Organics	
1,1-Dichloroethane‡	
1,1-Dichloroethylene	0.007
1,1-Dichloropropene‡	
1,1,1-Trichloroethane	0.2
1,1,1,2-Tetrachloroethane‡	
1,1,2-Trichloroethane†	0.005
1,1,2,2-Tetrachloroethane‡	
1,2-Dichloropropane	0.005
1,2-Dichloroethane	0.005
1,2,3-Trichloropropane‡	
1,2,4-Trichlorobenzene†	0.07
1,3-Dichloropropane‡	
1,3-Dichloropropene‡	
2,2-Dichloropropane‡	
Benzene	0.005
Bromobenzene‡	
Bromodichloromethane‡	
Bromoform‡	
Bromomethane‡	
Carbon Tetrachloride	0.005
Chlorodibromomethane ‡	
Chloroethane‡	
Chloroform‡	
Chloromethane‡	
o-Chlorotoluene‡	
p-Chlorotoluene‡	
Cis-1,2-Dichloroethylene	0.07
Dibromomethane‡	
m-Dichlorobenzene‡	
Dichloromethane†	0.005
Ethylbenzene	0.7
Monochlorobenzene	0.1
O-Dichlorobenzene	0.6
P-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1.0
Total Xylenes	10.0
Trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl Chloride	0.002

Synthetic Organics	mg/l
2,4-D	0.07
2,4,5-TP Silvex	0.05
3-Hydroxycarbofuran‡	
Adipates†	0.4
Alachlor (Lasso)	0.002
Aldicarb	
Aldicarb Sulfoxide	
Aldicarb Sulfone	
Aldrin‡	
Atrazine	0.003
Benzo(A)Pyrene†	0.0002
BHC-gamma (Lindane)	0.0002
Butachlor‡	
Carbofuran	0.04
Carbaryl‡	
Chlordane	0.002
Dalapon†	0.2
Dibromochloropropane	0.0002
Dicamba‡	
Dieldrin‡	
Dinoseb†	0.007
Dioxin†	$3x10^{-8}$
Diquat†	0.02
Endothall†	0.1
Endrin†	0.0002
Ethylene Dibromide (EDB)	0.00005
Glyphosate†	0.7
Heptachlor Epoxide	0.0002
Heptachlor	0.0004
Hexachlorobenzene (HCB)†	0.001
Hexachlorocyclopentadiene†	0.05
Methomyl‡	
Methoxychlor	0.04
Metolachlor‡	
Metribuzin‡	
Pentachlorophenol	0.001
Phthalates†	0.006
Picloram†	0.5
Polychlorinated Biphenyls (PCB)	0.0005
Propachlor‡	
Simazine†	0.004
Toxaphene	0.003
Vydate†	0.2

† Unregulated for systems with less than 150 connections until 1/1/96 (Phase 5).
‡ Unregulated organics.
[1] Million Fibers per Liter
* Action Level

* SANITARY SURVEY REPORT * OREGON HEALTH DIVISION DRINKING WATER PROGRAM COMMUNITY WATER SYSTEMS	SUPPLY NAME: TILLAMOOK WATER COMMISSION ID NUMBER : 4100893 COUNTY : TILLAMOOK SURVEYED BY: B. WAYBRIGHT & M. GRIMM DATE : 11-14-94

Sheets Attached:

- ☐ Narrative Summary/Recommendations
- ☐ Inventory Master Data
- ☐ Water System Schematic
- ☐ Location Map(s)
- ☐ Source of Supply - Wells
- ☐ Source of Supply - Surface
- ☐ Treatment - Disinfection
- ☐ Treatment - Filtration
- ☐ Storage/Distribution
- ☐ Booster Pumps/Production Data
- ☐ Certification

Additional Attachments:

SIMPLIFIED CHEMICAL MONITORING FOR COMMUNITY WATER SYSTEMS

Narrative Summary:

THE TILLAMOOK WATER COMMISSION IS LOCATED IN TILLAMOOK, OREGON, AND SERVES A POPULATION OF APPROXIMATELY 6400 PEOPLE THROUGH 1600 SERVICE CONNECTIONS. THE WATER SYSTEM IS SUPPLIED FROM KILLAM CREEK, FAWCETT CREEK, AND TWO WELLS. A THIRD WELL IS AVAILABLE FOR EMERGENCY USE. THE SURFACE WATER IS TREATED USING CONVENTIONAL FILTRATION. TWO RESERVOIRS TOTALING 3.0 MILLION GALLONS PROVIDE BOTH STORAGE AND CONTACT TIME.

Requirements/Recommendations:

REQUIREMENTS:

1. A CURRENT MASTER PLAN IS NEEDED.
2. INORGANIC AND NITRATE TESTS ARE NEEDED FOR THE SURFACE WATER ENTRY POINT.
3. SODIUM TESTS ARE NEEDED FOR ALL ENTRY POINTS.
4. CERTIFICATION AT THE WT 2 LEVEL IS NEEDED.

RECOMMENDATIONS:

1. CONTINUE EFFORTS TO PREPARE A WRITTEN WATERSHED CONTROL PROGRAM.

INVENTORY MASTER INFORMATION

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

Date of Last Survey:	(MM/DD/YY)	10-1-87
System Type:		C
Ownership of System:	(1,2,3,4,5)	4
Population Served:	(Total Number)	6400
Number of Connections:	(Total Number)	1600
Twelve-Month Period:		T
Year-Round Residents		Y
Primary Service Characteristic:	(R,T,S,O)	R
Secondary Service Characteristic:	(1,2,3,4,5,6,9)	1
Number of Sources:	(Total Number)	5
Counties Served (Refer to Codes):	(__/__/__)	29
Emergency Systems Available (Name & ID Number):		
PWS - _____	(41_____)	-
PWS - _____	(41_____)	-
PWS - _____	(41_____)	-
Percent Ground:	(%)	10
Percent Surface:	(%)	90
Percent Purchased Ground:	(%)	0
Percent Purchased Surface:	(%)	0
Active:	(Y/N)	Y
Activate Date	(MM/DD/YY)	-
Deactivate Date	(MM/DD/YY)	-
Deactivate Reason:	(A,C,D,M,N,O,P,R,S,U,0)	-
Number of Tanks in Supply:	(Total Number)	2
Number of Gallons in Storage:	(Total Number)	3,000,000

Mailing Address	PO BOX 99
City/State/Zip	TILLAMOOK, OR 97141
Contact Name/Phone	RICH ADAMS / (503)842-2463
Comments	MONTEY SESSIONS / (503)842-2343
Legal (Owner) Address	PO BOX 99
City/State/Zip	TILLAMOOK, OR 97141
Contact Name/Phone	RICH ADAMS / (503)842-2463
Comments	MONTEY SESSIONS / (503)842-2343
Supply Address	7995 KILLAM CREEK RD.
City/State/Zip	TILLAMOOK, OR 97141
Contact Name/Phone	RICH ADAMS / (503)842-3060
Comments	ADDRESS & PHONE FOR WTP

SOURCE DATA (Sources for Individual Compliance Monitoring)

Source ID	Source Name	* Type	Seller	** Status	VOC	SOC	SWI
A	ENTRY POINT - SURFACE SOURCES	S	41 ---	P	N	N	-
B	WELL #1	G	41 ---	E	N	N	N
C	WELL #2	G	41 ---	P	N	N	N
D	WELL #3	G	41 ---	P	N	N	N

* (S)urface/(G)round/(P)Purchased Surface/(W)Purchased Ground
** (P)ermanent/(S)easonal/(E)mergency/(O)ther/(I)nterim
*** Vulnerability to Contamination - (Y)es/(N)o
VOCs/SOCs/Surface Water Influence

WATER SYSTEM OVERALL SCHEMATIC

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

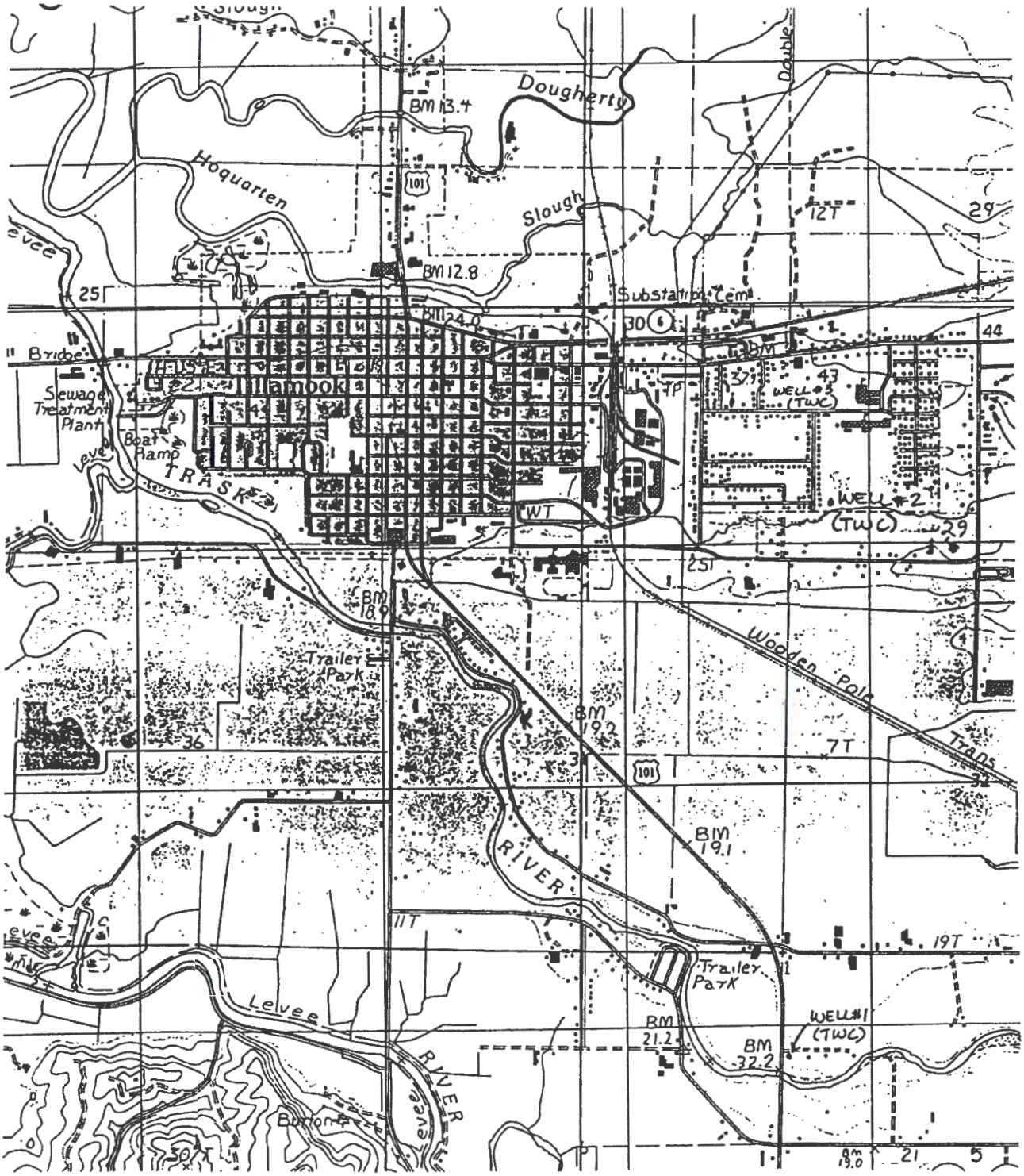
192



LOCATION MAP (USGS QUAD SHEET)

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

Quadrangle Map
USGS Map Name - TILLAMOOK, OREG
USGS Map Number - 45123-D7-TF-024



LOCATION MAP (USGS QUAD SHEET)

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

Quadrangle Map
USGS Map Name - TILLAMOOK, OREG
USGS Map Number - 45123-D7-TF-024



SOURCE OF SUPPLY - WELL

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

Source ID/Detail ID - Well Detail Name

B	A	WELL #1
C	A	WELL #2
D	A	WELL #3

Well Data:

Source ID Letter:		B	C	D		
Detail ID Letter:		A	A	A		
Well/Spring/Stream:		W	W	W	W	
Source/Detail Status:	(P/S/E/O/I)	E	P	P		
Treatment Objective/Process:	(____)	D421	D421	D403		
Treatment Objective/Process:	(____)	-	-	-		
Treatment Objective/Process:	(____)	-	-	-		
Treatment Objective/Process:	(____)	-	-	-		
Capacity:	(GPM)	675	800	900		
Latitude: Degrees	(___)	45	45	45		
Minutes	(__)	25	27	27		
Seconds	(__)	49	03	17		
Longitude: Degrees	(___)	123	123	123		
Minutes	(__)	49	49	49		
Seconds	(__)	21	14	24		
Location Map Included (USGS):	(Y/N)	Y	Y	Y		
Well Log Attached:	(Y/N)	Y	Y	Y		
Depth of Well:	(FT.)	146	122	198		
Year of Installation:	(19__)	58	81	90		
Casing Diameter:	(IN.)	16	14	18		
Grout Seal:	(Y/N)	Y	Y	Y		
Gravel Pack:	(Y/N)	N	Y	Y		
Openings - Screens/Slots/Torch:	(S/L/T)	L	S	S		
Length of Open Interval:	(FT.)	10	25	40		
Depth to Top of Intake:	(FT.)	88	95	154		
Water Level Device:	(Y/N)	Y	Y	-		
Static Water Level:	(FT.)	25	35	31.5		
Pumping Water Level:	(FT.)	-	67	-		

Comments:

Pump Data:

Pump Type:	(VT,SU,CE,SJ,DJ,OT)	VT	VT	SU	
Pump Setting:	(FT.)	-	-	180	
Capacity:	(GPM)	675	800	980	
At TDH:	(FT.)	-	-	-	
Discharge Pressure:	(PSI)	85	85	85	
Horsepower:	(HP)	75	75	-	
Date Pump Pulled:	(19__)	92	-	-	
Bearing Lubrication - (Oil/Water):	(O/W)	W	W	W	
Pump Base Sealed:	(Y/N)	Y	Y	Y	

Comments:

SOURCE OF SUPPLY - WELL

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

Wellhead Data:

Well House:	(Y/N)	Y	Y	Y	
Pitless Adapter or Unit:	(Y/N)	N	N	Y	
Slab:	(Y/N)	Y	Y	Y	
Heated/Lighted:	(Y/N)	Y	Y	Y	
Casing Above Grade - (12 in.):	(Y/N)	Y	Y	N	
Subject to Flooding:	(Y/N)	N	N	N	
Sanitary Well Seal:	(Y/N)	Y	Y	Y	
Casing Vent:	(Y/N)	Y	Y	N	
Pump to Waste Piping:	(Y/N)	Y	Y	Y	
Check Valve:	(Y/N)	Y	Y	Y	
Air/Vacuum Relief:	(Y/N)	N	Y	Y	
Flow Meter:	(Y/N)	Y	Y	Y	
Sampling Tap - Raw:	(Y/N)	Y	Y	Y	
Sampling Tap - Treated:	(Y/N)	-	-	-	
Chemical Feed Tap:	(Y/N)	Y	Y	Y	
Chemical Feed Electrical Outlet:	(Y/N)	Y	Y	Y	
Floor Drain:	(Y/N)	Y	Y	Y	
Pressure Gage:	(Y/N)	Y	Y	Y	
Pump Removal Provision:	(Y/N)	Y	Y	Y	

Comments:

Source Protection:

Site Protection (Immediate):					
Required	(FT.)	100	100	100	
Available	(FT.)	200	100	100	
Control - None/Owned/Easement	(N/O/E)	E	P	E	
Recharge Area Protection - (See Map):					
Aquifer Characteristics:					
Recharge Area - (SQ MI)	(___._)	-	-	-	
Consolidated/Unconsolidated	(C/U)	U	U	U	
Artesian/Water Table	(A/W)	W	W	W	
Geologic Barrier	(Y/N)	N	N	N	
Grout Seal into Confining Layer	(Y/N)	N	N	N	
Protection Zone:					
Distance Considered - (None = 0)	(FT.)	100	100	100	
Land Use Codes in Zone	(A-M)	D	D	G	
Ownership of Zone (Refer to Codes)	(_)	5	4	5	
Zone Status - None/Prelim/Final	(N/P/F)	-	-	-	
Vulnerable to Contamination:					
VOCs	(Y/N)	N	N	N	
SOCs	(Y/N)	N	N	N	
Surface Water Influence	(Y/N)	N	N	N	
Sensitivity to Contamination:					
High/Low/None	(H/L/N)/(O/I/M/P/T)	L/M	L/M	L/M	
Org/Inorg/Micro/Pesti/Turbi					

Comments:
WELL #1 SURROUNDED BY PRIVATE PROPERTY, ROAD NEARBY.
TWC OWNS 1 ACRE AROUND WELL #2

Comments: (Water Quality, Surface Water Influence, Housekeeping, Etc.)

SOURCE OF SUPPLY - SURFACE

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

Source ID/Detail ID - Surface Detail Name

A	A	KILLAM CREEK
A	B	FAWCETT CREEK

Intake Data:

Source ID Letter:			A	A		
Surface ID Letter:			A	B		
Well/Spring/Stream			T	T	T	T
Source/Detail Status:		(P/S/E/O/I)	P	P		
Treatment Objective/Process:		(____)	D401	D401		
Treatment Objective/Process:		(____)	D403	D403		
Treatment Objective/Process:		(____)	P345	P345		
Treatment Objective/Process:		(____)	-	-		
Capacity:		(GPM)	900	900		
Intake Location:						
Latitude:	Degrees	(___)	45	45		
	Minutes	(__)	23	23		
	Seconds	(__)	47	09		
Longitude:	Degrees	(___)	123	123		
	Minutes	(__)	46	45		
	Seconds	(__)	13	44		
Rivermile:		(____)	-	-		
Location Map Included (USGS):		(Y/N)	Y	Y		

Comments:

Surface Intake:

Impoundment:	(Y/N)	N	N		
Diversion Dam:	(Y/N)	Y	Y		
Screens:	(Y/N)	Y	Y		
Drain:	(Y/N)	Y	Y		

Comments:

Infiltration Gallery:

Number of Laterals:	(Total Number)				
Total Length of Pipe:	(FT.)				
Average Diameter of Pipe:	(IN.)				
Average Depth of Laterals:	(FT.)				
Protection from Flooding:	(Y/N)				

Comments:

SOURCE OF SUPPLY - SURFACE

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

Source Protection (See Map):

Recharge Area - (SQ MI)	(___._)	5.3	4.8		
Land Use Codes:	(A-M)	K	K		
Ownership (Refer to Codes):	(_)	5	5		
Vulnerable to Contamination:					
VOCs	(Y/N)	N	N		
SOCs	(Y/N)	N	N		
Human Viruses	(Y/N)	N	N		
Sensitivity to Contamination:					
High/Low/None	(H/L/N)/(O/I/M/P/T)	H/M	H/M		
Org/Inorg/Micro/Pesti/Turbi		-	-		

Comments:
TILLAMOOK WC OWNS APPROXIMATELY 2/3 OF THE WATERSHED. THE REST BELONGS TO THE STATE DEPT. OF FORESTRY.

Watershed Control Program:

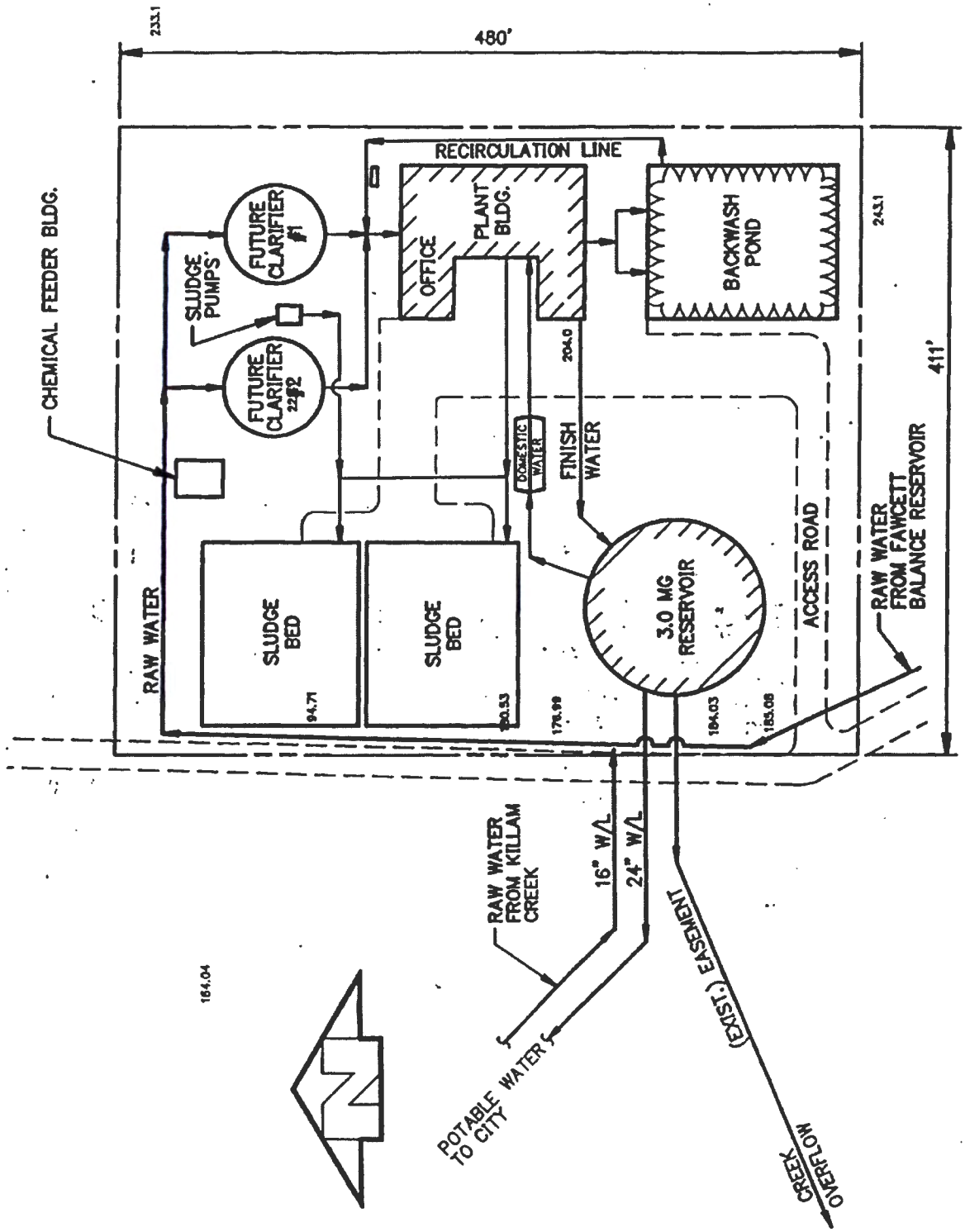
Written Program Attached:	(Y/N)	N			
Forest Practices	(Y/N)	-			
Forest Fire Control	(Y/N)	-			
Wildlife Population	(Y/N)	-			
Grazing	(Y/N)	-			
Human Habitation	(Y/N)	-			
Recreational Activities	(Y/N)	-			
Construction/Maintenance/Repair	(Y/N)	-			
Hydroelectric Power/Flood Control	(Y/N)	-			
Mining	(Y/N)	-			
Monitoring	(Y/N)	-			
Date of Last Revision:	(MM/YY)	-			
Date of Last Watershed Survey:	(MM/YY)	-			

Comments:
TILLAMOOK WC IS CURRENTLY WORKING ON A WRITTEN PROGRAM.

Comments: (Water Quality, Surface Water Influence, Housekeeping, Etc.)

Detail Sketch of Surface Intake:

Detail Sketch of Facilities:



TREATMENT - FILTRATION

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100093

General:

Type of Filtration - (Refer to Codes):	(RS,SS,DE,DF,CF,OT)	RS
Test Equipment:		
Jar Test	(Y/N)	N
pH Meter	(Y/N)	Y
Bench Turbidimeter	(Y/N)	Y
Continuous Turbidimeter - (Raw Water)	(Y/N)	Y
Continuous Turbidimeter - (Filtered Water)	(Y/N)	Y
Lab Balance	(Y/N)	-
Coagulant Control Center	(Y/N)	Y
Records:		
Raw Turbidity	(Y/N)	Y
Finished Turbidity	(Y/N)	Y
Chemical Dosage	(Y/N)	Y
Flow	(Y/N)	Y
pH Raw	(Y/N)	Y
pH Treated	(Y/N)	Y
Alkalinity	(Y/N)	N
Other:		
Chemical Storage Provision	(Y/N)	Y
Turbidity Performance Standards Met	(Y/N)	-
Treatment Schematic Attached	(Y/N)	Y

Comments - (Chemicals used and purpose):

Pretreatment and Filtration Facilities:

	Total Number of Units	Rated Capacity Total Units (GPM)	Fil. Rate (GPM/FT^2) or Det. Time (Min)	Brief Description
Rapid Mix:	2	1400	-	INLINE MECH.
Adsorption Clarifier:	2	700 EACH	297	
	-	1400 TOT.	-	
Filters:	2	1854	4.5	
Raw Water Pumps:	-	-		
Backwash Pumps:	1	-		
High Service Pumps:	-	-		
Total Capacity:		-		

Comments - (Filter-to-waste, backwash on turbidity, surface wash):
REFER TO THE COMPREHENSIVE PERFORMANCE EVALUATION (CPE) FOR MORE INFORMATION.

Feeder ID - Type/Location Feed Point

1	EP - SURFACE SOURCES
2	WELL #1
3	WELL #2
4	WELL #3

General:

		1	2	3	4
Feeder ID Number:					
Disinfectant Used - (Refer to Codes):					
Primary	(CH,SH,CM,CG,OZ,CD,UV,OT,NO)	CG	SH	SH	CG
Secondary	(CH,SH,CM,CG,OZ,CD,UV,OT,NO)	-	-	-	-
Maximum Dosage - ☐mg/L	(__)	-	0.8	0.8	-
☐lbs/day		25	-	-	5
Test Equipment:					
DPD Test Kit	(Y/N)	Y	Y	Y	Y
Residual Analizer/Recorder	(Y/N)	Y	N	N	N
pH Meter	(Y/N)	Y	N	N	N
Thermometer	(Y/N)	Y	N	N	N
Flow Meter	(Y/N)	Y	Y	Y	N
Records:					
Residuals -(Daily/Continuous)	(D/C)	C	D	D	D
pH	(Y/N)	Y	N	N	N
Temperature	(Y/N)	Y	N	N	N
Flow	(Y/N)	Y	N	N	N

Comments:

Disinfectant Safety:

Personal Protective Gear on Location:	(Y/N)	Y	N	Y	Y
Safety Drills/Training:	(Y/N)	Y	N	N	Y
Dry Storage Area:	(Y/N)	Y	-	Y	Y
Minimum Storage Area:	(Y/N)	Y	Y	Y	Y
Low Level Alarm - (Supply):	(Y/N)	N	N	N	N
Eyewash/Shower:	(Y/N)	Y	N	N	Y
Gas Chlorination:					
Air Pack:	(Y/N)	Y	-	-	Y
Air Pack Outside Chlorine Room:	(Y/N)	Y	-	-	Y
Exhaust Fan:	(Y/N)	Y	-	-	Y
Intake Near Floor	(Y/N)	Y	-	-	N*
Adequate Capacity	(Y/N)	Y	-	-	Y
Switch Outside Door	(Y/N)	Y	-	-	Y
Vent:	(Y/N)	Y	-	-	Y
Separate Room:	(Y/N)	Y	-	-	Y
Window:	(Y/N)	Y	-	-	Y
Alarm System - (Low Pressure):	(Y/N)	N	-	-	N
Secondary Feeder System - (Redundancy):	(Y/N)	N	N	Y	N
Auxilary Power:	(Y/N)	Y	N	N	N

Comments:

* AIR INTAKE IS NEAR CEILING.

CT Analysis:

Feeder ID	Seasonal Averages	pH	Temp oC	Flow (GPM)	Contact Time (Min)	Residual mg/L	CT Actual	CT Req'd
1	Winter (J-F-M)	7.0	5	1400	686	0.5	343	24
	Spring (A-M-J)							
	Summer (J-A-S)		15					12
	Fall (O-N-D)							
2	Winter (J-F-M)							
	Spring (A-M-J)							
	Summer (J-A-S)							
	Fall (O-N-D)							
3	Winter (J-F-M)							
	Spring (A-M-J)							
	Summer (J-A-S)							
	Fall (O-N-D)							
4	Winter (J-F-M)							
	Spring (A-M-J)							
	Summer (J-A-S)							
	Fall (O-N-D)							

CT Tables Used:

Primary Disinfectant (CH,SH,CM,CG,OZ,CD,OT)	CG				
Unfiltered Surface Water (Y/N)	N				
Filtered Surface Water (Y/N)	Y				
Ground Water - (Viruses) (Y/N)	N				
Minimum Contact Time Available:					
Contact Time (Min)	686				
Actual/Estimate (A/E)	E				
Maximum Flow (GPM)	1400				
CT Values Met At All Times (Y/N)	Y				

Comments:

REFER TO THE COMPREHENSIVE PERFORMANCE EVALUATION (CPE) FOR MORE INFORMATION.

STORAGE/DISTRIBUTION

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

Storage ID No.	Name	Material (C/S/W/O)	Con. Date (YEAR)	Volume (MGAL)
1	SMALL RESERVOIR	S	1994	1.1
2	LARGE RESERVOIR	S	1994	1.9
3				
4				
5				
6				
Total Volume of Storage:				3.0

Storage Details:

Storage ID Number:		1	2	3	4	5	6
Type:							
Ground Level Tank	(Y/N)	Y	Y				
Elevated Tank	(Y/N)	N	N				
Pressure Tank	(Y/N)	N	N				
Hatch:							
Locked	(Y/N)	Y	Y				
Watertight	(Y/N)	Y	Y				
Curbing	(Y/N)	Y	Y				
Features:							
Used for Contact Time	(Y/N)	Y	Y				
Separate Inlet/Outlet	(Y/N)	Y	Y				
Drain to Daylight	(Y/N)	Y	Y				
Flap Valve	(Y/N)	Y	Y				
Overflow	(Y/N)	Y	Y				
Screened Vent	(Y/N)	Y	Y				
Fence/Gate	(Y/N)	Y	Y				
Water Level Gage	(Y/N)	Y	Y				
Bypass Piping	(Y/N)	Y	Y				
Cathodic Protection	(Y/N)	Y	Y				
Maintenance:		N	N				
Painting	(Y/N)	Y	Y				
Approved Coating	(Y/N)	Y	Y				
Routine Cleaning	(Y/N)	Y	Y				
Routine Inspection	(Y/N)	Y	Y				

Comments:

Distribution:

Adequate Pressure (20 psi):	(Y/N)	Y
Depth of Cover Adequate:	(Y/N)	Y
Blow Offs or Hydrants:	(Y/N)	Y
Flushing and Inspection:	(Y/N)	Y
Piping Looped:	(Y/N)	Y
Adequate Valving:	(Y/N)	Y
Valve Location and Turning:	(Y/N)	Y
Individual Booster Pumps:	(Y/N)	N
Master Plan on File:	(Y/N)	N
Plan Review Waiver:	(Y/N)	N

Comments:

BOOSTER PUMPS/PRODUCTION DATA

SUPPLY NAME: TILLAMOOK WATER COMMISSION
ID NUMBER : 4100893

Booster Pump ID

No.	Location in System	HP	GPM	Suc/Dis PSI	Aux Power (Y/N)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Comments:

Production Data:

Year	Maximum Day (GPD)	Average Day (GPD)

Capacity Needed: (GPM)
Capacity Available: (GPM) 4175
Capacity With Largest Unit Out of Service: (GPM) 2375
Capacity Under Standby Power: (GPM)

Comments: WELL #1: 675 GPM
WELL #2: 800 GPM
WELL #3: 900 GPM
SURFACE SOURCES: 900 GPM EACH

Cross Connection Control Program:

Responsible Person/Department:

Name	Department
MONTEY SESSIONS, ASST. SUPERINTENDENT	

Name of Certified Inspector(s):

MONTEY SESSIONS	#2406
RICH ADAMS	#302

Program Information:

Inspections/Reinspections	(Y/N)	Y
Annual Device Testing - (Certified Tester)	(Y/N)	Y
Record Keeping	(Y/N)	Y

Comments:

Operator Certification:

Classification Needed for System:

Water Treatment - (WT 1-4)	(Level)	2
Water Distribution - (WD 1-4)	(Level)	2

Name/Certification:

Name		(WT#)	(WD#)
MONTEY SESSIONS	#3182	-	2
HARRY TARR	#3420	-	1
BRET SILER	#3616	-	1
RICH ADAMS	#5242	1	2

Comments:

APPENDIX C

ISO COMMERCIAL RISK SERVICES, INC.

3000 EXECUTIVE PARKWAY SUITE 510 P.O. BOX 5126 SAN RAMON CA 94583 (415) 830-8778 FAX (415) 830-4691

June 12, 1991

Tom Weber, Fire Chief
City of Tillamook
2310 Fourth Street
Tillamook, OR 97141

Dear Chief Weber:

We wish to thank you, and many others for the cooperation given to our representative during our recent survey. We have completed our evaluation of the fire insurance classification for your city and confirm that Class 5 continues to apply.

The purpose of our visit was to gather information needed to determine a fire insurance classification which may be used in the calculation of property insurance premiums. This survey was not conducted for property loss prevention or life safety purposes and no life safety or property loss prevention recommendations will be made.

The city classification applies to properties with a needed fire flow of 3500 gpm or less. The private and public protection at properties with larger needed fire flows are individually evaluated, and may vary from the city classification.

We are attaching a copy of the Grading Sheet and the results of the hydrant flow tests witnessed during our survey. Extra copies of this letter and attachments are enclosed so that you may distribute them to other interested parties, if you desire to do so.

If you have any questions concerning our survey and grading, please let us know.

Very truly yours,

Barbara A. Hill
Assistant Manager

ECP

bah:vs

Enclosures

ISO COMMERCIAL RISK SERVICES, INC.
3000 EXECUTIVE PARKWAY SUITE 310 P.O. BOX 5126 SAN RAMON, CA 94583 (415) 830-8778 FAX (415) 830-4691

June 12, 1991

Tom Weber, Chief
Tillamook Rural Fire Protection District
2310 Fourth Street
Tillamook, OR 97141

Dear Chief Weber:

We wish to thank you, and many others for the cooperation given to our representatives during our recent survey. We have completed our evaluation of the fire insurance classification for your district and advise that the protection class has improved to 5.

Formerly Class 7 applied; the new classification will result in a decrease in the property insurance premium calculations for many insured commercial properties under hydrant protection within the . The new premium calculations will be effective August 1, 1991.

The purpose of our visit was to gather information needed to determine a fire insurance classification which may be used to develop fire insurance premium calculations. This survey was not conducted for property loss prevention or life safety purposes and no life safety or property loss prevention recommendations will be made.

The change from Class 7 to Class 5 does not affect premium calculations for sprinklered properties and some other special schedule rated property. The effect on residential properties is usually about -27% for Homeowner-type policies. The change will affect typical mercantile properties to a degree depending upon the type of building construction, the hazard of occupancy and other calculations factors. The overall effect is usually about -24% for wood frame buildings, -28% for masonry buildings and -19% for fire-resistive buildings. However, variations in construction, occupancy and private protection can result in increases or decreases from this average.

The above estimates apply only for insurance companies using ISO premium calculations rates. However, numerous insurance companies use other than ISO premium calculations so that the effect of the change in class may be different for their policy holders.

The city classification applies to properties with a needed fire flow of 3500 gpm or less. The private and public protection at properties with larger needed fire flows are individually evaluated, and may vary from the city classification.

We are attaching a copy of our Grading Sheet and the results of the hydrant flow tests witnessed during our survey. Extra copies of this letter and attachments are also enclosed so that you may distribute them to other interested parties, if you desire to do so.

If you have any questions concerning the new classification, or the resulting change in premium calculations rates, please let us know.

Very truly yours,

Barbara A. Hill
Assistant Manager

bah:vs

ISO COMMERCIAL RISK SERVICES, INC.

3000 EXECUTIVE PARKWAY SUITE 510 P.O. BOX 5126 SAN RAMON, CA 94583-9787 (510) 830-8778 FAX. (510) 830-4091

August 29, 1991

Mr. Tom Weber, Fire Chief
Tillamook Rural FPD
2310 Fourth Street
Tillamook, OR 97141

Dear Chief Weber:

We are enclosing Classification Details and Improvement Statements in response to your request. These details and statements cover the items which are reviewed in our Fire Suppression Rating Schedule, and which are of importance in determining your fire insurance classification.

These Classification Details and Improvement Statements were developed using the information obtained during our 1990 survey and consider that conditions in your district remain the same. They refer only to the fire insurance rating classification of your district, and are not for property loss prevention or life safety purposes.

The classification applies to properties with a needed fire flow of 3500 gpm or less. The private and public protection at properties with larger needed fire flows are individually evaluated, and may vary from the classification.

Please contact us if you have any questions concerning the enclosed material.

Very truly yours,

Barbara A. Hill
Assistant Manager

Enclosures

bah/ver

FIRE INSURANCE CLASSIFICATION

IMPROVEMENT STATEMENTS
FOR

TILLAMOOK F.D.

Prepared By

ISO/COMMERCIAL RISK SERVICES, INC.
3000 Executive Parkway
San Ramon, California 94583

AT THE REQUEST OF

CHIEF WEBER

The following statements are based upon the criteria contained in our Fire Suppression Rating Schedule and upon conditions in Tillamook F.D. in October 1990. They indicate the performance needed to receive full credit for the specific items in the Schedule, and the quantity you have provided. Partial improvement will result in receiving a partial increase in the credit. These statements relate only to the fire insurance classification of your district. They are not for property loss prevention or life safety purposes and no life safety or property loss prevention recommendations are made.

RECEIVING AND HANDLING FIRE ALARMS

Credit For Telephone Service (Item 414)

Actual = 2.00%; Maximum = 2.00%

Credit For Dispatch Circuits (Item 432)

For maximum credit in the Schedule, the radio alarm dispatch circuit should be supervised in accordance with National Fire Protection Association Standard, 1221.

For maximum credit in the Schedule, alarm dispatch circuits should have recording facilities at the communication center.

FIRE DEPARTMENT

Credit For Engine Companies (Item 513)

For maximum credit in the Schedule, 3 engine companies are needed in your district. These are calculated as follows:

3 for the Basic Fire flow of 3500 gpm.

You have 3 engine companies in service. These are calculated as follows:

95 percent for Engine 7111 because of insufficient equipment.

95 percent for Engine 7115 because of insufficient equipment.

93 percent for Engine 7218 because of insufficient equipment.

Credit For Reserve Pumpers (Item 523)

For maximum credit in the Schedule, 1 fully-equipped reserve pumper are needed. You have 1 reserve pumper. This is calculated as 47 percent for Pumper 7219 because of insufficient equipment,pumper tests.

Credit For Ladder Service (Item 540)

For maximum credit in the Schedule, 1 ladder companies and 0 service companies are needed in your district. These are calculated as follows:

1 ladder and 0 service companies due to the size of the area served.

You have 1 ladder and 0 service companies. These are calculated as follows:

18 percent for Ladder 7149 because of insufficient equipment.

Credit For Reserve Ladder Service (Item 553).

For maximum credit in the Schedule, 1 fully-equipped reserve ladder truck and 0 fully-equipped reserve service truck is needed. You have 0 reserve ladder truck and 0 reserve service truck.

Credit For Distribution (Item 561).

For maximum credit in the Schedule, all sections of the district should be within 1 1/2 miles of an adequately-equipped engine company and 2 1/2 miles of an adequately-equipped ladder, service, engine-ladder, or engine-service company. The distance is to be measured along all-weather roads.

An increase in the on-duty company personnel by one person will increase the fire department credit by 1% and an increase in the response by other Fire Department members by one person will increase the credit by 1%.

Credit For Training (Item 581)

For maximum credit in the Schedule, complete facilities should be provided for training and the training program should be improved. You receive 32 percent credit for the current training program and the use of facilities.

For maximum credit in the Schedule, pre-fire planning inspections of each commercial, industrial, institutional and other similar type building should be made twice a year by company members. Records of the inspections should include complete and up-to-date notes and sketches.

For maximum credit in the Schedule, records should be kept of all training.

WATER SUPPLY

Credit for the Water System (Item 616)

For maximum credit in the Schedule, the needed fire flows should be available at each location in the district. Needed fire flows of 2500 gpm and less should be available for 2 hours, 3000 and 3500 gpm for 3 hours and all others for 4 hours. See the attached table for an evaluation of fire flow tests made at representative locations in your district.

All AWWA standard hydrants within 1000 feet of a building, measured as hose can be laid by apparatus, are credited; 1000 gpm for hydrants within 300 feet; 670 gpm for 301 to 600 feet; and 250 gpm for 601 to 1000 feet. Credit is reduced when hydrants lack a pumper outlet, and ins further reduced when they only have a single 2 1/2 inch hose outlet.

Credit For Hydrants (Item 621)

For maximum credit in the Schedule, all hydrants should have a pumper outlet, 6 inch or large branch connection, uniform size operating nut and should operate in an uniform direction.

Credit For Inspection and Condition of Hydrants (Item 631).

For maximum credit in the Schedule, all hydrants should be inspected twice a year. The inspection should include operation and a test at domestic pressure. Records should be kept of the inspections. Hydrants should be conspicuous, well located for use by a pumper, and in good condition.

FIRE FLOW TESTS

Tests Made In 1990

Test No.	Needed Fire Flow*, gpm	Limited By Supply Works	Limited By Distribution Mains	Limited By Hydrant Spacing
1	3500		X	
2	2250			
3	2250		X	
4	3000		X	
5	1000			
6	3000		X	
7	2500			
8	1500			
9	1000			
10	3000		X	
11	2500		X	
12	3000		X	
13	1000			
14	1000		X	
15	3500			X
16	3500		X	
17	750		X	
18	3000			X
19	3000			X
20	1250	X		

* Needed fire flows exceeding 3500 gpm are not considered in determining the classification of the municipality.

ISO COMMERCIAL RISK SERVICES, INC.

HYDRANT FLOW DATA SUMMARY

City Tillamook State OR Zip 97141 Witnessed by JSM for ISO/CRS Date October 3, 1990

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW-GPM INDIVIDUAL HYDRANTS		TOTAL	PRESSURE PSI STATIC	PRESSURE PSI RESID.	FLOW AT 20 PSI: NEEDED **	FLOW AT 20 PSI: AVAIL.	REMARKS
		City of Tillamook									
1	Comm	3rd & Ivy	Main	840	900	1740	89	52	3500	2400	
2	Comm	Hwy 101 N @ Safeway	Main	840	920	1760	96	56	7000 / 2250	2500	
3	Comm	3rd & Cedar	Main	580	580	1160	93	66	2250	2000	
4	Comm	8th & Stillwell	Main	840	920	1760	91	62	3000	2900	
5	Res	9th & Cedar	Main	650	730	1380	93	37	1000	1600	
6	Comm	11th & Laurel	Main	840	820	1660	96	64	3000	2600	
7	Comm	5th & Miller	Main	840	800	1640	87	56	4000 / 2500	2500	
8	Comm	12th E. of Miller	Main	840	920	1760	91	62	5000 / 4000 / 1500	2900	
9	Comm	Alder & Spruce	Main	840	800	1640	86	47	5000 / 1000	2200	
10	Comm	Maple & Williams	Main	820	840	1660	87	50	3000	2300	
11	Comm	Hwy 101 N to Wilson R. Loop	Main	650	630	1280	97	45	5500 / 2500	1600	
12	Comm	1st & Cedar	Main	690	710	1400	89	50	3000	1900	

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE NOT INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION. THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

* Comm = Commercial Res = Residential

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule

26 AUG.1996 01:16 PM P 11
FAX NO 503 842 1811
FROM TILLAMOOK FIRE

ISO COMMERCIAL RISK SERVICES, INC.

HYDRANT FLOW DATA SUMMARY

City Tillamook F.D. State OR Zip 97141 Witnessed by JSM for ISO/CRS Date October 3, 1990

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW-GPM INDIVIDUAL HYDRANTS		TOTAL	PRESSURE PSI STATIC	PRESSURE PSI RESID.	FLOW AT 20 PSI NEEDED **	FLOW AT 20 PSI AVAIL.	REMARKS
		FAIRVIEW WATER DISTRICT									
13	Comm	Fairview Rd & Wilson R. Rd.	F.W.D.		490	490	980	114	86	5000 / 1000	1900	
14	Res	Hughey Ln. & Bluebird Ln.	F.W.D.		240	240	480	89	48	1000	650	
		PORT OF TILLAMOOK IND. PARK									
15	Comm	Hangar Rd & 4th	T.W.C.		580	560	1140	80	74	4500 / 3500	4000	
16	Comm	Officer Row Loop	T.W.C.		530	580	1110	80	60	3500	2000	
		BLEASDALE VALLEY WATER CO									
17	Res	Hwy 101 S. S. of Manzanita	T.W.C.		340	340	680	78	18	750	650	
		SOUTH PRAIRIE WATER ASSN									
18	Comm	@ S. Prairie School	T.W.C.			1010	1010	84	50	3000	1400	
		LATIMER ROAD WATER CO.									
19	Comm	Latimer Rd @ RR crossing	Bay City			1030	1030	72	45	3000	1500	
		CAPE MEARES WATER CO									
20	Res	1st & D	C.M.			630	630	62	52	1250	1400	

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE NOT INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION. THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

* Comm = Commercial Res = Residential

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule

CLASSIFICATION DETAILS

Municipality: Tillamook F.D. State: Oregon

Population: 5,200 Date Surveyed: October 1990
Total Credit: 58.05 Class: 5

RECEIVING AND HANDLING FIRE ALARMS

This section of the Fire Suppression Rating Schedule reviews the facilities provided for the general public to report fires, and for the operator on duty at the communication center to dispatch fire department companies to the fires.

		CREDIT	
		Actual	Maximum
1.	(Item 414) Credit for Telephone Service This item reviews the facilities provided for the public to report fires, including the listing of fire and business numbers including the listing of fire and business number in the telephone directory.	2.00	2.00
2.	(Item 422) Credit for Operators This item reviews the number of operator on-duty at the communication center to handle fire calls.	3.00	3.00
3.	(Item 432) Credit for Dispatch Circuits This item reviews the dispatch circuit facilities used to transmit alarms to fire department members.	3.50	5.00
4.	(Item 440) Total Credit For Receiving and Handling Fire Alarms	8.50	10.00

FIRE DEPARTMENT

This section of the fire Suppression Rating Schedule reviews the engine and ladder-service companies, equipment carried, response to fires, training and available fire fighters.

		CREDIT	
		Actual	Maximum
1.	(Item 513) Credit for Engine companies This item reviews the number of engine companies and the hose and equipment carried	9.39	10.00
2.	(Item 523) Credit for Reserve Pumpers This item reviews the number of reserve pumpers and the equipment carried on each	0.78	1.00
3.	(Item 532) Credit for Pump Capacity This item reviews the total available pump capacity	5.00	5.00
4.	(Item 549) Credit for Ladder Service This item reviews the number of ladder and service companies and equipment carried	0.92	5.00
5.	(Item 553) Credit for Reserve Ladder Service This reviews the number of reserve ladder and service trucks, and the equipment carried	0	1.00

CLASSIFICATION DETAILS

FIRE DEPARTMENT
(Continued)

		CREDIT	
		Actual	Maximum
6.	(Item 561) Credit for Distribution This item reviews the percent of the built-upon area of the city which has an adequately-equipped, responding first-due engine company within 1 1/2 miles and an adequately-equipped, ladder-service company within 2 1/2 miles	1.77	4.00
7.	(Item 571) Credit for Company Personnel This item reviews the average number of equivalent fire fighters and company officers on duty with existing companies	4.17	15.00+
8.	(Item 581) Credit for Training This item reviews the training facilities and their use	3.11	9.00
9.	(Item 590) Total Credit for Fire Department	25.14	50.00+

+ This indicates that credit for manning is open-ended, with no maximum credit for this item. —

WATER SUPPLY

This section of the Fire Suppression Rating Schedule reviews the water supply system that is available for fire suppression in the city.

		CREDIT	
		Actual	Maximum
1.	(Item 616) Credit for the Water System This item reviews the supply works, the main capacity and hydrant distribution	25.16	35.00
2.	(Item 621) Credit for Hydrants This item reviews the type of hydrants, and method of installation	1.23	2.00
3.	(Item 631) Credit for Inspection and Condition of Hydrants This item reviews the frequency of inspection of hydrants and their condition.	2.31	3.00
4.	(Item 640) Total Credit for Water Supply	28.70	40.00

SUMMARY OF CREDIT

Feature	Assigned	Maximum Credit
Receiving and Handling Fire Alarms ..	8.50%	10.0%
Fire Department	25.14	50.00
Water Supply	28.70	40.00
*Divergence	-4.29%	
	58.05%	100.00%

The Public Protection Class is based on the total percentage credit as follows:

Class	%
1	90.00 or more
2	80.00 to 89.99
3	70.00 to 79.99
4	60.00 to 69.99
5	50.00 to 59.99
6	40.00 to 49.99
7	30.00 to 39.99
8	20.00 to 29.99
9	10.00 to 19.99
10	0 to 9.99

*Divergence is a reduction in credit to reflect a difference in the relative credits for Fire Department and Water Supply.

The above classification has been developed for use in property insurance premium calculations only.

APPENDIX III-F

FIRE FLOW ORDINANCE REQUIREMENTS FOR BUILDINGS
(See U.F.C. Section 903.3)

SECTION 1 - SCOPE

The procedure determining fire-flow requirements and fire hydrants for buildings or portions of buildings hereafter constructed shall be in accordance with this appendix. The appendix does not apply to structures other than buildings.

SECTION 2 - DEFINITIONS

For the purpose of this appendix, certain terms are defined as follows:

FIRE AREA is the floor area, in square feet, used to determine the required fire flow.

FIRE FLOW is the flow rate of a water supply, measured at 20 psi residual pressure, that is available for firefighting.

SECTION 3 - MODIFICATIONS

3.1 Decreases. Fire-flow requirements may be modified downward by the chief for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

3.2 Increases. Fire flow may be modified upward by the chief where conditions indicate an unusual susceptibility to group fires or conflagrations. An upward modification shall not be more than twice that required for the building under consideration.

SECTION 4 - FIRE AREA

4.1 General. The fire area shall be the total floor area of the floor levels within the exterior walls, and under the horizontal projections of the roof of a building, except as modified in Section 4. There shall be an allowance for each additional floor level of the building, as well.

4.2 Area Separation. Portions of buildings which are separated by one or more four-hour area separation walls constructed in accordance with the Building Code, without openings and provided with a 30-inch (762mm) parapet, may be allowed to be considered as separate fire areas, when approved by the chief.

4.3 Occupancy Separations. For areas exceeding those shown in Table A-III-F-1, one or two -hour occupancy separation walls constructed in accordance with the Building Code, including protected openings, may be required by the chief to reduce those areas to be in accordance with those shown in Table A-III-F-1.

SECTION 5 - FIRE-FLOW REQUIREMENTS FOR BUILDINGS

5.1 One-and Two-Family Dwellings. The minimum fire flow and flow duration requirements for one-and two-family dwellings having a fire area which does not exceed 3,600 square feet shall be 1,000 gallons per minute. Fire flow and flow duration for dwellings having a fire area in excess of 3,600 square feet shall not be less than that specified in Table No. A-III-F-1.

EXCEPTION: A reduction in required fire flow of 50 percent, as approved by the chief, is allowed when the building is provided with an approved automatic sprinkler system.

5.2 Buildings other than One-and Two-Family Dwellings. The minimum fire flow and flow duration for buildings other than one-and two-family dwellings shall be as specified in Table No. A-III-F-1.

EXCEPTION: A reduction in required fire flow may be allowed as shown in the Table No. A-III-F-1 reduction allowances and notes, as approved by the chief. The resulting fire flow shall not be less than 1,000 gallons per minute.

SECTION 6 - NUMBER AND LOCATIONS OF FIRE HYDRANTS

6.1 Location. Fire hydrants shall be provided along required fire apparatus access roads and adjacent public streets.

6.2 Number. The minimum number of fire hydrants required for a building shall not be less than the number needed to supply the required fire flow for a building, or portions of buildings. The maximum flow to be considered for any fire hydrant in determining the number of fire hydrants required may not exceed 1,000 GPM, unless otherwise approved by the chief. The number of fire hydrants required for a complex or subdivision shall not be less than that determined by this section and that determined by spacing requirements in Section 8 when applied to fire apparatus access roads and perimeter public streets from which fire operations could be conducted.

SECTION 7 - CONSIDERATION OF EXISTING FIRE HYDRANTS

7.1 Existing Fire Hydrants. Existing fire hydrants on public streets are allowed to be considered as available. Existing fire hydrants on adjacent properties shall not be considered available unless unobstructed fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads.

SECTION 8 - DISTRIBUTION OF FIRE HYDRANTS

8.1 Fire Hydrant Spacing. Fire hydrant spacing shall not exceed 500 feet, unless otherwise approved by the chief. When conditions indicate it, fire hydrant spacing may be further reduced by the chief.

8.2 Placement. Regardless of the spacing, fire hydrants shall be located and placed such that all portions of the building are within one-half the maximum fire hydrant spacing distance, not to exceed a maximum distance of 250 feet.

8.3 Fire Department Connections. A fire hydrant shall be placed no more than 75 feet from any fire department connection (FDC) that is designed to supply water to any fire extinguishing system, or standpipe system, and the location shall be approved by the chief.

TABLE NO. A-III-F-1
MINIMUM REQUIRED FIRE FLOW AND FLOW DURATION FOR BUILDINGS

District Classification	FIRE FLOW REQUIREMENTS (GPM)	DURATION REQUIREMENTS (hours)	FIRE HYDRANT MAXIMUM SPACING (feet)
I Dwellings, 2 stories or less 1 and 2 family only 10.403 Street Fire Hyd.	1000	2	500
II Limited multiple residence 1 and 2 stories Apartments/Tenements/ Dormitories Building size in square feet on first floor (Notes 1,2,3,&6)			
Less than 5000 sq. ft.	1500	6	500
5000 or more sq. ft.	2000	8	500
10000 or more sq. ft.	2500	10	500
15000 or more sq. ft.	3000	10	500
20000 or more sq. ft.	3500	10	500
III Unlimited residence Three story and higher Hotels- High Rise - Etc. Building size in Square feet on first floor (Notes 1,2,4,&6)			
Less than 10000 sq. ft.	2000	8	500
10000 or more sq. ft.	2500	10	500
15000 or more sq. ft.	3000	10	500
20000 or more sq. ft.	3500	10	500
25000 or more sq. ft.	4000	10	500
30000 or more sq. ft.	4500	10	500
35000 or more sq. ft.	5000	10	500
IV Commercial or Industrial Building Size in Square Feet on First Floor (Notes 1,2,4,5,&6)			
Less than 10000 sq. ft.	2000	8	500
10000 or more sq. ft.	2500	10	500
15000 or more sq. ft.	3000	10	500
20000 or more sq. ft.	3500	10	500
25000 or more sq. ft.	4000	10	500
30000 or more sq. ft.	4500	10	500
35000 or more sq. ft.	5000	10	500

TABLE NO. A-III-F-1 (Continued)
MINIMUM REQUIRED FIRE FLOW AND FLOW DURATION FOR BUILDINGS

V Schools			
Elementary/Intermediate			
Senior High Schools			
Building Size in Square Feet on First Floor (Notes 1,4,&6)			
Less than 10000 sq. ft.	2000	10	500
10000 or more sq. ft.	2500	10	500
20000 or more sq. ft.	3000	10	500
30000 or more sq. ft.	3500	10	500
More than 40000 sq. ft.	5000	10	500
VI Colleges/Churches			
Building Size in Square Feet on First Floor (Notes 1,2,4,5,&6)			
Less than 10000 sq. ft.	2000	8	500
10000 or more sq. ft.	2500	10	500
15000 or more sq. ft.	3000	10	500
20000 or more sq. ft.	3500	10	500
25000 or more sq. ft.	4000	10	500
30000 or more sq. ft.	4500	10	500
35000 or more sq. ft.	5000	10	500
VII Institutions/Nursing Homes/ Homes For The Aged/Hospitals			
Building Size in Square Feet on First Floor All Must be Sprinklered (Notes 4,6,&7)			
Less than 10000 sq. ft.	2000	10	500
10000 or more sq. ft.	2500	10	500
15000 or more sq. ft.	3000	10	500
20000 or more sq. ft.	3500	10	500
25000 or more sq. ft.	5000	10	500

REDUCTIONS MAY BE: 25% for unsupervised sprinkler system (an approved, Supervised alarm system may also be considered)
35% for a completely supervised sprinkler system
50% for fully protected fire resistive building (light hazard).

No reduction shall exceed 50% total.
No reduction shall be allowed for partial protection.
No flow will be allowed less than 1,500 gpm.

TABLE NO. A-III-F-1 NOTES:

1. When development occurs in mountainous area, at least two-thirds of the required duration should be provided from storage located at an elevation capable of delivering the fire flow by gravity

2. Required fire flows should be based on the highest land use allowed and/or zoning within the proposed subdivision.

3. Five hundred gpm should be added for each additional floor level, in addition to the first floor, to a total required fire flow not to exceed 3500 gpm.

4. Five hundred gpm should be added for each additional floor level, in addition to the first floor, to a total required fire flow not to exceed 5000 gpm.

5. Five thousand gpm should be required for industrial and/or commercial subdivisions where land use or zoning allows the construction of buildings that justify such a flow.

6. Where buildings are constructed of fire-resistive materials such as concrete, brick, etc., and/or provided with automatic fire sprinkler systems, required fire flow may be reduced. All such reductions should be predicated on recognized standards and recommendations of the public fire protection grading and rating agencies providing that service.

7. All required fire flows are to be available at 20 pounds per square inch, residual pressure.

Tillamook Fire District

2310 Fourth Street • Tillamook, Oregon 97141-2494 • 503-842-7587 • FAX 503-842-1811

Directors:
Denny Green
Joseph F. Martin
Debbi Reeves
Eric Simmons
John Washburn

Rick Adams
Fire Chief

John Fricia
Fire Marshal

FAX COVER SHEET

Date: 5/15/96 Fax # 503-655-1360

To: GEORGE, BOB LEE ENGINEERING

From: FIRE MARSHAL Extension #

Division: Fire Prevention

Subject: WATER FLOW / HYDRANT REQUIREMENTS

Number of pages (including this one) 6

Should you encounter difficulties with this transmission please call 503-842-7587

APPENDIX D

RESOLUTION

RESOLUTION NO. 82-2

A RESOLUTION REGARDING THE POTENTIAL CONTAMINATION OF CITY WATER SUPPLY

The Tillamook Water Commission does hereby resolve to amend its rules and regulations for the conduct and operation of Tillamook City Water Commission as follows:

Section 19. Contamination of Water Supply.

(a) No owner of property or user of City water shall introduce or permit the introduction of pollution or contamination of any kind into the City water supply system. Whenever a condition is found which present the possibility of contamination or pollution, the water supply to such premises and/or other such premises as is necessary shall be discontinued immediately by physical break until such condition is remedied.

(b) No owner of property or user of city water shall cause or allow a connection of the Tillamook City Water System with any other water system. Such cross-connections and the water supply to such premises shall be discontinued immediately until such cross-connections are eliminated. The control of cross-connections shall be in accordance with the manuals of standard practice pertaining to cross-connection control approved by the Tillamook Water Commission any requirements set forth by the "Safe Drinking Water Act" Public Law 93-523 and subsequent applicable legislation.

(c) If the Tillamook Water Commission determines that a permanent physical separation from the City water system is not practicable or necessary or adequate inspection for cross-connections cannot be made, the Tillamook Water Commission may require the owner of property or the user of City water to install and maintain a backflow prevention devise to prevent pollution or contamination of the City water supply.

(d) If a backflow prevention devise is required by the Tillamook Water Commission, the Commission shall prescribe the pattern, design and size of such devise as it believes is reasonably adequate to prevent contamination. The Commission shall also regulate the location, installation and testing of such devises. Any corrective measure or change required to a premises shall be at the sole expense of the owner of the property or the user of the City water. The cost of any change required in the City water system up to the property line or between the property line and the meter, as well as cut-off or disconnection costs shall be added to the charge for water against the premise or premises necessitating the expense.

Section 20. Penalties for Violations.

In addition to any remedies herein before provided by these rules and regulations, any person violating any of the provisions of these shall, upon conviction thereof, be puncished by a fine not exceeding $500.00 or by imprisonment in the county jail not exceeding 60 days, or by both such fines and imprisonment in the discretion of the Municipal Judge.

RESOLVED, this 18th day of March, 1982.

President

Secretary

APPENDIX E

Job#: DO-930309S-2

Applied Science Lab
Page 2

Sample Id: 1 308301 TWC Creeks

Contaminant	EPA Code	MCL	MDL	Result	Method	Analyst
Antimony	1074	0.006	0.005	ND	EPA 204.2	AKH
Arsenic	1005	0.05	0.005	ND	EPA 206.2	AKH
Barium	1010	2	0.005	ND	EPA 200.7	JEL
Beryllium	1075	0.004	0.001	ND	EPA 200.7	JEL
Cadmium	1015	0.005	0.001	ND	EPA 213.2	AKH
Chromium	1020	0.1	0.001	0.001	EPA 218.2	AKH
Mercury	1035	0.002	0.0005	ND	EPA 245.1	JRW
Nickel	1036	0.1	0.05	ND	EPA 200.7	JEL
Selenium	1045	0.05	0.005	ND	EPA 270.2	AKH
Sodium	1052	---	0.1	4.8	EPA 200.7	JEL
Thallium	1085	0.002	0.002	ND	EPA 279.2	AKH
Cyanide	1024	0.2	0.01	ND	EPA 335.2	NTN
Fluoride	1025	4.0	0.2	ND	EPA 340.2	RAM
itrate	1040	10.	0.01	0.90	EPA 300.0	NTN
Nitrate-Nitrite	1038	10	0.1	0.9	Calculation	NTN
Nitrite	1041	1.0	0.01	ND	EPA 300.0	NTN
Sulfate	1055	---	0.5	2.6	EPA 300.0	NTN

Results expressed as mg/L unless otherwise noted.

Maximum Contaminant Level (MCL) means the maximum allowable level of a contaminant in water delivered to the users of a public water system.

Method Detection Limit (MDL) means the limit at which a compound can be quantified.

ND means none detected at or above the detection limit listed.

REPORT CONTINUES

Job#: DO-930309S-2

Applied Science Lab
Page 3

Sample Id: 1 308301 TWC Creeks

Contaminant	EPA Code	MCL	MDL	Results	Method	Analyst
DBCP	2931	0.0002	0.00005	ND	EPA 504	JG
EDB	2946	0.00005	0.00005	ND	EPA 504	JG
Di(ethylhexyl) adipate	---	0.4	0.01	ND	EPA 506	DJM
Di(ethylhexyl) phthalate	---	0.006	0.003	ND	EPA 506	DJM
Atrazine	2050	0.003	0.0005	ND	EPA 507	JG
Butachlor	2076	---	0.001	ND	EPA 507	JG
Metolachlor	2045	---	0.001	ND	EPA 507	JG
Metribuzine	2595	---	0.001	ND	EPA 507	JG
Propachlor	2077	---	0.001	ND	EPA 507	JG
Simazine	2037	0.004	0.0005	ND	EPA 507	JG
Alachlor	2051	0.002	0.0002	ND	EPA 508	JG
Aldrin	2356	---	0.00002	ND	EPA 508	JG
Chlordane	2959	0.002	0.0002	ND	EPA 508	JG
ieldrin	2070	---	0.00002	ND	EPA 508	JG
Endrin	2005	0.0002	0.00002	ND	EPA 508	JG
Heptachlor	2065	0.0004	0.00004	ND	EPA 508	JG
Heptachlor epoxide	2067	0.0002	0.00002	ND	EPA 508	JG
Hexachlorobenzene	2274	0.001	0.00005	ND	EPA 508	JG
Hexachlorocyclo-pentadiene	2042	0.05	0.0002	ND	EPA 508	JG
Lindane	2010	0.0002	0.00002	ND	EPA 508	JG
Methoxychlor	2015	0.04	0.0001	ND	EPA 508	JG
Toxaphene	2020	0.003	0.001	ND	EPA 508	JG
Polychlorinated biphenyls	---	0.0005	0.0001	ND	EPA 508A	JG
2,4-D	2105	0.07	0.0005	ND	EPA 515.1	JG
Dalapon	2031	0.2	0.001	ND	EPA 515.1	JG
Dicamba	2440	---	0.001	ND	EPA 515.1	JG
Dinoseb	2041	0.007	0.0002	ND	EPA 515.1	JG
Pentachlorophenol	2326	0.001	0.00004	ND	EPA 515.1	JG
Picloram	2040	0.5	0.0001	ND	EPA 515.1	JG
2,4,5-TP	2110	0.05	0.0002	ND	EPA 515.1	JG

Results expressed as mg/L unless otherwise noted.
Maximum Contaminant Level (MCL) means the maximum allowable level of a contaminant in water delivered to the users of a public water system.
Method Detection Limit (MDL) means the limit at which a compound can be quantified.
'D means none detected at or above the detection limit.
EPORT CONTINUES

Job#: DO-930309S-2

Applied Science Lab
Page 4

Sample Id: 1 308301 TWC Creeks

Contaminant	EPA Code	MCL	MDL	Results	Method	Analyst
Aldicarb	2047	---	0.004	ND	EPA 531.1	VB
Aldicarb sulfone	2044	---	0.004	ND	EPA 531.1	VB
Aldicarb sulfoxide	2043	---	0.004	ND	EPA 531.1	VB
Carbaryl	2021	---	0.004	ND	EPA 531.1	VB
Carbofuran	2046	0.04	0.004	ND	EPA 531.1	VB
3-Hydroxycarbofuran	2066	---	0.004	ND	EPA 531.1	VB
Methyomyl	2022	---	0.004	ND	EPA 531.1	VB
Vydate (Oxymyl)	2036	0.2	0.004	ND	EPA 531.1	VB
Endothall	2033	0.1	0.05	ND	EPA 548	DJM
Benzo(a)pyrene	2306	0.0002	0.00005	ND	EPA 550	DJM

Results expressed as mg/L unless otherwise noted.

Maximum Contaminant Level (MCL) means the maximum allowable level of a contaminant in water delivered to the users of a public water system.

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ND means none detected at or above the detection limit.

REPORT CONTINUES

Job#: DO-930309S-2

Applied Science Lab
Page 5

Sample Id: 1 308301 TWC Creeks

REGULATED VOCs

Contaminant	EPA Code	MCL	MDL	Result	Method	Analyst
Benzene	2990	0.005	0.0005	ND	EPA 502.2	ML
Carbon tetrachloride	2982	0.005	0.0005	ND	EPA 502.2	ML
Chlorobenzene	2989	0.1	0.0005	ND	EPA 502.2	ML
1,2-Dichlorobenzene	2968	0.6	0.0005	ND	EPA 502.2	ML
1,4-Dichlorobenzene	2969	0.075	0.0005	ND	EPA 502.2	ML
1,2-Dichloroethane	2980	0.005	0.0005	ND	EPA 502.2	ML
1,1-Dichloroethylene	2977	0.007	0.0005	ND	EPA 502.2	ML
cis-1,2-Dichloroethylene	2380	0.07	0.0005	ND	EPA 502.2	ML
trans-1,2-Dichloroethylene	2979	0.1	0.0005	ND	EPA 502.2	ML
Dichloromethane	2964	0.005	0.0005	ND	EPA 502.2	ML
1,2-Dichloropropane	2983	0.005	0.0005	ND	EPA 502.2	ML
Ethylbenzene	2992	0.7	0.0005	ND	EPA 502.2	ML
Styrene	2996	0.1	0.0005	ND	EPA 502.2	ML
Tetrachloroethylene	2987	0.005	0.0005	ND	EPA 502.2	ML
Toluene	2991	0.1	0.0005	ND	EPA 502.2	ML
1,2,4-Trichlorobenzene	2378	0.07	0.0005	ND	EPA 502.2	ML
Trichloroethylene	2984	0.005	0.0005	ND	EPA 502.2	ML
1,1,1-Trichloroethane	2981	0.2	0.0005	ND	EPA 502.2	ML
1,1,2-Trichloroethane	2985	0.005	0.0005	ND	EPA 502.2	ML
Vinyl chloride	2976	0.002	0.002	ND	EPA 502.2	ML
Xylenes (total)	2955	10.0	0.0005	ND	EPA 502.2	ML

Results expressed as mg/L unless otherwise noted.

Maximum Contaminant Level (MCL) means the maximum allowable level of a contaminant in water delivered to the users of a public water system.

Method Detection Limit (MDL) means the limit at which a compound can be quantified.

ND means none detected at or above the detection limit.

REPORT CONTINUES

Sample Id: 1 308301 TWC Creeks

UNREGULATED

Contaminant	EPA Code	MCL	MDL	Result	Method	Analyst
Bromobenzene	2993	---	0.0005	ND	EPA 502.2	ML
Bromodichloromethane	2943	---	0.0005	ND	EPA 502.2	ML
Bromoform	2942	---	0.0005	ND	EPA 502.2	ML
Bromomethane	2214	---	0.002	ND	EPA 502.2	ML
Chloroethane	2216	---	0.001	ND	EPA 502.2	ML
Chloroform	2941	---	0.0005	0.0006	EPA 502.2	ML
Chloromethane	2210	---	0.003	ND	EPA 502.2	ML
1,2-Chlorotoluene	2965	---	0.0005	ND	EPA 502.2	ML
1,4-Chlorotoluene	2966	---	0.0005	ND	EPA 502.2	ML
Dibromochloromethane	2944	---	0.0005	ND	EPA 502.2	ML
Dibromomethane	2408	---	0.0005	ND	EPA 502.2	ML
1,3-Dichlorobenzene	2967	---	0.0005	ND	EPA 502.2	ML
1,1-Dichloroethane	2978	---	0.0005	ND	EPA 502.2	ML
1,3-Dichloropropane	2412	---	0.0005	ND	EPA 502.2	ML
2,2-Dichloropropane	2416	---	0.0005	ND	EPA 502.2	ML
1,1-Dichloropropene	2410	---	0.0005	ND	EPA 502.2	ML
1,3-Dichloropropene	2413	---	0.0005	ND	EPA 502.2	ML
1,1,1,2-Tetrachloroethane	2986	---	0.0005	ND	EPA 502.2	ML
1,1,2,2-Tetrachloroethane	2988	---	0.0005	ND	EPA 502.2	ML
1,2,3-Trichloropropane	2414	---	0.0005	ND	EPA 502.2	ML

Results expressed as mg/L unless otherwise noted.

Maximum Contaminant Level (MCL) means the maximum allowable level of a contaminant in water delivered to the users of a public water system.

Method Detection Limit (MDL) means the limit at which a compound can be quantified.

ND means none detected at or above the detection limit.

Job#: DO-931217AM-1

Applied Science Lab
Page 2

Laboratory Identification: 1

Sampled at: TWC Creeks - 1216302
Date Collected: 12/15/93
Date Received: 12/17/93
Sample Composition: None Provided

Sampled By: REA
Time Collected: 0840
Date Analyzed: 01/03/94

Contaminant	EPA Code	MCL (mg/L)	MDL (mg/L)	Results (mg/L)	Method	Analyst
2,4-D	2105	0.07	0.007	ND	EPA 515.1	JAG
Dalapon	2031	0.2	0.020	ND	EPA 515.1	JAG
Dicamba	2440	———	0.001	ND	EPA 515.1	JAG
Dinoseb	2041	0.007	0.0007	ND	EPA 515.1	JAG
Pentachlorophenol	2326	0.001	0.0001	ND	EPA 515.1	JAG
Picloram	2040	0.5	0.050	ND	EPA 515.1	JAG
:,4,5-TP	2110	0.05	0.005	ND	EPA 515.1	JAG

ND means none detected at or above the detection limit.

Maximum contaminant level (MCL) means the maximum allowable level of a contaminant in water delivered to the users of a public water system.

Method detection limit (MDL) means the limit at which a compound can be quantified.

WFR LABORATORIES INC.

Oregon Certified Lab #31
13035 SW PACIFIC HWY.
TIGARD, OR 97223
503-639-9311 Fax 684-1588

Tillamook Water Commission
Attn: Rich Adams
P.O. Box 99
Tillamook, OR 97141

Report # 24552

PWSID: 4100893

Chemical Laboratory Report
********* 08/24/95 *******

Samples:	Water samples for Sodium
Sources:	1) Outlet of Resevoir/Killam Cr-Fawcett Cr
	2) Well #2
	3) Well #3
Time Collected:	1) 0914 2) 1420 3) 1440
Composition:	(All 3) Treated Source Single
Collected:	8/16/95
Received:	8/17/95

Analysis	EPA Method	Results 1	2	3	Reporting Limit
*********	*******	*******ppm;mg/L********			*******
Sodium	273.1	5.6	10.6	11.3	0.05

Reviewed By:

Christian Nielsen
Chemist

centurytesting
LABORATORIES

LABORATORY ANALYSIS

APPLIED SCIENCE LAB
P.O. BOX 195
NETARTS, OR 97143

TILLAMOOK WATER COMMISSION
PWSID #4100893 A&B

LAB SAMPLE NO.: 12133-1
SAMPLE DESCRIP.: 1218502 - FILTER PLANT
MATRIX: WATER
DATE SUBMITTED: 12/19/95
DATE ANALYZED: 12/26-28/95
COLLECTED BY: TARR

ANALYSIS METHOD NUMBER	CONSTITUENT	SAMPLE CONC.*	METHOD DETECTION LIMIT	UNITS	PERCENT RECOVERY**
EPA 310.1	ALKALINITY	21	0.5	mg/l	99.2%
EPA 200.7	ALUMINUM	N.D.	0.016	mg/l	102%
EPA 200.7	CALCIUM	6.53	0.004	mg/l	99.1%
EPA 200.7	MAGNESIUM	1.79	0.001	mg/l	105%

*N.D. means "not detected".

**Percent Recovery values are within established control limits.

CENTURY TESTING LABORATORIES, INC.

Reviewed and approved by:

Laboratory Supervisor 01/05/96

centurytesting
LABORATORIES

LABORATORY ANALYSIS

APPLIED SCIENCE LAB
P.O. BOX 195
NETARTS, OR 97143

TILLAMOOK WATER COMMISSION
PWSID #4100893D

LAB SAMPLE NO.: 12135-1
SAMPLE DESCRIP.: 1218501 - WELL#2
MATRIX: WATER
DATE SUBMITTED: 12/19/95
DATE ANALYZED: 12/26-27/95
COLLECTED BY: RICH

ANALYSIS METHOD NUMBER	CONSTITUENT	SAMPLE CONC.	METHOD DETECTION LIMIT	UNITS	PERCENT RECOVERY*
EPA 310.1	ALKALINITY	66.5	0.5	mg/l	99.2%
EPA 200.7	CALCIUM	14.1	0.004	mg/l	99.1%

*Percent Recovery values are within established control limits.

CENTURY TESTING LABORATORIES, INC.

Reviewed and approved by:

Laboratory Supervisor 01/05/96

centurytesting
LABORATORIES

LABORATORY ANALYSIS

APPLIED SCIENCE LAB
P.O. BOX 195
NETARTS, OR 97143

TILLAMOOK WATER COMMISSION
PWSID #4100893E

LAB SAMPLE NO.: 12134-1
SAMPLE DESCRIP.: 1218503 - WELL#3
MATRIX: WATER
DATE SUBMITTED: 12/19/95
DATE ANALYZED: 12/26-27/95
COLLECTED BY: RICH

ANALYSIS METHOD NUMBER	CONSTITUENT	SAMPLE CONC.	METHOD DETECTION LIMIT	UNITS	PERCENT RECOVERY*
EPA 310.1	ALKALINITY	48.5	0.5	mg/l	99.2%
EPA 200.7	CALCIUM	10.6	0.004	mg/l	99.1%

*Percent Recovery values are within established control limits

CENTURY TESTING LABORATORIES, INC.

Reviewed and approved by:

Laboratory Supervisor 01/05/96

Post Office Box 1174 Bend, Oregon 97709 Phone: (541) 382-6432 FAX: (541) 388-5062

(503) 731-4381
FAX (503) 731-4077
TDD-Nonvoice (503) 732-4031

Oregon

August 19, 1996

DEPARTMENT OF
HUMAN
RESOURCES

HEALTH DIVISION

TILLAMOOK WATER COMMISSION 4100893
Arley Sullivan, Manager
104 STILLWELL AVENUE
TILLAMOOK, OR 97141

Based on the results of a year of quarterly sampling for nitrate completed in 1996, you may reduce sampling to once per year. If there was any noticeable difference between the four quarterly results, this annual sample should be collected during the quarter in which the nitrate result was the highest.

You must resume sampling quarterly if the result of future annual testing is equal to or greater than 5 mg/l.

Be sure to identify the sample site on your report, which source(s) it represents and whether it is before or after any treatment.

If you have any questions, please call us at 731-4381.

Sincerely,

Mary Alvey, R.S., Manager
Monitoring & Compliance Unit
Drinking Water Program

John A. Kitzhaber
Governor

800 NE Oregon Street # 21
Portland, OR 97232-216
(503) 731-4030 Emergency
(503) 252-7978 TDD
Emergency

Copy file

PHONE (503) 842-2343
FAX (503) 842-8839

TILLAMOOK WATER COMMISSION

104 STILLWELL AVENUE
TILLAMOOK, OREGON 97141

Oregon State Health Division
Drinking Water Program
P.O. Box 14350
Portland, OR 97214-0350

August 9, 1996

Dear Sirs:

This is a request for reduction of monitoring requirements of NITRATES in our source water supply, both surface and grourd. Please find enclosed supporting documentation for this request and the following notations.

07/19/96 Source ID: A & B Killam and Fawcett Creeks combined.
mg/L 0.71

04/09/96 Source ID: A & B Killam and Fawcett Creeks.
mg/L 0.87 & 0.80

05/10/96 Source: Treatment Plant
mg/L 1.0

12/21/95 Source ID: A & B Killam and Fawcett Creeks combined.
mg/L 1.17

Source ID: E & D Well #2 and Well #3
mg/L 0.48 and 1.44

04/04/95 Source ID: A & B Killam and Fawcett Creeks combined.

Thank you for your consideration of this request.

Sincerely,

Arley F. Sullivan
Manager

APPENDIX F

TILLAMOOK WATER COMMISSION
CAPITAL IMPROVEMENTS ASSESSMENT
WATER LINE INVENTORY
LEE ENGINEERING, INC.

96 Dec. ENR = 5,600

NO.	LOCATION	DIA	MATERIAL	LENGTH	DATE	INIT.VALUE	LIFE	ENR INDEX	REM. VALUE	REM.LIFE	REPL. $ '96
1	2nd Street, Stillwell to Grove	2	GI	275	1906	$103	40	95	$0	(50)	$6,050
2	11th Street, Stillwell to Fir	4	CI	490	1918	$447	100	189	$98	22	$13,230
3	1st Street, Park Ave. East	1.5	GI	240	1920	$161	40	251	$0	(36)	$3,600
4	4th Street, Stillwell to Grove	4	CI	300	1920	$363	100	251	$87	24	$8,100
5	7th Street, Madrona to Nestucca	2	GI	215	1920	$212	40	251	$0	(36)	$4,730
6	7th Street, Nestucca to Miller	1	GI	200	1920	$108	40	251	$0	(36)	$2,400
7	5th Street, Grove to Elm	4	STL	540	1924	$560	40	215	$0	(32)	$14,580
8	5th Street, Stillwell to Grove	4	STL	270	1924	$280	40	215	$0	(32)	$7,290
9	Grove Ave., 5th to 6th	2	GI	280	1924	$237	40	215	$0	(32)	$6,160
10	6th Street, Main to Pacific	8	STL	50	1925	$68	40	207	$0	(31)	$1,850
11	9th Street, Madrona to Nestucca	2	GI	100	1925	$81	40	207	$0	(31)	$2,200
12	1st Street, Elm to Douglas	6	CI	265	1927	$341	100	206	$106	31	$9,275
13	Douglas Ave., Front to 1st	6	CI	265	1927	$341	100	206	$106	31	$9,275
14	10th Street, Laurel to Nestucca	6	CI	530	1930	$672	100	203	$229	34	$18,550
15	10th Street, Main to Pacific	6	CI	160	1930	$203	100	203	$69	34	$5,600
16	10th Street, Pacific to Laurel	6	CI	270	1930	$343	100	203	$116	34	$9,450
17	4th Street, Ivy to Stillwell	6	CI	320	1930	$406	100	203	$138	34	$11,200
18	4th Street, Laurel to Madrona	6	CI	270	1930	$343	100	203	$116	34	$9,450
19	4th Street, Main to Ivy	6	CI	265	1930	$336	100	203	$114	34	$9,275
20	4th Street, Main to Laurel	6	CI	470	1930	$596	100	203	$203	34	$16,450
21	Laurel Ave., 3rd to 4th	6	CI	260	1930	$330	100	203	$112	34	$9,100
22	Laurel Ave., 4th to 5th	6	CI	270	1930	$343	100	203	$116	34	$9,450
23	Laurel Ave., 5th to 7th	6	CI	540	1930	$685	100	203	$233	34	$18,900
24	Laurel Ave., 7th to 8th	6	CI	260	1930	$330	100	203	$112	34	$9,100
25	Laurel Ave., 8th to 10th	6	CI	535	1930	$679	100	203	$231	34	$18,725
26	Madrona Ave., 3rd to 4th	6	CI	50	1930	$63	100	203	$22	34	$1,750
27	Main Ave., 1st to 2nd	6	CI	275	1930	$349	100	203	$119	34	$9,625
28	Main Ave., 2nd to 3rd	6	CI	260	1930	$330	100	203	$112	34	$9,100
29	Main Ave., 3rd to 4th	6	CI	265	1930	$336	100	203	$114	34	$9,275
30	Nestucca Ave., 9th to 10th	6	CI	265	1930	$336	100	203	$114	34	$9,275
31	3rd Street, Ash Street West	6	CI	400	1931	$453	100	181	$158	35	$14,000
32	3rd Street, Birch to Ash	6	CI	265	1931	$300	100	181	$105	35	$9,275
33	3rd Street, Cedar to Birch	6	CI	270	1931	$305	100	181	$107	35	$9,450
34	3rd Street, Elm to Cedar	6	CI	540	1931	$611	100	181	$214	35	$18,900
35	3rd Street, Stillwell to Elm	6	CI	805	1931	$911	100	181	$319	35	$28,175
36	12th Street, Ivy to Stillwell	6	CI	270	1932	$265	100	157	$95	36	$9,450
37	Hwy. 101, Front to 1st	4	CI	300	1932	$227	100	157	$82	36	$8,100

TILLAMOOK WATER COMMISSION
CAPITAL IMPROVEMENTS ASSESSMENT
WATER LINE INVENTORY
LEE ENGINEERING, INC.

96 Dec. ENR = 5,600

NO.	LOCATION	DIA	MATERIAL	LENGTH	DATE	INIT.VALUE	LIFE	ENR INDEX	REM. VALUE	REM.LIFE	REPL. $ '96
38	Stillwell Ave., 10th to 11th	6	CI	280	1932	$275	100	157	$99	36	$9,800
39	Stillwell Ave., 11th to 12th	6	CI	270	1932	$265	100	157	$95	36	$9,450
40	Stillwell Ave., 3rd to 4th	6	CI	270	1932	$265	100	157	$95	36	$9,450
41	Stillwell Ave., 4th to 5th	6	CI	270	1932	$265	100	157	$95	36	$9,450
42	Stillwell Ave., 5th to 6th	6	CI	270	1932	$265	100	157	$95	36	$9,450
43	Stillwell Ave., 6th to 8th	6	CI	725	1932	$711	100	157	$256	36	$25,375
44	Stillwell Ave., 8th to 9th	6	CI	265	1932	$260	100	157	$94	36	$9,275
45	Stillwell Ave., 9th to 10th	6	CI	265	1932	$260	100	157	$94	36	$9,275
46	Stillwell Ave., N 12th to S 12th	6	CI	110	1932	$108	100	157	$39	36	$3,850
47	5th Street, Cedar to Birch	4	CI	285	1933	$234	100	170	$86	37	$7,695
48	5th Street, Main to Pacific	6	CI	210	1933	$223	100	170	$83	37	$7,350
49	5th Street, Birch Ave. West	2	GI	570	1936	$461	40	206	$0	(20)	$12,540
50	Transmission line @ Port of Tillamook	16	STL	4450	1937	$11,204	40	235	$0	(19)	$267,000
51	1st Street, Main to Ivy	6	CI	250	1938	$369	100	236	$155	42	$8,750
52	2nd Street, Main to Ivy	6	CI	265	1938	$391	100	236	$164	42	$9,275
53	4th Street, Miller Ave. East	2	CI	150	1938	$139	100	236	$58	42	$3,300
54	5th Street, Douglas to Cedar	6	CI	265	1938	$391	100	236	$164	42	$9,275
55	5th Street, Elm to Douglas	6	CI	270	1938	$398	100	236	$167	42	$9,450
56	6th Street, Miller to Park	6	CI	520	1938	$767	100	236	$322	42	$18,200
57	6th Street, Pacific to Laurel	6	CI	70	1938	$103	100	236	$43	42	$2,450
58	6th Street, Park to Railroad	6	CI	480	1938	$708	100	236	$297	42	$16,800
59	Douglas, 5th to 6th	2	CI	400	1938	$371	100	236	$156	42	$8,800
60	Elm Ave., 3rd to 4th	6	CI	270	1938	$398	100	236	$167	42	$9,450
61	Elm Ave., 4th to 5th	6	CI	270	1938	$398	100	236	$167	42	$9,450
62	Madrona Ave., 1st to 3rd	4	CI	385	1938	$438	100	236	$184	42	$10,395
63	Miller Ave., 1st to 3rd	6	CI	310	1938	$457	100	236	$192	42	$10,850
64	Miller Ave., 3rd to 4th	6	CI	260	1938	$384	100	236	$161	42	$9,100
65	Miller Ave., 4th to 5th	6	CI	270	1938	$398	100	236	$167	42	$9,450
66	Miller Ave., 5th to 6th	6	CI	270	1938	$398	100	236	$167	42	$9,450
67	Miller Ave., 6th to 7th	6	CI	270	1938	$398	100	236	$167	42	$9,450
68	Miller Ave., 7th to 8th	6	CI	265	1938	$391	100	236	$164	42	$9,275
69	Miller Ave., 8th to 9th	6	CI	230	1938	$339	100	236	$142	42	$8,050
70	Miller Ave., 9th to 10th	6	CI	300	1938	$443	100	236	$186	42	$10,500
71	10th Street, Nestucca to Miller	6	CI	450	1939	$664	100	236	$285	43	$15,750
72	10th Street, Stillwell to Grove	6	CI	270	1939	$398	100	236	$171	43	$9,450
73	1st Street, Cedar to Birch	6	CI	265	1939	$391	100	236	$168	43	$9,275
74	1st Street, Douglas to Cedar	6	CI	270	1939	$398	100	236	$171	43	$9,450

TILLAMOOK WATER COMMISSION
CAPITAL IMPROVEMENTS ASSESSMENT
WATER LINE INVENTORY
LEE ENGINEERING, INC.

96 Dec. ENR = 5 600

NO.	LOCATION	DIA	MATERIAL	LENGTH	DATE	INIT.VALUE	LIFE	ENR INDEX	REM. VALUE	REM.LIFE	REPL. $ '96
75	1st Street, Ivy to Stillwell	6	CI	270	1939	$398	100	236	$171	43	$9,450
76	2nd Street, Ivy to Stillwell	6	CI	270	1939	$398	100	236	$171	43	$9,450
77	Birch Ave., 1st to 2nd	6	CI	280	1939	$413	100	236	$178	43	$9,800
78	Cedar Ave., 5th to 6th	6	CI	430	1939	$634	100	236	$273	43	$15,050
79	Stillwell Ave., 1st to 2nd	6	CI	280	1939	$413	100	236	$178	43	$9,800
80	Stillwell Ave., 2nd to 3rd	6	CI	260	1939	$384	100	236	$165	43	$9,100
81	10th Street, Grove to Elm	6	CI	440	1940	$666	100	242	$293	44	$15,400
82	4th Street, Birch to Meadowlark	6	CI	1150	1940	$1,739	100	242	$765	44	$40,250
83	5th Street, Miller to Park	6	CI	520	1940	$787	100	242	$346	44	$18,200
84	5th Street, Del Monte Ave., East	6	CI	352	1940	$532	100	242	$234	44	$12,320
85	5th Street, Park to del Monte	6	CI	250	1940	$378	100	242	$166	44	$8,750
86	8th Street, Miller Ave. West	4	STL	200	1940	$233	40	242	$0	(16)	$5,400
87	Del Monte,North	1.5	GI	300	1940	$194	40	242	$0	(16)	$4,500
88	Park Ave. 5th to 6th	6	CI	270	1940	$408	100	242	$180	44	$9,450
89	2nd Street, Grove to Fir	2	CI	290	1941	$294	100	258	$132	45	$6,380
90	Laurel Ave., 10th to 11th	2	CI	270	1941	$274	100	258	$123	45	$5,940
91	Transmission line @ Port of Tillamook	12	STL	7700	1942	$17,837	40	276	$0	(14)	$361,900
92	Transmission line @ Port of Tillamook	16	STL	7000	1942	$20,700	40	276	$0	(14)	$420,000
93	10th Street, Grove to Elm	6	CI	80	1943	$145	100	290	$68	47	$2,800
94	6th Street, Cedar to Birch	6	CI	270	1943	$489	100	290	$230	47	$9,450
95	6th Street, Ash to Cottonwood	4	CI	300	1943	$419	100	290	$197	47	$8,100
96	6th Street, Birch to Ash	4	CI	300	1943	$419	100	290	$197	47	$8,100
97	9th 'Street, Manor Place to Elm	2	CI	180	1943	$205	100	290	$96	47	$3,960
98	9th Street ,Elm to Cedar	6	PVC	600	1943	$1,088	50	290	$0	(3)	$21,000
99	Cedar Ave., 6th to 9th	6	CI	540	1943	$979	100	290	$460	47	$18,900
100	Elm Ave., 5th to Manor Place	6	CI	650	1943	$1,178	100	290	$554	47	$22,750
101	Elm Ave., 9th to 10th	6	CI	385	1943	$698	100	290	$328	47	$13,475
102	Elm Ave., Manor Place to 9th	6	CI	380	1943	$689	100	290	$324	47	$13,300
103	Manor Place	2	CI	680	1943	$775	100	290	$364	47	$14,960
104	11th Street, Main to Pacific	6	CI	160	1949	$477	100	477	$253	53	$5,600
105	7th Street, Miller to Park	2	CI	525	1949	$984	100	477	$521	53	$11,550
106	7th Street, Pacific to Laurel	6	CI	60	1949	$179	100	477	$95	53	$2,100
107	7th Street, Park to Railroad	2	GI	450	1949	$843	40	477	$0	(7)	$9,900
108	9th Street, Main to Pacific	6	CI	160	1949	$477	100	477	$253	53	$5,600
109	9th Street, Pacific to Laurel	6	CI	50	1949	$149	100	477	$79	53	$1,750
110	Ash Ave., 2nd to 3rd	6	CI	70	1949	$209	100	477	$111	53	$2,450
111	Birch Ave., 2nd to 3rd	6	CI	260	1949	$775	100	477	$411	53	$9,100

TILLAMOOK WATER COMMISSION
CAPITAL IMPROVEMENTS ASSESSMENT
WATER LINE INVENTORY
LEE ENGINEERING, INC.

96 Dec. ENR = 5,600

NO.	LOCATION	DIA	MATERIAL	LENGTH	DATE	INIT.VALUE	LIFE	ENR INDEX	REM. VALUE	REM.LIFE	REPL. $ '96
112	Birch Ave., 6th Street North	2	GI	250	1949	$468	40	477	$0	(7)	$5,500
113	Miller Ave., 10th to 11th	6	PVC	180	1949	$537	50	477	$32	3	$6,300
114	Pacific Ave., 10th to 11th	6	CI	270	1949	$805	100	477	$427	53	$9,450
115	Pacific Ave., 6th to 7th	6	CI	270	1949	$805	100	477	$427	53	$9,450
116	Pacific Ave., 7th to 8th	6	CI	260	1949	$775	100	477	$411	53	$9,100
117	Pacific Ave., 8th to 9th	6	CI	270	1949	$805	100	477	$427	53	$9,450
118	Pacific Ave., 9th to 10th	6	CI	265	1949	$790	100	477	$419	53	$9,275
119	Pacific Ave.,5th to 6th	6	CI	270	1949	$805	100	477	$427	53	$9,450
120	Transmission line from south city to Port	14	STL	10500	1949	$49,191	40	477	$0	(7)	$577,500
121	2nd Street, Birch to Ash	6	CI	270	1950	$861	100	510	$465	54	$9,450
122	Alder, Williams to Meadow	6	STL	760	1950	$2,423	40	510	$0	(6)	$26,600
123	Evergreen 3rd to Alder	2	AC	595	1950	$1,192	50	510	$95	4	$13,090
124	Evergreen, Alder to Maple	4	AC	675	1950	$1,660	50	510	$133	4	$18,225
125	3rd Street, Park to Del Monte	6	CI	250	1951	$848	100	543	$467	55	$8,750
126	12th Street, Stillwell to Elm	6	CI	750	1953	$2,813	100	600	$1,603	57	$26,250
127	Fir Ave., 11th to 12th	2	CI	270	1953	$636	100	600	$363	57	$5,940
128	Ivy Ave., 12th Street South	18	STL	1000	1953	$7,714	40	600	$0	(3)	$72,000
129	Transmission line from south city limit boundary to Port of Tillamook	18	STL	10300	1953	$79,457	40	600	$0	(3)	$741,600
130	10th Street, Main to Ivy	6	CI	270	1954	$1,060	100	628	$615	58	$9,450
131	1st Street, Laurel to Madrona	6	CI	280	1954	$1,099	100	628	$637	58	$9,800
132	1st Street, Madrona to Miller	6	CI	730	1954	$2,865	100	628	$1,662	58	$25,550
133	1st Street, Main to Laurel	6	CI	480	1954	$1,884	100	628	$1,093	58	$16,800
134	3RD Street, Main to Laurel	6	CI	470	1954	$1,845	100	628	$1,070	58	$16,450
135	3rd Street, Laurel to Madrona	6	CI	270	1954	$1,060	100	628	$615	58	$9,450
136	3rd Street, Madrona to Miller	6	CI	740	1954	$2,905	100	628	$1,685	58	$25,900
137	3rd Street, Main to Ivy	6	CI	265	1954	$1,040	100	628	$603	58	$9,275
138	8th Street, Main to Ivy	6	CI	270	1954	$1,060	100	628	$615	58	$9,450
139	Laurel Ave., 1st to 2nd	6	CI	175	1954	$687	100	628	$398	58	$6,125
140	2nd Street, Fir to Elm	2	CI	240	1955	$622	100	660	$367	59	$5,280
141	3rd Street, Del Monte to Railroad	6	CI	550	1955	$2,269	100	660	$1,339	59	$19,250
142	3rd Street, Evergreen to Pine	6	CI	220	1955	$908	100	660	$535	59	$7,700
143	3rd Street, Hemlock to Meadow	6	CI	970	1955	$4,001	100	660	$2,361	59	$33,950
144	3rd Street, Miller to Park	6	CI	510	1955	$2,104	100	660	$1,241	59	$17,850
145	3rd Street, Pine to Hemlock	6	CI	1640	1955	$6,765	100	660	$3,991	59	$57,400
146	3rd Street, Railroad to Evergreen	6	CI	1160	1955	$4,785	100	660	$2,823	59	$40,600
147	4th Street, Cedar to Birch	6	CI	280	1955	$1,155	100	660	$681	59	$9,800

TILLAMOOK WATER COMMISSION
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WATER LINE INVENTORY
LEE ENGINEERING, INC.

96 Dec. ENR = 5,600

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148	4th Street, Elm to Cedar	6	CI	535	1955	$2,207	100	660	$1,302	59	$18,725
149	4th Street, Grove to Elm	6	CI	505	1955	$2,083	100	660	$1,229	59	$17,675
150	5th Street, Laurel to Madrona	6	CI	265	1955	$1,093	100	660	$645	59	$9,275
151	5th Street, Madrona to Nestucca	6	CI	270	1955	$1,114	100	660	$657	59	$9,450
152	5th Street, Main to Ivy	6	CI	260	1955	$1,073	100	660	$633	59	$9,100
153	5th Street, Nestucca to Miller	6	CI	435	1955	$1,794	100	660	$1,059	59	$15,225
154	5th Street, Pacific to Laurel	6	CI	265	1955	$1,093	100	660	$645	59	$9,275
155	Cedar Ave., 1st to 3rd	3	CI	540	1955	$1,464	100	660	$864	59	$12,420
156	Cedar Ave., 3rd to 4th	6	CI	270	1955	$1,114	100	660	$657	59	$9,450
157	Cedar Ave., 4th to 5th	6	CI	270	1955	$1,114	100	660	$657	59	$9,450
158	Cedar Ave., Front to 1st	6	CI	140	1955	$578	100	660	$341	59	$4,900
159	Elm Ave., 1st to 2nd	2	CI	280	1955	$726	100	660	$428	59	$6,160
160	Hemlock, 3rd to Alder	6	CI	800	1955	$3,300	100	660	$1,947	59	$28,000
161	Madrona, 3rd to 4th	4	CI	210	1955	$668	100	660	$394	59	$5,670
162	Madrona, 4th to 5th	4	CI	270	1955	$859	100	660	$507	59	$7,290
163	Meadow, 3rd to Apple	6	CI	220	1955	$908	100	660	$535	59	$7,700
164	Meadow, Apple to Beech	4	CI	240	1955	$764	100	660	$451	59	$6,480
165	Nestucca, 5th to 7th	6	CI	90	1955	$371	100	660	$219	59	$3,150
166	Nestucca, 5th to 7th	4	CI	505	1955	$1,607	100	660	$948	59	$13,635
167	Nestucca, 7th to 8th	4	CI	295	1955	$939	100	660	$554	59	$7,965
168	1st Street, Fir to Elm	6	CI	270	1956	$1,168	100	692	$701	60	$9,450
169	1st Street, Grove to Fir	6	CI	270	1956	$1,168	100	692	$701	60	$9,450
170	1st Street, Miller to Park	4	CI	510	1956	$1,702	100	692	$1,021	60	$13,770
171	1st Street, Stillwell to Grove	6	CI	270	1956	$1,168	100	692	$701	60	$9,450
172	7th Street, Laurel to Madrona	2	CI	295	1956	$802	100	692	$481	60	$6,490
173	8th Street, Laurel to Madrona	6	CI	300	1956	$1,298	100	692	$779	60	$10,500
174	8th Street, Madrona to Nestucca	6	CI	240	1956	$1,038	100	692	$623	60	$8,400
175	8th Street, Main to Pacific	6	CI	160	1956	$692	100	692	$415	60	$5,600
176	8th Street, Miller to Park	6	CI	525	1956	$2,271	100	692	$1,362	60	$18,375
177	8th Street, Nestucca to Miller	6	CI	470	1956	$2,033	100	692	$1,220	60	$16,450
178	8th Street, Pacific to Laurel	6	CI	265	1956	$1,146	100	692	$688	60	$9,275
179	Del Monte, 3rd to 5th	4	CI	530	1956	$1,768	100	692	$1,061	60	$14,310
180	Fir Ave., Front to 1st	4	CI	250	1956	$834	100	692	$500	60	$6,750
181	Grove Ave., Front to 1st	4	CI	300	1956	$1,001	100	692	$601	60	$8,100
182	Madrona Ave., 7th to 8th	2	CI	290	1956	$788	100	692	$473	60	$6,380
183	Park Ave., 1st to 3rd	4	CI	270	1956	$901	100	692	$541	60	$7,290
184	Park Ave., 6th to 7th	4	CI	270	1956	$901	100	692	$541	60	$7,290

TILLAMOOK WATER COMMISSION
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185	Park Ave., 7th to 8th	4	CI	260	1956	$867	100	692	$520	60	$7,020
186	6th Street, Fir to Elm	1	GI	460	1958	$748	40	759	$37	2	$5,520
187	6th Street, Fir to Elm	2	GI	50	1958	$149	40	759	$7	2	$1,100
188	Transmission line from Killam intake north	18	STL	5300	1959	$54,310	40	797	$4,073	3	$381,600
189	Alder Ave., Evergreen to Williams	4	AC	1490	1960	$5,920	50	824	$1,657	14	$40,230
190	Alder Ave., Williams To Meadow East	4	AC	250	1960	$993	50	824	$278	14	$6,750
191	Elmwood Street	2	CI	350	1960	$1,133	100	824	$725	64	$7,700
192	Miller Street, 12th Street South	10	STL	1600	1960	$9,653	40	824	$965	4	$65,600
193	Meadow Ave., Dogwood To Elmwood	6	CI	290	1966	$1,847	100	1,019	$1,293	70	$10,150
194	4th Street, Miller Street West	1	CU	160	1967	$368	40	1,074	$101	11	$1,920
195	4th Street, Miller Street West	0.75	CU	60	1967	$115	40	1,074	$32	11	$600
196	Filbert Ave.	2	CI	460	1967	$1,941	100	1,074	$1,378	71	$10,120
197	Green Ave.	2	CI	410	1967	$1,730	100	1,074	$1,228	71	$9,020
198	Meadow Ave., Elmwood To Filbert	6	CI	260	1967	$1,745	100	1,074	$1,239	71	$9,100
199	Meadow Ave., Filbert to Green	6	CI	250	1967	$1,678	100	1,074	$1,191	71	$8,750
200	Meadow Ave., Green Ave. South	2	CI	120	1967	$506	100	1,074	$359	71	$2,640
201	Transmission line within Port	24	STL	5600	1971	$142,290	40	1,581	$53,359	15	$504,000
202	11TH Street, Nestucca to Miller	6	PVC	420	1977	$6,762	50	2,576	$4,192	31	$14,700
203	11th Street, Laural to Nestucca	6	PVC	540	1977	$8,694	50	2,576	$5,390	31	$18,900
204	11th Street, Pacific to Laurel	6	PVC	270	1977	$4,347	50	2,576	$2,695	31	$9,450
205	9th Street, Beachwood to Cottonwood	6	PVC	400	1977	$6,440	50	2,576	$3,993	31	$14,000
206	9th Street, Cedar to Ash	6	PVC	800	1977	$12,880	50	2,576	$7,986	31	$28,000
207	Ash Ave., 6th to 9th	6	PVC	600	1977	$9,660	50	2,576	$5,989	31	$21,000
208	Cottonwood Ave., 6th to 9th	6	PVC	600	1977	$9,660	50	2,576	$5,989	31	$21,000
209	Hwy. 101 west side, Hadley Rd No	8	PVC	200	1977	$3,404	50	2,576	$2,110	31	$7,400
210	Hwy. 101 west side, Hadley Rd North	4	PVC	200	1977	$2,484	50	2,576	$1,540	31	$5,400
211	Hwy. 101, Hadley Rd. South	8	PVC	1100	1977	$18,722	50	2,576	$11,608	31	$40,700
212	Maple Ave., Evergreen to Williams	10	PVC	1500	1977	$28,290	50	2,576	$17,540	31	$61,500
213	Nestucca Ave., 10th Street North	6	PVC	200	1977	$3,220	50	2,576	$1,996	31	$7,000
214	4th Street, Meadow Ave., West	8	PVC	200	1978	$3,668	50	2,776	$2,348	32	$7,400
215	Hawthorne Ave., Evergreen to Williams Ave.	10	PVC	1320	1978	$26,828	50	2,776	$17,170	32	$54,120
216	Maple, Evergreen to Williams	10	PVC	1500	1978	$30,486	50	2,776	$19,511	32	$61,500
217	Hawthorne, Evergreen to Williams	10	PVC	180	1979	$3,958	50	3,003	$2,612	33	$7,380
218	Walnut Ave., Evergreen to Hawthorne	8	PVC	1400	1979	$27,778	50	3,003	$18,333	33	$51,800
219	8th Street, Park Ave., East	6	PVC	400	1980	$8,093	50	3,237	$5,503	34	$14,000
220	Hwy. 101, Trask River crossing	18	DI	225	1980	$9,364	100	3,237	$7,866	84	$16,200
221	Pine Ave., 3rd to Alder	6	PVC	620	1980	$12,543	50	3,237	$8,529	34	$21,700

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222	Alder Ave., School Dist. #9 easement to Williams Av	12	PVC	400	1981	$11,868	50	3,535	$8,307	35	$18,800
223	Front Street, Ivy to Hwy. 101	12	PVC	200	1981	$5,934	50	3,535	$4,154	35	$9,400
224	Hadley Road, East	2	PVC	600	1981	$8,333	50	3,535	$5,833	35	$13,200
225	Hawthorne Ave., Williams Ave West	12	PVC	250	1981	$7,417	50	3,535	$5,192	35	$11,750
226	Hwy. 101 (S. of Hadley Rd.) East	6	PVC	400	1981	$8,838	50	3,535	$6,186	35	$14,000
227	Hwy 101, Front to north side Hoquarton Slough	12	DIP	325	1981	$9,642	100	3,535	$8,196	85	$15,275
228	Hwy. 101, Hadley Rd. North	12	PVC	4100	1981	$121,642	50	3,535	$85,149	35	$192,700
229	Hwy. 101, Werner Rd. North	8	PVC	3200	1981	$74,740	50	3,535	$52,318	35	$118,400
230	Hwy. 101, east side, north of Hoquarton Slough to Ha	12	PVC	1525	1981	$45,245	50	3,535	$31,671	35	$71,675
231	Ivy Ave., Front Street North	12	DI	80	1981	$2,374	100	3,535	$2,017	85	$3,760
232	Larson Road, East	2	PVC	350	1981	$4,861	50	3,535	$3,402	35	$7,700
233	Main Ave., 12th Street South	10	PVC	300	1981	$7,764	50	3,535	$5,435	35	$12,300
234	Main Ave., 4th to 12th	10	PVC	2500	1981	$64,703	50	3,535	$45,292	35	$102,500
235	School Dist. #9 easement, well #2 Alder	12	PVC	700	1981	$20,768	50	3,535	$14,538	35	$32,900
236	Williams Ave., Alder to Maple	12	PVC	670	1981	$19,878	50	3,535	$13,915	35	$31,490
237	Williams Ave., Alder to Maple	12	PVC	670	1981	$19,878	50	3,535	$13,915	35	$31,490
238	Williams Ave., Maple to Hawthorne	12	PVC	575	1981	$17,060	50	3,535	$11,942	35	$27,025
239	Williams Ave., Maple to Hawthorne	12	PVC	575	1981	$17,060	50	3,535	$11,942	35	$27,025
240	12th Street, Miller to Railroad	12	PVC	182	1982	$5,843	50	3,825	$4,207	36	$8,554
241	Alder, Well No. 2 line to Dogwood	12	PVC	800	1983	$27,300	50	4,066	$20,202	37	$37,600
242	Cypress Street	2	PVC	450	1983	$7,188	50	4,066	$5,319	37	$9,900
243	Dogwood Street, East	2	PVC	200	1983	$3,195	50	4,066	$2,364	37	$4,400
244	Dogwood Street, West	6	PVC	400	1983	$10,165	50	4,066	$7,522	37	$14,000
245	Linden Ave., 3rd to Alder	2	PVC	290	1983	$4,632	50	4,066	$3,428	37	$6,380
246	Linden Ave., Alder North	6	PVC	260	1983	$6,607	50	4,066	$4,889	37	$9,100
247	Pine Ave., to Linden Ave.	6	PVC	520	1983	$13,215	50	4,066	$9,779	37	$18,200
248	11th St., Ivy to Stillwell	6	PVC	270	1985	$7,079	50	4,195	$5,522	39	$9,450
249	Apple Street	2	PVC	550	1985	$9,064	50	4,195	$7,070	39	$12,100
250	Beech Street, west	2	PVC	200	1985	$3,296	50	4,195	$2,571	39	$4,400
251	Donald Place, Elm Ave., East	2	PVC	250	1986	$4,218	50	4,295	$3,375	40	$5,500
252	Donald Place, Elm Ave.,East	2	PVC	280	1986	$4,725	50	4,295	$3,780	40	$6,160
253	Meadow, Beech to Cypress	6	PVC	245	1986	$6,577	50	4,295	$5,261	40	$8,575
254	Meadow, Cypress to Dogwood	6	PVC	200	1986	$5,369	50	4,295	$4,295	40	$7,000
255	Front St., Douglas to Elm	6	PVC	400	1988	$11,298	50	4,519	$9,490	42	$14,000
256	Meadowlark Lane	2	PVC	700	1989	$12,667	50	4,606	$10,893	43	$15,400
257	Williams Ave., Hawthorne, South	6	PVC	1200	1989	$34,545	50	4,606	$29,709	43	$42,000
258	Williams Ave., Hawthorne, South	12	PVC	200	1989	$7,732	50	4,606	$6,649	43	$9,400

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259	11th St., Ivy to Main	12	DI	200	1990	$7,943	100	4,732	$7,466	94	$9,400
260	3rd Street, Ivy to Stillwell	16	DI	265	1990	$13,436	100	4,732	$12,629	94	$15,900
261	3rd, Hospital West	6	PVC	600	1990	$17,745	50	4,732	$15,616	44	$21,000
262	5th Street, Ivy to Stillwell	6	DI	190	1990	$5,619	100	4,732	$5,282	94	$6,650
263	6th Street, Ivy to Stillwell	6	DI	300	1990	$8,873	100	4,732	$8,340	94	$10,500
264	6th Street, Main to Ivy	6	DI	270	1990	$7,985	100	4,732	$7,506	94	$9,450
265	7th, Stillwell to Ivy	16	DI	300	1990	$15,210	100	4,732	$14,297	94	$18,000
266	8th Street, Ivy to Stillwell	6	PVC	220	1990	$6,507	50	4,732	$5,726	44	$7,700
267	8th Street, Ivy to Stillwell	6	PVC	250	1990	$7,394	50	4,732	$6,507	44	$8,750
268	8th Street, Ivy to Stillwell	6	PVC	220	1990	$6,507	50	4,732	$5,726	44	$7,700
269	Beech Ave., East	6	PVC	280	1990	$8,281	50	4,732	$7,287	44	$9,800
270	DelMonte East	2	PVC	150	1990	$2,789	50	4,732	$2,454	44	$3,300
271	Ivy Ave., 10th to 11th	16	DI	280	1990	$14,196	100	4,732	$13,344	94	$16,800
272	Ivy Ave., 11th to 12th	16	DI	390	1990	$19,773	100	4,732	$18,587	94	$23,400
273	Ivy Ave., 1st to 2nd	16	DI	280	1990	$14,196	100	4,732	$13,344	94	$16,800
274	Ivy Ave., 2nd to 3rd	16	DI	260	1990	$13,182	100	4,732	$12,391	94	$15,600
275	Ivy Ave., 7th to 8th	16	DI	260	1990	$13,182	100	4,732	$12,391	94	$15,600
276	Ivy Ave., 8th to 9th	16	DI	270	1990	$13,689	100	4,732	$12,868	94	$16,200
277	Ivy Ave., 9th to 10th	16	DI	260	1990	$13,182	100	4,732	$12,391	94	$15,600
278	Ivy Ave., Front to 1st	12	DI	270	1990	$10,723	100	4,732	$10,080	94	$12,690
279	Stillwell, 3rd to 6th	16	DI	1100	1990	$55,770	100	4,732	$52,424	94	$66,000
280	11th St., Main to Miller	12	PVC	1400	1991	$56,811	50	4,835	$51,130	45	$65,800
281	12th Street, Miller to Railroad	12	PVC	425	1991	$17,246	50	4,835	$15,522	45	$19,975
282	12th Street, Railroad to Evergreen	12	PVC	1080	1991	$43,826	50	4,835	$39,443	45	$50,760
283	Evergreen Ave., Hawthorne to 12th	12	PVC	610	1991	$24,753	50	4,835	$22,278	45	$28,670
284	Evergreen Ave., Maple to Walnut	12	PVC	370	1991	$15,014	50	4,835	$13,513	45	$17,390
285	Evergreen Ave., Walnut to Hawthorne	12	PVC	205	1991	$8,319	50	4,835	$7,487	45	$9,635
286	Miller Ave., 11th to 12th	12	PVC	390	1991	$15,826	50	4,835	$14,243	45	$18,330
287	Well No. 3 to Alder	8	DI	580	1991	$18,528	100	4,835	$17,602	95	$21,460
288	Well No. 3 to Williams	12	DI	400	1991	$16,232	100	4,835	$15,420	95	$18,800
289	Nestucca Ave., 8th to 9th	6	PVC	270	1993	$8,792	50	5,210	$8,264	47	$9,450
290	Nestucca Ave., 10th to 11th	6	PVC	240	1993	$7,815	50	5,210	$7,346	47	$8,400
291	W.T.P. to Brick Yard Road	24	DI	2700	1993	$428,500	100	5,210	$415,645	97	$460,576
292	5th St., Beechwood West	2	PVC	650	1994	$13,807	50	5,407	$13,255	48	$14,300
293	9th Street, Miller to Park	2	PVC	470	1994	$9,984	50	5,407	$9,584	48	$10,340
294	Beech St. to Marolf Loop	6	PVC	400	1994	$13,518	50	5,407	$12,977	48	$14,000
295	Domingo Ct., Evergreen Ave east	8	PVC	250	1994	$8,931	50	5,407	$8,574	48	$9,250

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296	Killam Creek Raw Water W/L- W.T.P to intake	12	PVC	4500	1994	$296,000	50	5,407	$285,024	48	$307,498
297	Larson Rd., West	2	PVC	400	1994	$8,497	50	5,407	$8,157	48	$8,800
298	S. of Hawthorne, Evergreen East	6	PVC	380	1994	$12,842	50	5,407	$12,328	48	$13,300
299	Wilson River Loop	6	PVC	400	1994	$13,518	50	5,407	$12,977	48	$14,000
300	Fred Meyer's	8	PVC	1350	1995	$48,523	50	5,440	$47,662	49	$49,950
301	Wilson River LP - Hwy 101 West	8	PVC	500	1995	$17,971	50	5,440	$17,612	49	$18,500
302	7th St., Ivy to Main	6	PVC	200	1996	$6,800	50	5,440	$6,800	50	$7,000
303	Beechwood Ave., 5th to 8th	6	PVC	700	1996	$23,800	50	5,440	$23,800	50	$24,500
304	Domingo Ct. extension	8	PVC	200	1996	$7,189	50	5,440	$7,189	50	$7,400
			TOTAL	183,324		$2,867,991			$2,119,542		$8,521,143

APPENDIX G

Tillamook Water Commission Master Plan

Existing System Hydraulic Analysis

Pipe Table

Input						Output		
Pipe	UpNode	DnNode	Length ft	Diameter in	Roughness	Flow US gpm	Velocity ft/sec	HeadLoss ft
1	901	1	300.0	10.0	150.0	0.00	0.00	0.00
2	1	2	900.0	12.0	150.0	-5.00	-0.01	0.00
3	2	245	850.0	12.0	150.0	9.18	0.03	0.00
4	245	3	400.0	6.0	150.0	3.18	0.04	0.00
5	2	6	50.0	6.0	135.0	7.79	0.09	0.00
6	2	7	215.0	12.0	150.0	-21.97	-0.06	0.00
7	7	8	525.0	12.0	135.0	11.12	0.03	0.00
8	8	10	50.0	8.0	135.0	11.12	0.07	0.00
9	902	10	310.0	8.0	135.0	0.00	0.00	10.00
10	10	18	310.0	4.0	140.0	5.58	0.14	0.01
11	10	6	700.0	4.0	140.0	0.53	0.01	0.00
12	6	5	800.0	6.0	135.0	8.32	0.09	0.01
13	5	4	950.0	6.0	135.0	-3.18	-0.04	0.00
14	4	246	440.0	4.0	135.0	-3.18	-0.08	0.01
15	246	3	460.0	6.0	150.0	-3.18	-0.04	0.00
16	5	20	1100.0	6.0	135.0	6.50	0.07	0.01
17	20	21	550.0	6.0	135.0	1.50	0.02	0.00
18	21	23	210.0	6.0	135.0	11.30	0.13	0.00
19	21	247	310.0	6.0	150.0	-9.80	-0.11	0.00
20	247	19	310.0	6.0	150.0	-5.37	-0.06	0.00
21	247	248	550.0	6.0	150.0	-4.43	-0.05	0.00
22	248	18	250.0	6.0	150.0	-4.43	-0.05	0.00
23	18	19	530.0	4.0	140.0	1.15	0.03	0.00
24	19	22	210.0	4.0	140.0	-4.22	-0.11	0.00
25	23	56	500.0	6.0	135.0	11.30	0.13	0.01
26	22	17	670.0	4.0	140.0	-4.22	-0.11	0.01
27	17	11	1500.0	10.0	150.0	15.08	0.06	0.00
28	11	7	650.0	12.0	150.0	33.09	0.09	0.00
29	11	12	570.0	12.0	150.0	-18.00	-0.05	0.00
30	12	13	270.0	10.0	150.0	-23.00	-0.09	0.00
31	13	16	1210.0	10.0	150.0	-16.18	-0.07	0.00
32	13	14	200.0	8.0	150.0	-6.83	-0.04	0.00
33	14	15	1210.0	8.0	150.0	-6.83	-0.04	0.00
34	15	17	380.0	12.0	150.0	24.30	0.07	0.00
35	15	16	200.0	12.0	150.0	-36.13	-0.10	0.00
36	16	24	600.0	12.0	150.0	-52.30	-0.15	0.01
37	24	25	1100.0	12.0	150.0	-57.30	-0.16	0.01
38	25	26	720.0	12.0	150.0	-82.30	-0.23	0.01
39	26	27	240.0	12.0	150.0	-85.30	-0.24	0.00
40	27	226	1700.0	12.0	120.0	-104.60	-0.30	0.08
41	27	28	450.0	12.0	150.0	19.30	0.05	0.00
42	28	29	100.0	12.0	150.0	17.75	0.05	0.00
43	29	30	150.0	6.0	90.0	17.43	0.20	0.01
44	30	36	300.0	6.0	90.0	14.06	0.16	0.02
45	36	37	230.0	6.0	90.0	14.06	0.16	0.01
46	37	38	530.0	6.0	135.0	8.17	0.09	0.01

Tillamook Water Commission Master Plan
Existing System Hydraulic Analysis
Pipe Table

Input						Output		
Pipe	UpNode	DnNode	Length ft	Diameter in	Roughness	Flow US gpm	Velocity ft/sec	HeadLoss ft
47	37	40	260.0	6.0	90.0	12.60	0.14	0.01
48	37	43	490.0	6.0	135.0	-6.71	-0.08	0.00
49	38	39	260.0	4.0	135.0	8.17	0.21	0.02
50	39	41	270.0	4.0	135.0	3.17	0.08	0.00
51	41	50	270.0	6.0	90.0	6.67	0.08	0.00
52	41	42	530.0	6.0	90.0	-3.50	-0.04	0.00
53	49	50	510.0	6.0	90.0	-1.90	-0.02	0.00
54	50	51	250.0	6.0	90.0	4.77	0.05	0.00
55	51	52	265.0	4.0	135.0	4.77	0.12	0.01
56	52	53	265.0	4.0	135.0	4.77	0.12	0.01
57	53	54	325.0	6.0	135.0	-6.30	-0.07	0.00
58	54	55	400.0	6.0	135.0	-11.30	-0.13	0.01
59	55	56	500.0	6.0	135.0	-11.30	-0.13	0.01
60	53	57	260.0	6.0	135.0	11.07	0.13	0.00
61	57	58	270.0	4.0	135.0	2.93	0.07	0.00
62	57	60	510.0	6.0	135.0	8.15	0.09	0.00
63	58	59	510.0	4.0	135.0	2.93	0.07	0.01
64	59	60	270.0	6.0	90.0	-6.10	-0.07	0.00
65	59	62	300.0	6.0	135.0	4.03	0.05	0.00
66	60	63	250.0	6.0	135.0	-3.50	-0.04	0.00
67	60	61	270.0	6.0	90.0	-12.45	-0.14	0.01
68	61	49	270.0	6.0	90.0	-12.45	-0.14	0.01
69	49	47	430.0	6.0	135.0	-6.46	-0.07	0.00
70	49	42	270.0	6.0	90.0	-9.10	-0.10	0.01
71	42	40	270.0	6.0	90.0	-12.60	-0.14	0.01
72	30	31	400.0	6.0	90.0	3.37	0.04	0.00
73	29	32	425.0	12.0	150.0	-4.68	-0.01	0.00
74	28	250	425.0	6.0	150.0	1.54	0.02	0.00
75	250	32	100.0	6.0	150.0	-2.10	-0.02	0.00
76	250	33	540.0	6.0	150.0	3.65	0.04	0.00
77	32	89	270.0	12.0	150.0	-29.38	-0.08	0.00
78	89	35	710.0	12.0	150.0	-34.38	-0.10	0.00
79	33	34	270.0	6.0	150.0	3.65	0.04	0.00
80	34	93	270.0	6.0	150.0	-13.50	-0.15	0.01
81	93	35	100.0	12.0	150.0	34.38	0.10	0.00
82	93	97	400.0	10.0	150.0	-60.16	-0.25	0.01
83	93	125	270.0	12.0	135.0	-73.22	-0.21	0.01
84	93	92	270.0	10.0	150.0	85.51	0.35	0.01
85	92	90	200.0	6.0	90.0	7.11	0.08	0.00
86	92	94	270.0	10.0	150.0	87.21	0.36	0.01
87	92	123	270.0	6.0	135.0	-8.81	-0.10	0.00
88	90	34	270.0	6.0	90.0	-12.15	-0.14	0.01
89	90	87	270.0	6.0	90.0	7.27	0.08	0.00
90	90	91	270.0	6.0	90.0	11.98	0.14	0.01
91	87	88	265.0	6.0	90.0	-4.34	-0.05	0.00
92	87	86	270.0	6.0	90.0	11.61	0.13	0.01

Tillamook Water Commission Master Plan

Existing System Hydraulic Analysis

Pipe Table

Input						Output		
Pipe	UpNode	DnNode	Length ft	Diameter in	Roughness	Flow US gpm	Velocity ft/sec	HeadLoss ft
93	88	31	265.0	6.0	90.0	-4.34	-0.05	0.00
94	31	44	270.0	6.0	90.0	16.64	0.19	0.02
95	32	31	270.0	6.0	150.0	22.60	0.26	0.01
96	44	43	270.0	6.0	150.0	11.64	0.13	0.00
97	43	45	300.0	4.0	135.0	6.36	0.16	0.01
98	43	85	270.0	6.0	135.0	-1.43	-0.02	0.00
99	85	84	300.0	6.0	135.0	-1.43	-0.02	0.00
100	45	46	200.0	4.0	135.0	6.36	0.16	0.01
101	46	47	220.0	4.0	135.0	6.36	0.16	0.01
102	47	48	90.0	4.0	135.0	-0.10	0.00	0.00
103	48	68	270.0	6.0	135.0	-0.10	0.00	0.00
104	68	77	270.0	6.0	135.0	-9.78	-0.11	0.00
105	68	67	270.0	6.0	90.0	9.68	0.11	0.01
106	67	73	270.0	6.0	90.0	-4.59	-0.05	0.00
107	67	66	270.0	6.0	90.0	14.28	0.16	0.02
108	66	64	270.0	6.0	135.0	8.50	0.10	0.00
109	64	63	200.0	6.0	135.0	3.50	0.04	0.00
110	66	65	380.0	4.0	90.0	3.02	0.08	0.01
111	66	72	270.0	6.0	135.0	2.76	0.03	0.00
112	65	62	450.0	6.0	135.0	-4.03	-0.05	0.00
113	65	69	270.0	6.0	135.0	7.05	0.08	0.00
114	69	70	300.0	6.0	135.0	2.05	0.02	0.00
115	70	71	150.0	6.0	135.0	2.05	0.02	0.00
116	71	200	1000.0	4.0	90.0	6.16	0.16	0.09
117	105	104	180.0	12.0	150.0	113.84	0.32	0.01
118	104	199	700.0	12.0	150.0	98.84	0.28	0.02
119	105	106	270.0	12.0	135.0	-128.84	-0.37	0.01
120	106	71	270.0	6.0	90.0	-3.10	-0.04	0.00
121	106	109	270.0	6.0	90.0	16.91	0.19	0.02
122	106	107	270.0	16.0	135.0	-142.64	-0.23	0.00
123	103	71	240.0	6.0	90.0	7.21	0.08	0.00
124	103	107	270.0	6.0	90.0	2.08	0.02	0.00
125	103	102	260.0	6.0	90.0	-9.30	-0.11	0.01
126	107	110	270.0	6.0	90.0	2.77	0.03	0.00
127	108	107	270.0	16.0	135.0	143.33	0.23	0.00
128	108	111	240.0	16.0	135.0	-134.87	-0.22	0.00
129	108	102	270.0	6.0	135.0	-8.46	-0.10	0.00
130	102	74	250.0	6.0	135.0	1.89	0.02	0.00
131	74	72	220.0	6.0	135.0	-3.11	-0.04	0.00
132	73	72	270.0	6.0	90.0	15.35	0.17	0.02
133	73	77	270.0	6.0	90.0	-10.84	-0.12	0.01
134	73	75	270.0	6.0	90.0	-9.10	-0.10	0.01
135	101	75	140.0	6.0	90.0	9.10	0.10	0.00
136	101	102	270.0	6.0	90.0	19.66	0.22	0.03
137	101	112	540.0	6.0	90.0	10.68	0.12	0.02
138	101	100	270.0	10.0	150.0	-39.44	-0.16	0.00

Tillamook Water Commission Master Plan
Existing System Hydraulic Analysis
Pipe Table

Input						Output		
Pipe	UpNode	DnNode	Length ft	Diameter in	Roughness	Flow US gpm	Velocity ft/sec	HeadLoss ft
139	76	100	150.0	6.0	90.0	-2.95	-0.03	0.00
140	76	79	270.0	6.0	90.0	-6.81	-0.08	0.00
141	76	77	270.0	6.0	135.0	9.76	0.11	0.00
142	77	78	270.0	6.0	90.0	-10.87	-0.12	0.01
143	78	80	270.0	6.0	90.0	-10.87	-0.12	0.01
144	80	84	270.0	6.0	90.0	-10.87	-0.12	0.01
145	84	86	270.0	6.0	90.0	-11.61	-0.13	0.01
146	83	84	270.0	6.0	135.0	5.69	0.06	0.00
147	83	91	270.0	6.0	90.0	-13.01	-0.15	0.01
148	91	94	200.0	6.0	90.0	-1.03	-0.01	0.00
149	83	95	200.0	6.0	135.0	-4.49	-0.05	0.00
150	83	82	270.0	6.0	90.0	11.81	0.13	0.01
151	82	79	270.0	6.0	90.0	11.81	0.13	0.01
152	99	100	270.0	10.0	150.0	57.39	0.23	0.01
153	99	115	540.0	6.0	135.0	10.00	0.11	0.01
154	99	96	270.0	10.0	150.0	-72.40	-0.30	0.01
155	96	95	270.0	10.0	150.0	-69.01	-0.28	0.01
156	95	94	270.0	10.0	150.0	-81.18	-0.33	0.01
157	95	118	270.0	6.0	135.0	-7.32	-0.08	0.00
158	96	117	270.0	6.0	150.0	-3.30	-0.04	0.00
159	117	116	270.0	16.0	135.0	217.88	0.35	0.01
160	117	118	300.0	16.0	135.0	-221.27	-0.35	0.01
161	118	120	270.0	16.0	135.0	-257.92	-0.41	0.01
162	118	119	270.0	8.0	150.0	24.33	0.28	0.02
163	120	123	270.0	16.0	135.0	-272.92	-0.44	0.01
164	123	125	270.0	16.0	135.0	-286.73	-0.46	0.02
165	125	98	390.0	16.0	135.0	-388.69	-0.62	0.04
166	125	124	270.0	6.0	150.0	13.74	0.16	0.01
167	98	127	250.0	6.0	90.0	16.55	0.19	0.02
168	127	126	120.0	6.0	90.0	16.55	0.19	0.01
169	126	124	240.0	6.0	90.0	16.55	0.19	0.02
170	124	122	270.0	6.0	90.0	30.28	0.34	0.06
171	122	132	300.0	6.0	90.0	37.28	0.42	0.10
172	132	133	500.0	6.0	90.0	32.28	0.37	0.13
173	122	121	270.0	6.0	90.0	-7.00	-0.08	0.00
174	121	119	270.0	6.0	90.0	-7.00	-0.08	0.00
175	119	113	800.0	6.0	90.0	14.33	0.16	0.05
176	116	115	240.0	16.0	135.0	217.88	0.35	0.01
177	115	114	270.0	16.0	135.0	227.89	0.36	0.01
178	114	112	270.0	16.0	135.0	222.89	0.36	0.01
179	112	111	270.0	16.0	135.0	212.74	0.34	0.01
180	112	249	100.0	6.0	90.0	20.84	0.24	0.01
181	249	113	270.0	6.0	90.0	3.88	0.04	0.00
182	249	111	270.0	6.0	90.0	-5.21	-0.06	0.00
183	111	110	270.0	6.0	135.0	15.64	0.18	0.01
184	110	109	270.0	6.0	90.0	18.41	0.21	0.02

Tillamook Water Commission Master Plan
Existing System Hydraulic Analysis
Pipe Table

Input						Output		
Pipe	UpNode	DnNode	Length ft	Diameter in	Roughness	Flow US gpm	Velocity ft/sec	HeadLoss ft
185	109	194	270.0	6.0	135.0	30.32	0.34	0.03
186	194	193	270.0	6.0	135.0	30.32	0.34	0.03
187	193	192	270.0	6.0	135.0	30.32	0.34	0.03
188	192	191	270.0	6.0	90.0	30.32	0.34	0.06
189	191	190	270.0	6.0	90.0	30.32	0.34	0.06
190	190	195	270.0	6.0	90.0	25.32	0.29	0.04
191	195	180	270.0	6.0	90.0	20.32	0.23	0.03
192	180	179	270.0	6.0	90.0	8.07	0.09	0.01
193	179	177	270.0	6.0	90.0	8.07	0.09	0.01
194	180	178	270.0	6.0	90.0	12.25	0.14	0.01
195	178	177	270.0	6.0	90.0	-3.07	-0.03	0.00
196	178	181	270.0	6.0	90.0	15.32	0.17	0.02
197	181	165	270.0	6.0	135.0	32.28	0.37	0.03
198	181	182	270.0	6.0	90.0	-16.96	-0.19	0.02
199	182	183	270.0	6.0	90.0	-21.96	-0.25	0.03
200	183	162	270.0	6.0	90.0	15.06	0.17	0.02
201	183	184	270.0	6.0	90.0	-37.02	-0.42	0.09
202	184	185	270.0	6.0	90.0	-37.02	-0.42	0.09
203	185	111	270.0	6.0	90.0	-42.02	-0.48	0.11
204	249	161	300.0	4.0	90.0	22.16	0.57	0.28
205	161	164	220.0	6.0	135.0	22.16	0.25	0.01
206	164	162	270.0	6.0	135.0	22.16	0.25	0.02
207	162	159	270.0	6.0	90.0	1.12	0.01	0.00
208	162	163	270.0	6.0	135.0	36.11	0.41	0.04
209	163	165	270.0	6.0	135.0	31.11	0.35	0.03
210	165	150	270.0	6.0	135.0	-8.63	-0.10	0.00
211	150	158	270.0	6.0	90.0	-19.32	-0.22	0.03
212	158	159	270.0	6.0	90.0	-24.32	-0.28	0.04
213	159	160	540.0	4.0	120.0	-18.22	-0.47	0.20
214	160	113	270.0	4.0	120.0	-18.22	-0.47	0.10
215	159	138	370.0	6.0	90.0	-4.98	-0.06	0.00
216	150	140	420.0	6.0	90.0	7.84	0.09	0.01
217	150	151	270.0	2.0	135.0	2.84	0.29	0.08
218	151	152	300.0	2.0	90.0	2.84	0.29	0.18
219	152	153	250.0	2.0	90.0	-2.16	-0.22	0.09
220	153	154	200.0	2.0	90.0	-2.16	-0.22	0.07
221	154	148	740.0	6.0	150.0	-20.14	-0.23	0.03
222	154	155	400.0	2.0	135.0	17.98	1.84	3.47
223	155	156	220.0	2.0	150.0	17.98	1.84	1.57
224	156	171	100.0	2.0	150.0	-6.90	-0.70	0.12
225	156	170	150.0	2.0	150.0	-20.12	-2.05	1.32
226	170	169	200.0	2.0	150.0	-25.12	-2.57	2.65
227	171	172	120.0	2.0	150.0	-6.90	-0.70	0.15
228	172	174	75.0	2.0	150.0	-6.90	-0.70	0.09
229	173	174	100.0	2.0	150.0	31.90	3.26	2.07
230	173	169	75.0	2.0	150.0	-31.90	-3.26	1.55

Tillamook Water Commission Master Plan
Existing System Hydraulic Analysis
Pipe Table

Input						Output		
Pipe	UpNode	DnNode	Length ft	Diameter in	Roughness	Flow US gpm	Velocity ft/sec	HeadLoss ft
231	169	168	500.0	6.0	90.0	-57.02	-0.65	0.37
232	168	167	270.0	6.0	90.0	-72.02	-0.82	0.31
233	167	166	300.0	6.0	90.0	-72.02	-0.82	0.34
234	166	165	270.0	6.0	135.0	-72.02	-0.82	0.15
235	148	147	350.0	6.0	150.0	-20.14	-0.23	0.01
236	146	147	150.0	6.0	150.0	25.14	0.29	0.01
237	146	145	270.0	6.0	150.0	-3.95	-0.04	0.00
238	146	141	270.0	6.0	150.0	-21.18	-0.24	0.01
239	145	144	310.0	6.0	150.0	-3.95	-0.04	0.00
240	142	144	270.0	4.0	90.0	3.95	0.10	0.01
241	142	141	580.0	6.0	150.0	-3.48	-0.04	0.00
242	142	143	270.0	4.0	90.0	-5.48	-0.14	0.02
243	143	140	270.0	6.0	90.0	-5.48	-0.06	0.00
244	139	140	780.0	6.0	90.0	-2.36	-0.03	0.00
245	139	141	310.0	6.0	150.0	24.66	0.28	0.02
246	139	136	720.0	6.0	90.0	-22.30	-0.25	0.09
247	136	137	370.0	6.0	90.0	9.98	0.11	0.01
248	137	138	260.0	6.0	90.0	4.98	0.06	0.00
249	136	134	100.0	6.0	90.0	-32.28	-0.37	0.03
250	133	134	280.0	6.0	90.0	32.28	0.37	0.07
251	200	202	650.0	8.0	150.0	-8.84	-0.06	0.00
252	199	201	650.0	12.0	150.0	93.84	0.27	0.02
253	201	203	400.0	12.0	150.0	93.84	0.27	0.01
254	202	204	400.0	8.0	150.0	-8.84	-0.06	0.00
255	204	205	500.0	8.0	150.0	-13.84	-0.09	0.00
256	205	206	100.0	8.0	135.0	-28.84	-0.18	0.00
257	203	206	500.0	12.0	150.0	93.84	0.27	0.01
258	206	207	500.0	12.0	150.0	65.00	0.18	0.01
259	207	208	250.0	12.0	150.0	65.00	0.18	0.00
260	208	209	250.0	12.0	150.0	65.00	0.18	0.00
261	209	210	100.0	8.0	135.0	50.06	0.32	0.01
262	209	212	690.0	8.0	150.0	14.94	0.10	0.00
263	210	211	688.0	12.0	150.0	35.06	0.10	0.00
264	211	214	400.0	12.0	150.0	35.06	0.10	0.00
265	212	213	530.0	8.0	150.0	14.94	0.10	0.00
266	214	216	900.0	12.0	150.0	20.06	0.06	0.00
267	216	215	100.0	12.0	135.0	20.06	0.06	0.00
268	213	215	900.0	8.0	150.0	14.94	0.10	0.01
269	215	217	490.0	8.0	150.0	7.84	0.05	0.00
270	217	218	807.0	8.0	150.0	7.84	0.05	0.00
271	215	219	810.0	8.0	150.0	12.16	0.08	0.00
272	218	219	528.0	8.0	150.0	7.84	0.05	0.00
273	219	220	320.0	8.0	150.0	5.00	0.03	0.00
274	98	221	450.0	18.0	120.0	-405.24	-0.51	0.04
275	221	223	520.0	18.0	120.0	-405.24	-0.51	0.04
276	223	224	950.0	18.0	120.0	-425.24	-0.54	0.08

Tillamook Water Commission Master Plan

Existing System Hydraulic Analysis

Pipe Table

Input						Output		
Pipe	UpNode	DnNode	Length ft	Diameter in	Roughness	Flow US gpm	Velocity ft/sec	HeadLoss ft
277	97	222	540.0	12.0	120.0	-75.16	-0.21	0.01
278	222	225	800.0	12.0	120.0	-75.16	-0.21	0.02
279	225	226	1100.0	12.0	120.0	-80.16	-0.23	0.03
280	224	227	1200.0	18.0	120.0	-425.24	-0.54	0.10
281	226	229	2600.0	12.0	120.0	-184.76	-0.52	0.34
282	227	228	700.0	18.0	120.0	-425.24	-0.54	0.06
283	228	243	1100.0	16.0	120.0	-430.24	-0.69	0.17
284	243	230	270.0	16.0	120.0	-442.24	-0.71	0.04
285	230	232	4600.0	16.0	120.0	-443.24	-0.71	0.75
286	229	244	650.0	12.0	120.0	-199.76	-0.57	0.10
287	244	231	600.0	12.0	120.0	-235.76	-0.67	0.12
288	231	233	2900.0	12.0	120.0	-235.76	-0.67	0.60
289	233	235	250.0	12.0	120.0	-240.76	-0.68	0.05
290	232	234	250.0	16.0	120.0	-443.24	-0.71	0.04
291	234	237	3100.0	24.0	120.0	-504.24	-0.36	0.09
292	235	236	3100.0	16.0	120.0	-240.76	-0.38	0.16
293	236	237	100.0	16.0	120.0	-280.76	-0.45	0.01
294	237	238	150.0	24.0	120.0	-785.00	-0.56	0.01
295	238	239	1250.0	12.0	120.0	45.00	0.13	0.01
296	238	240	1220.0	24.0	135.0	-830.00	-0.59	0.07
297	240	241	900.0	24.0	135.0	-830.00	-0.59	0.05
298	241	242	480.0	24.0	135.0	-830.00	-0.59	0.03
299	242	900	200.0	24.0	135.0	-830.00	-0.59	0.01

Tillamook Water Commission Master Plan

Existing System Hydraulic Analysis

Node Table

Demand = 830 gpm

Flowfactor = 1.0

Input			Output		Input	
Node	Elevation ft	Demand US gpm	Pressure psi	HGL ft	Status	Demand Avg.
1	30.0	5.0	79.58	213.82		5.0
2	30.0	0.0	79.58	213.82		0.0
3	40.0	0.0	75.25	213.82		0.0
4	44.0	0.0	73.51	213.82		0.0
5	43.0	5.0	73.95	213.82		5.0
6	30.0	0.0	79.58	213.82		0.0
7	30.0	0.0	79.58	213.83		0.0
8	30.0	0.0	79.58	213.82		0.0
9	35.0	0.0	0.00	0.00	closed	0.0
10	30.0	5.0	79.58	213.82		5.0
11	30.0	0.0	79.58	213.83		0.0
12	30.0	5.0	79.58	213.83		5.0
13	30.0	0.0	79.58	213.83		0.0
14	30.0	0.0	79.58	213.83		0.0
15	20.0	5.0	83.91	213.83		5.0
16	20.0	0.0	83.91	213.83		0.0
17	20.0	5.0	83.91	213.83		5.0
18	32.0	0.0	78.71	213.81		0.0
19	35.0	0.0	77.41	213.81		0.0
20	38.0	5.0	76.11	213.81		5.0
21	38.0	0.0	76.11	213.81		0.0
22	35.0	0.0	77.41	213.82		0.0
23	38.0	0.0	76.11	213.81		0.0
24	25.0	5.0	81.75	213.84		5.0
25	20.0	25.0	83.92	213.85		25.0
26	20.0	3.0	83.92	213.86		3.0
27	20.0	0.0	83.93	213.87		0.0
28	20.0	0.0	83.92	213.87		0.0
29	20.0	5.0	83.92	213.87		5.0
30	20.0	0.0	83.92	213.85		0.0
31	20.0	5.0	83.92	213.85		5.0
32	20.0	0.0	83.92	213.87		0.0
33	20.0	0.0	83.92	213.87		0.0
34	20.0	5.0	83.92	213.86		5.0
35	20.0	0.0	83.93	213.87		0.0
36	20.0	0.0	83.91	213.84		0.0
37	20.0	0.0	83.91	213.82		0.0
38	20.0	0.0	83.90	213.82		0.0
39	20.0	5.0	83.90	213.80		5.0
40	20.0	0.0	83.90	213.81		0.0
41	20.0	0.0	83.90	213.80		0.0
42	20.0	0.0	83.90	213.80		0.0
43	20.0	0.0	83.91	213.83		0.0

Tillamook Water Commission Master Plan

Existing System Hydraulic Analysis

Node Table

Demand = 830 gpm

Flowfactor = 1.0

Input			Output		Input	
Node	Elevation ft	Demand US gpm	Pressure psi	HGL ft	Status	Demand Avg.
44	20.0	5.0	83.91	213.83		5.0
45	20.0	0.0	83.90	213.81		0.0
46	20.0	0.0	83.90	213.81		0.0
47	20.0	0.0	83.89	213.80		0.0
48	20.0	0.0	83.89	213.80		0.0
49	20.0	5.0	83.89	213.79		5.0
50	20.0	0.0	83.89	213.79		0.0
51	20.0	0.0	83.89	213.79		0.0
52	20.0	0.0	83.89	213.79		0.0
53	20.0	0.0	83.89	213.78		0.0
54	20.0	5.0	83.89	213.78		5.0
55	20.0	0.0	83.89	213.79		0.0
56	20.0	0.0	83.89	213.80		0.0
57	20.0	0.0	83.89	213.78		0.0
58	20.0	0.0	83.88	213.77		0.0
59	20.0	5.0	83.88	213.77		5.0
60	20.0	18.0	83.88	213.77		18.0
61	20.0	0.0	83.89	213.78		0.0
62	20.0	0.0	83.88	213.77		0.0
63	20.0	0.0	83.88	213.77		0.0
64	20.0	5.0	83.88	213.77		5.0
65	20.0	0.0	83.88	213.77		0.0
66	20.0	0.0	83.88	213.77		0.0
67	20.0	0.0	83.89	213.79		0.0
68	20.0	0.0	83.89	213.80		0.0
69	20.0	5.0	83.88	213.76		5.0
70	20.0	0.0	83.88	213.76		0.0
71	20.0	0.0	83.88	213.76		0.0
72	20.0	15.0	83.88	213.77		15.0
73	20.0	0.0	83.89	213.79		0.0
74	20.0	5.0	83.88	213.77		5.0
75	20.0	0.0	83.90	213.80		0.0
76	20.0	0.0	83.90	213.80		0.0
77	20.0	0.0	83.90	213.80		0.0
78	20.0	0.0	83.90	213.81		0.0
79	20.0	5.0	83.90	213.81		5.0
80	20.0	0.0	83.90	213.82		0.0
81	20.0	0.0	0.00	0.00	closed	0.0
82	20.0	0.0	83.90	213.82		0.0
83	20.0	0.0	83.91	213.83		0.0
84	20.0	5.0	83.91	213.83		5.0
85	20.0	0.0	83.91	213.83		0.0
86	20.0	0.0	83.91	213.84		0.0

Tillamook Water Commission Master Plan

Existing System Hydraulic Analysis

Node Table

Demand = 830 gpm

Flowfactor = 1.0

Input			Output		Input	
Node	Elevation ft	Demand US gpm	Pressure psi	HGL ft	Status	Demand Avg.
87	20.0	0.0	83.92	213.85		0.0
88	20.0	0.0	83.92	213.85		0.0
89	20.0	5.0	83.93	213.87		5.0
90	20.0	0.0	83.92	213.85		0.0
91	20.0	0.0	83.91	213.84		0.0
92	20.0	0.0	83.92	213.86		0.0
93	20.0	0.0	83.93	213.87		0.0
94	20.0	5.0	83.91	213.84		5.0
95	20.0	15.0	83.91	213.83		15.0
96	20.0	0.0	83.91	213.82		0.0
97	20.0	15.0	83.93	213.88		15.0
98	20.0	0.0	83.95	213.92		0.0
99	20.0	5.0	83.90	213.81		5.0
100	20.0	15.0	83.90	213.80		15.0
101	20.0	0.0	83.90	213.80		0.0
102	20.0	0.0	83.88	213.77		0.0
103	20.0	0.0	83.88	213.77		0.0
104	20.0	15.0	83.87	213.74		15.0
105	20.0	15.0	83.87	213.75		15.0
106	20.0	0.0	83.88	213.76		0.0
107	20.0	0.0	83.88	213.77		0.0
108	20.0	0.0	83.88	213.77		0.0
109	20.0	5.0	83.87	213.74		5.0
110	20.0	0.0	83.88	213.77		0.0
111	20.0	15.0	83.88	213.77		15.0
112	20.0	0.0	83.89	213.78		0.0
113	20.0	0.0	83.88	213.77		0.0
114	20.0	5.0	83.89	213.79		5.0
115	20.0	0.0	83.90	213.80		0.0
116	20.0	0.0	83.90	213.81		0.0
117	20.0	0.0	83.91	213.82		0.0
118	20.0	5.0	83.91	213.83		5.0
119	20.0	3.0	83.90	213.82		3.0
120	20.0	15.0	83.92	213.85		15.0
121	20.0	0.0	83.90	213.81		0.0
122	20.0	0.0	83.90	213.81		0.0
123	20.0	5.0	83.92	213.86		5.0
124	20.0	0.0	83.93	213.87		0.0
125	20.0	15.0	83.93	213.88		15.0
126	20.0	0.0	83.93	213.89		0.0
127	20.0	0.0	83.94	213.90		0.0
128	20.0	0.0	0.00	0.00	closed	0.0
129	20.0	0.0	0.00	0.00	closed	0.0

Tillamook Water Commission Master Plan

Existing System Hydraulic Analysis

Node Table

Demand = 830 gpm

Flowfactor = 1.0

Input			Output		Input	
Node	Elevation ft	Demand US gpm	Pressure psi	HGL ft	Status	Demand Avg.
130	20.0	0.0	0.00	0.00	closed	0.0
131	20.0	0.0	0.00	0.00	closed	0.0
132	20.0	5.0	83.86	213.71		5.0
133	20.0	0.0	83.80	213.58		0.0
134	20.0	0.0	83.77	213.51		0.0
135	20.0	0.0	0.00	0.00	closed	0.0
136	20.0	0.0	83.76	213.48		0.0
137	20.0	5.0	83.75	213.47		5.0
138	20.0	0.0	83.75	213.47		0.0
139	20.0	0.0	83.72	213.39		0.0
140	20.0	0.0	83.72	213.39		0.0
141	20.0	0.0	83.71	213.37		0.0
142	20.0	5.0	83.71	213.37		5.0
143	20.0	0.0	83.72	213.39		0.0
144	20.0	0.0	83.70	213.36		0.0
145	20.0	0.0	83.70	213.36		0.0
146	20.0	0.0	83.70	213.36		0.0
147	20.0	5.0	83.70	213.35		5.0
148	20.0	0.0	83.69	213.33		0.0
149	20.0	0.0	0.00	0.00	closed	0.0
150	20.0	0.0	83.72	213.40		0.0
151	20.0	0.0	83.69	213.32		0.0
152	20.0	5.0	83.61	213.14		5.0
153	20.0	0.0	83.65	213.23		0.0
154	20.0	0.0	83.68	213.30		0.0
155	20.0	0.0	82.18	209.83		0.0
156	20.0	45.0	81.50	208.26		45.0
157	20.0	0.0	0.00	0.00	closed	0.0
158	20.0	5.0	83.73	213.42		5.0
159	20.0	0.0	83.75	213.46		0.0
160	20.0	0.0	83.84	213.67		0.0
161	20.0	0.0	83.76	213.49		0.0
162	20.0	0.0	83.75	213.46		0.0
163	20.0	5.0	83.73	213.42		5.0
164	20.0	0.0	83.76	213.48		0.0
165	20.0	0.0	83.72	213.39		0.0
166	20.0	0.0	83.66	213.25		0.0
167	20.0	0.0	83.51	212.91		0.0
168	20.0	15.0	83.38	212.60		15.0
169	20.0	0.0	83.22	212.23		0.0
170	20.0	5.0	82.07	209.58		5.0
171	20.0	0.0	81.55	208.38		0.0
172	20.0	0.0	81.61	208.52		0.0

Tillamook Water Commission Master Plan

Existing System Hydraulic Analysis

Node Table

Demand = 830 gpm

Flowfactor = 1.0

Input			Output		Input	
Node	Elevation ft	Demand US gpm	Pressure psi	HGL ft	Status	Demand Avg.
173	20.0	0.0	82.55	210.68		0.0
174	20.0	25.0	81.65	208.61		25.0
175	20.0	0.0	0.00	0.00	closed	0.0
176	20.0	0.0	0.00	0.00	closed	0.0
177	20.0	5.0	83.74	213.44		5.0
178	20.0	0.0	83.74	213.44		0.0
179	20.0	0.0	83.74	213.45		0.0
180	20.0	0.0	83.75	213.45		0.0
181	20.0	0.0	83.73	213.43		0.0
182	20.0	5.0	83.74	213.45		5.0
183	20.0	0.0	83.76	213.48		0.0
184	20.0	0.0	83.80	213.57		0.0
185	20.0	5.0	83.84	213.66		5.0
186	20.0	0.0	0.00	0.00	closed	0.0
187	20.0	0.0	0.00	0.00	closed	0.0
188	20.0	0.0	0.00	0.00	closed	0.0
189	20.0	0.0	0.00	0.00	closed	0.0
190	20.0	5.0	83.78	213.53		5.0
191	20.0	0.0	83.81	213.59		0.0
192	20.0	0.0	83.83	213.65		0.0
193	20.0	0.0	83.85	213.68		0.0
194	20.0	0.0	83.86	213.71		0.0
195	20.0	5.0	83.76	213.48		5.0
196	20.0	0.0	0.00	0.00	closed	0.0
197	20.0	0.0	0.00	0.00	closed	0.0
198	20.0	0.0	0.00	0.00	closed	0.0
199	12.0	5.0	87.33	213.72		5.0
200	12.0	15.0	87.31	213.68		15.0
201	12.0	0.0	87.32	213.71		0.0
202	12.0	0.0	87.31	213.68		0.0
203	12.0	0.0	87.31	213.70		0.0
204	12.0	5.0	87.31	213.68		5.0
205	13.0	15.0	86.87	213.68		15.0
206	13.0	0.0	86.88	213.68		0.0
207	12.0	0.0	87.31	213.68		0.0
208	12.0	0.0	87.30	213.67		0.0
209	12.0	0.0	87.30	213.67		0.0
210	12.0	15.0	87.30	213.66		15.0
211	11.0	0.0	87.73	213.66		0.0
212	11.0	0.0	87.73	213.67		0.0
213	12.0	0.0	87.30	213.66		0.0
214	12.0	15.0	87.30	213.66		15.0
215	17.0	15.0	85.13	213.66		15.0

Tillamook Water Commission Master Plan

Existing System Hydraulic Analysis

Node Table

Demand = 830 gpm

Flowfactor = 1.0

	Input		Output		Input	
Node	Elevation ft	Demand US gpm	Pressure psi	HGL ft	Status	Demand Avg.
216	17.0	0.0	85.13	213.66		0.0
217	17.0	0.0	85.13	213.66		0.0
218	17.0	0.0	85.13	213.66		0.0
219	17.0	15.0	85.13	213.66		15.0
220	17.0	5.0	85.13	213.66		5.0
221	20.0	0.0	83.96	213.95		0.0
222	20.0	0.0	83.94	213.89		0.0
223	20.0	20.0	83.98	213.99		20.0
224	20.0	0.0	84.01	214.07		0.0
225	20.0	5.0	83.95	213.91		5.0
226	20.0	0.0	83.96	213.94		0.0
227	20.0	0.0	84.06	214.17		0.0
228	20.0	5.0	84.08	214.23		5.0
229	20.0	15.0	84.11	214.29		15.0
230	20.0	1.0	84.18	214.45		1.0
231	20.0	0.0	84.20	214.51		0.0
232	35.0	0.0	78.01	215.20		0.0
233	35.0	5.0	77.97	215.10		5.0
234	35.0	61.0	78.03	215.24		61.0
235	35.0	0.0	77.99	215.16		0.0
236	100.0	40.0	49.92	215.32		40.0
237	100.0	0.0	49.93	215.33		0.0
238	100.0	0.0	49.93	215.34		0.0
239	200.0	45.0	6.63	215.33		45.0
240	110.0	0.0	45.63	215.41		0.0
241	150.0	0.0	28.34	215.46		0.0
242	180.0	0.0	15.36	215.49		0.0
243	20.0	12.0	84.16	214.40		12.0
244	30.0	36.0	79.82	214.38		36.0
245	30.0	6.0	79.58	213.82		6.0
246	30.0	0.0	79.58	213.82		0.0
247	37.0	0.0	76.54	213.81		0.0
248	35.0	0.0	77.41	213.81		0.0
249	20.0	0.0	83.88	213.77		0.0
250	20.0	0.0	83.92	213.87		0.0
900	185.0	0.0	13.20	215.50		0.0
901	0.0	0.0	92.56	213.82		0.0
902	0.0	0.0	96.89	223.82		0.0

Tillamook Water Commission Master Plan

Proposed System Hydraulic Analysis

Pipe Table

	Input					Output			Input
Pipe	UpNode	DnNode	Length	Diameter	Roughness	Flow	Velocity	HeadLoss	Status
			ft	in		US gpm	ft/sec	ft	OPEN
1	901	1	300.0	10.0	150.0	0.00	0.00	0.00	
2	1	2	900.0	12.0	150.0	-13.49	-0.04	0.00	
3	2	245	850.0	12.0	150.0	10.62	0.03	0.00	
4	245	3	400.0	6.0	150.0	-5.57	-0.06	0.00	
5	2	6	50.0	6.0	135.0	34.30	0.39	0.01	
6	2	7	215.0	12.0	150.0	-58.41	-0.17	0.00	
7	7	8	525.0	12.0	135.0	146.55	0.42	0.04	
8	8	10	50.0	8.0	135.0	146.55	0.94	0.02	
9	902	10	310.0	8.0	135.0	0.00	0.00	10.00	
10	10	18	310.0	12.0	150.0	141.85	0.40	0.02	
11	10	6	700.0	4.0	140.0	-8.80	-0.22	0.05	
12	6	5	800.0	6.0	135.0	25.50	0.29	0.06	
13	5	4	950.0	12.0	150.0	-191.09	-0.54	0.09	
14	4	246	440.0	4.0	135.0	5.57	0.14	0.01	
15	246	3	460.0	6.0	150.0	5.57	0.06	0.00	
16	5	20	1100.0	12.0	150.0	203.09	0.58	0.11	
17	20	21	550.0	12.0	150.0	222.79	0.63	0.07	
18	21	23	210.0	12.0	150.0	284.86	0.81	0.04	
19	21	247	310.0	6.0	150.0	-62.07	-0.70	0.10	
20	247	19	310.0	6.0	150.0	-45.59	-0.52	0.06	
21	247	248	550.0	6.0	150.0	-16.49	-0.19	0.02	
22	248	18	250.0	6.0	150.0	-49.67	-0.56	0.06	
23	18	19	530.0	12.0	150.0	92.17	0.26	0.01	
24	19	22	210.0	12.0	150.0	46.59	0.13	0.00	
25	23	56	500.0	12.0	150.0	669.62	1.90	0.47	
26	22	17	670.0	12.0	150.0	-338.17	-0.96	0.18	
27	17	11	1500.0	10.0	150.0	39.70	0.16	0.02	
28	11	7	650.0	12.0	150.0	204.96	0.58	0.07	
29	11	12	570.0	12.0	150.0	-165.26	-0.47	0.04	
30	12	13	270.0	10.0	150.0	-178.76	-0.73	0.05	
31	13	16	1210.0	10.0	150.0	-136.68	-0.56	0.15	
32	13	14	200.0	8.0	150.0	-42.08	-0.27	0.01	
33	14	15	1210.0	8.0	150.0	-42.08	-0.27	0.05	
34	15	17	380.0	12.0	150.0	391.36	1.11	0.13	
35	15	16	200.0	12.0	150.0	-446.93	-1.27	0.09	
36	16	24	600.0	12.0	150.0	-583.61	-1.66	0.44	
37	24	25	1100.0	12.0	150.0	-793.76	-2.25	1.42	
38	25	26	720.0	12.0	150.0	-861.23	-2.44	1.08	
39	26	27	240.0	12.0	150.0	-869.33	-2.47	0.37	
40	27	226	1700.0	12.0	135.0	-1533.83	-4.35	9.02	
41	27	28	450.0	12.0	150.0	664.50	1.89	0.42	
42	28	29	100.0	12.0	150.0	578.90	1.64	0.07	
43	29	30	150.0	6.0	70.0	113.66	1.29	0.63	
44	30	36	300.0	6.0	70.0	94.21	1.07	0.90	
45	36	37	230.0	6.0	70.0	94.21	1.07	0.69	
46	37	38	530.0	6.0	135.0	55.82	0.63	0.18	
47	37	40	260.0	6.0	70.0	79.23	0.90	0.56	

Tillamook Water Commission Master Plan

Proposed System Hydraulic Analysis

Pipe Table

Input						Output			Input
Pipe	UpNode	DnNode	Length	Diameter	Roughness	Flow	Velocity	HeadLoss	Status
			ft	in		US gpm	ft/sec	ft	OPEN
48	37	43	490.0	6.0	135.0	-40.84	-0.46	0.09	
49	38	39	260.0	4.0	135.0	55.82	1.43	0.63	
50	39	41	270.0	4.0	135.0	42.32	1.08	0.39	
51	41	50	270.0	6.0	70.0	56.82	0.64	0.32	
52	41	42	530.0	6.0	70.0	-14.50	-0.16	0.05	
53	49	50	510.0	6.0	70.0	-12.61	-0.14	0.04	
54	50	51	250.0	6.0	70.0	44.21	0.50	0.18	
55	51	52	265.0	4.0	135.0	44.21	1.13	0.42	
56	52	53	265.0	4.0	135.0	44.21	1.13	0.42	
57	53	54	325.0	6.0	135.0	-21.21	-0.24	0.02	
58	54	55	400.0	12.0	150.0	-669.62	-1.90	0.38	
59	55	56	500.0	12.0	150.0	-669.62	-1.90	0.47	
60	53	57	260.0	6.0	135.0	65.42	0.74	0.12	
61	57	58	270.0	4.0	135.0	28.82	0.74	0.19	
62	57	60	510.0	6.0	135.0	36.60	0.42	0.08	
63	58	59	510.0	4.0	135.0	28.82	0.74	0.36	
64	59	60	270.0	6.0	70.0	-70.91	-0.80	0.48	
65	59	62	300.0	6.0	135.0	86.24	0.98	0.23	
66	60	63	250.0	6.0	135.0	-3.49	-0.04	0.00	
67	60	61	270.0	6.0	70.0	-79.41	-0.90	0.59	
68	61	49	270.0	6.0	70.0	-79.41	-0.90	0.59	
69	49	47	430.0	6.0	135.0	-15.56	-0.18	0.01	
70	49	42	270.0	6.0	70.0	-64.73	-0.73	0.40	
71	42	40	270.0	6.0	70.0	-79.23	-0.90	0.58	
72	30	31	400.0	6.0	70.0	19.45	0.22	0.06	
73	29	32	425.0	12.0	150.0	451.75	1.28	0.19	
74	28	250	425.0	6.0	150.0	85.59	0.97	0.26	
75	250	32	100.0	6.0	150.0	23.55	0.27	0.01	
76	250	33	540.0	6.0	150.0	62.04	0.70	0.18	
77	32	89	270.0	12.0	150.0	318.39	0.90	0.06	
78	89	35	710.0	12.0	150.0	304.90	0.87	0.16	
79	33	34	270.0	6.0	150.0	62.04	0.70	0.09	
80	34	93	270.0	6.0	150.0	-30.90	-0.35	0.02	
81	93	35	100.0	12.0	150.0	-304.90	-0.87	0.02	
82	93	97	400.0	10.0	150.0	-471.87	-1.93	0.48	
83	93	125	270.0	12.0	135.0	103.01	0.29	0.01	
84	93	92	270.0	10.0	150.0	642.87	2.63	0.57	
85	92	90	200.0	6.0	70.0	22.10	0.25	0.04	
86	92	94	270.0	10.0	150.0	640.54	2.62	0.57	
87	92	123	270.0	6.0	135.0	-19.78	-0.22	0.01	
88	90	34	270.0	6.0	70.0	-79.44	-0.90	0.59	
89	90	87	270.0	6.0	70.0	26.59	0.30	0.08	
90	90	91	270.0	6.0	70.0	74.95	0.85	0.53	
91	87	88	265.0	6.0	70.0	-46.40	-0.53	0.21	
92	87	86	270.0	6.0	70.0	72.99	0.83	0.50	
93	88	31	265.0	6.0	70.0	-46.40	-0.53	0.21	
94	31	44	270.0	6.0	70.0	116.47	1.32	1.19	

Tillamook Water Commission Master Plan

Proposed System Hydraulic Analysis

Pipe Table

Input						Output			Input
Pipe	UpNode	DnNode	Length	Diameter	Roughness	Flow	Velocity	HeadLoss	Status
			ft	in		US gpm	ft/sec	ft	OPEN
95	32	31	270.0	6.0	150.0	156.91	1.78	0.51	
96	44	43	270.0	6.0	150.0	102.98	1.17	0.23	
97	43	45	300.0	4.0	135.0	53.85	1.38	0.68	
98	43	85	270.0	6.0	135.0	8.29	0.09	0.00	
99	85	84	300.0	6.0	135.0	8.29	0.09	0.00	
100	45	46	200.0	4.0	135.0	53.85	1.38	0.45	
101	46	47	220.0	4.0	135.0	53.85	1.38	0.50	
102	47	48	90.0	4.0	135.0	38.29	0.98	0.11	
103	48	68	270.0	6.0	135.0	38.29	0.43	0.05	
104	68	77	270.0	6.0	135.0	-36.85	-0.42	0.04	
105	68	67	270.0	6.0	70.0	75.13	0.85	0.53	
106	67	73	270.0	6.0	70.0	2.82	0.03	0.00	
107	67	66	270.0	6.0	70.0	72.31	0.82	0.49	
108	66	64	270.0	6.0	135.0	16.98	0.19	0.01	
109	64	63	200.0	6.0	135.0	3.49	0.04	0.00	
110	66	65	380.0	4.0	70.0	31.11	0.79	1.05	
111	66	72	270.0	6.0	135.0	24.22	0.27	0.02	
112	65	62	450.0	6.0	135.0	-86.24	-0.98	0.34	
113	65	69	270.0	6.0	135.0	117.35	1.33	0.36	
114	69	70	300.0	6.0	135.0	103.86	1.18	0.32	
115	70	71	150.0	6.0	135.0	103.86	1.18	0.16	
116	71	200	1000.0	10.0	150.0	1108.31	4.53	5.81	
117	105	104	180.0	12.0	150.0	1840.15	5.22	1.10	
118	104	199	700.0	12.0	150.0	2434.58	6.91	7.19	
119	105	106	270.0	12.0	135.0	-1293.64	-3.67	1.04	
120	106	71	270.0	6.0	70.0	121.66	1.38	1.29	
121	106	109	270.0	6.0	70.0	-13.90	-0.16	0.02	
122	106	107	270.0	16.0	135.0	-1401.40	-2.24	0.30	
123	103	71	240.0	10.0	150.0	882.80	3.61	0.91	
124	103	107	270.0	6.0	70.0	-85.79	-0.97	0.68	
125	103	102	260.0	10.0	150.0	-797.00	-3.26	0.82	
126	107	110	270.0	10.0	150.0	-92.34	-0.38	0.02	
127	108	107	270.0	16.0	135.0	1394.86	2.23	0.30	
128	108	111	240.0	16.0	135.0	-1469.10	-2.34	0.29	
129	108	102	270.0	6.0	135.0	74.24	0.84	0.15	
130	102	74	250.0	6.0	135.0	-43.97	-0.50	0.05	
131	74	72	220.0	6.0	135.0	-57.47	-0.65	0.08	
132	73	72	270.0	6.0	70.0	73.73	0.84	0.51	
133	73	77	270.0	6.0	70.0	-78.38	-0.89	0.57	
134	73	75	270.0	6.0	70.0	7.47	0.08	0.01	
135	101	75	140.0	6.0	70.0	-7.47	-0.08	0.00	
136	101	102	270.0	10.0	150.0	678.79	2.77	0.63	
137	101	112	540.0	6.0	70.0	-32.89	-0.37	0.21	
138	101	100	270.0	10.0	150.0	-638.43	-2.61	0.56	
139	76	100	150.0	6.0	70.0	32.13	0.36	0.06	
140	76	79	270.0	6.0	70.0	-68.62	-0.78	0.45	
141	76	77	270.0	6.0	135.0	36.49	0.41	0.04	

Tillamook Water Commission Master Plan

Proposed System Hydraulic Analysis

Pipe Table

			Input			Output			Input
Pipe	UpNode	DnNode	Length	Diameter	Roughness	Flow	Velocity	HeadLoss	Status
			ft	in		US gpm	ft/sec	ft	OPEN
142	77	78	270.0	6.0	70.0	-78.74	-0.89	0.58	
143	78	80	270.0	6.0	70.0	-78.74	-0.89	0.58	
144	80	84	270.0	6.0	70.0	-78.74	-0.89	0.58	
145	84	86	270.0	6.0	70.0	-72.99	-0.83	0.50	
146	83	84	270.0	6.0	135.0	10.95	0.12	0.00	
147	83	91	270.0	6.0	70.0	-76.65	-0.87	0.55	
148	91	94	200.0	6.0	70.0	-1.69	-0.02	0.00	
149	83	95	200.0	6.0	135.0	-16.41	-0.19	0.01	
150	83	82	270.0	6.0	70.0	82.11	0.93	0.62	
151	82	79	270.0	6.0	70.0	82.11	0.93	0.62	
152	99	100	270.0	10.0	150.0	646.78	2.64	0.58	
153	99	115	540.0	6.0	135.0	28.77	0.33	0.05	
154	99	96	270.0	10.0	150.0	-689.05	-2.82	0.65	
155	96	95	270.0	10.0	150.0	-621.29	-2.54	0.54	
156	95	94	270.0	10.0	150.0	-625.35	-2.55	0.54	
157	95	118	270.0	6.0	135.0	-52.83	-0.60	0.08	
158	96	117	270.0	6.0	150.0	-67.76	-0.77	0.11	
159	117	116	270.0	16.0	135.0	1704.51	2.72	0.43	
160	117	118	300.0	16.0	135.0	-1772.27	-2.83	0.51	
161	118	120	270.0	16.0	135.0	-1874.37	-2.99	0.51	
162	118	119	270.0	6.0	150.0	35.78	0.41	0.03	
163	120	123	270.0	16.0	135.0	-1914.85	-3.06	0.53	
164	123	125	270.0	16.0	135.0	-1948.13	-3.11	0.55	
165	125	98	390.0	16.0	135.0	-1922.52	-3.07	0.77	
166	125	124	270.0	6.0	150.0	36.92	0.42	0.03	
167	98	127	250.0	12.0	135.0	869.62	2.47	0.46	
168	127	126	120.0	12.0	135.0	63.33	0.18	0.00	
169	126	124	240.0	6.0	70.0	63.33	0.72	0.34	
170	124	122	270.0	6.0	70.0	100.25	1.14	0.90	
171	122	132	300.0	6.0	70.0	40.86	0.46	0.19	
172	132	133	500.0	6.0	70.0	27.36	0.31	0.15	
173	122	121	270.0	6.0	70.0	59.39	0.67	0.34	
174	121	119	270.0	6.0	70.0	59.39	0.67	0.34	
175	119	113	800.0	6.0	70.0	87.07	0.99	2.06	
176	116	115	240.0	16.0	135.0	1704.51	2.72	0.38	
177	115	114	270.0	16.0	135.0	1733.28	2.77	0.44	
178	114	112	270.0	16.0	135.0	1719.79	2.74	0.44	
179	112	111	270.0	16.0	135.0	1646.11	2.63	0.40	
180	112	249	100.0	6.0	70.0	40.79	0.46	0.06	
181	249	113	270.0	6.0	70.0	-40.25	-0.46	0.17	
182	249	111	270.0	6.0	70.0	58.98	0.67	0.34	
183	111	110	270.0	6.0	135.0	150.61	1.71	0.57	
184	110	109	270.0	6.0	70.0	54.33	0.62	0.29	
185	109	194	270.0	6.0	135.0	26.94	0.31	0.02	
186	194	193	270.0	6.0	135.0	-23.54	-0.27	0.02	
187	193	192	270.0	6.0	135.0	-65.81	-0.75	0.12	
188	192	191	270.0	6.0	70.0	16.81	0.19	0.03	

Tillamook Water Commission Master Plan

Proposed System Hydraulic Analysis

Pipe Table

Input						Output			Input
Pipe	UpNode	DnNode	Length	Diameter	Roughness	Flow	Velocity	HeadLoss	Status
			ft	in		US gpm	ft/sec	ft	OPEN
189	191	190	270.0	6.0	70.0	-25.33	-0.29	0.07	
190	190	195	270.0	6.0	70.0	-22.80	-0.26	0.06	
191	195	180	270.0	6.0	70.0	-36.29	-0.41	0.14	
192	180	179	270.0	6.0	70.0	-13.12	-0.15	0.02	
193	179	177	270.0	6.0	70.0	-13.12	-0.15	0.02	
194	180	178	270.0	6.0	70.0	-23.17	-0.26	0.06	
195	178	177	270.0	8.0	150.0	55.48	0.35	0.02	
196	178	181	270.0	8.0	150.0	-78.66	-0.50	0.03	
197	181	165	270.0	12.0	135.0	-553.76	-1.57	0.22	
198	181	182	270.0	6.0	70.0	6.98	0.08	0.01	
199	182	183	270.0	6.0	70.0	-6.52	-0.07	0.01	
200	183	162	270.0	6.0	70.0	-53.79	-0.61	0.29	
201	183	184	270.0	6.0	70.0	-31.40	-0.36	0.11	
202	184	185	270.0	6.0	70.0	-31.40	-0.36	0.11	
203	185	111	270.0	6.0	70.0	-44.89	-0.51	0.20	
204	249	161	300.0	4.0	70.0	22.06	0.56	0.44	
205	161	164	220.0	6.0	135.0	22.06	0.25	0.01	
206	164	162	270.0	6.0	135.0	22.06	0.25	0.02	
207	162	159	270.0	6.0	70.0	-70.68	-0.80	0.47	
208	162	163	270.0	6.0	135.0	38.95	0.44	0.05	
209	163	165	270.0	6.0	135.0	25.45	0.29	0.02	
210	165	150	270.0	12.0	135.0	-569.24	-1.62	0.23	
211	150	158	270.0	6.0	70.0	-31.61	-0.36	0.11	
212	158	159	270.0	6.0	70.0	-45.10	-0.51	0.21	
213	159	160	540.0	6.0	150.0	-46.82	-0.53	0.11	
214	160	113	270.0	6.0	150.0	-46.82	-0.53	0.05	
215	159	138	370.0	6.0	70.0	-68.95	-0.78	0.62	
216	150	140	420.0	12.0	135.0	-637.59	-1.81	0.44	
217	150	151	270.0	8.0	150.0	99.97	0.64	0.05	
218	151	152	300.0	8.0	150.0	99.97	0.64	0.06	
219	152	153	250.0	8.0	150.0	86.47	0.55	0.04	
220	153	154	200.0	8.0	150.0	86.47	0.55	0.03	
221	154	148	740.0	6.0	150.0	-86.62	-0.98	0.46	
222	154	155	400.0	8.0	150.0	173.10	1.10	0.22	
223	155	156	220.0	8.0	150.0	173.10	1.10	0.12	
224	156	171	100.0	8.0	150.0	43.31	0.28	0.00	
225	156	170	150.0	2.0	150.0	8.34	0.85	0.26	
226	170	169	200.0	2.0	150.0	-5.15	-0.53	0.14	
227	171	172	120.0	8.0	150.0	43.31	0.28	0.01	
228	172	174	75.0	8.0	150.0	43.31	0.28	0.00	
229	173	174	100.0	2.0	150.0	-4.71	-0.48	0.06	
230	173	169	75.0	2.0	150.0	4.71	0.48	0.04	
231	169	168	500.0	6.0	70.0	-0.45	-0.01	0.00	
232	168	167	270.0	6.0	70.0	-40.93	-0.46	0.17	
233	167	166	300.0	6.0	70.0	-40.93	-0.46	0.19	
234	166	165	270.0	6.0	135.0	-40.93	-0.46	0.05	
235	148	147	350.0	6.0	150.0	-86.62	-0.98	0.22	

Tillamook Water Commission Master Plan

Proposed System Hydraulic Analysis

Pipe Table

			Input			Output			Input
Pipe	UpNode	DnNode	Length	Diameter	Roughness	Flow	Velocity	HeadLoss	Status
			ft	in		US gpm	ft/sec	ft	OPEN
236	146	147	150.0	6.0	150.0	100.12	1.14	0.12	
237	146	145	270.0	6.0	150.0	-9.81	-0.11	0.00	
238	146	141	270.0	6.0	150.0	-90.31	-1.02	0.18	
239	145	144	310.0	6.0	150.0	-9.81	-0.11	0.00	
240	142	144	270.0	4.0	70.0	9.81	0.25	0.09	
241	142	141	580.0	6.0	150.0	-40.21	-0.46	0.09	
242	142	143	270.0	4.0	70.0	16.90	0.43	0.24	
243	143	140	270.0	6.0	70.0	16.90	0.19	0.03	
244	139	140	780.0	12.0	135.0	620.69	1.76	0.77	
245	139	141	310.0	6.0	150.0	130.51	1.48	0.41	
246	139	136	720.0	12.0	135.0	-751.21	-2.13	1.02	
247	136	137	370.0	6.0	70.0	82.45	0.94	0.86	
248	137	138	260.0	6.0	70.0	68.95	0.78	0.44	
249	136	134	100.0	12.0	135.0	-833.65	-2.37	0.17	
250	133	134	280.0	12.0	135.0	833.65	2.37	0.48	
251	200	202	650.0	8.0	150.0	1067.83	6.82	10.45	
252	199	201	650.0	12.0	150.0	2421.09	6.87	6.60	
253	201	203	400.0	12.0	150.0	2421.09	6.87	4.06	
254	202	204	400.0	8.0	150.0	1067.83	6.82	6.43	
255	204	205	500.0	12.0	150.0	1054.33	2.99	1.09	
256	205	206	100.0	12.0	135.0	134.00	0.38	0.01	
257	203	206	500.0	12.0	150.0	2421.09	6.87	5.08	
258	206	207	500.0	12.0	150.0	2555.09	7.25	5.61	
259	207	208	250.0	12.0	150.0	2555.09	7.25	2.81	
260	208	209	250.0	12.0	150.0	2555.09	7.25	2.81	
261	211	212	100.0	12.0	135.0	-1714.80	-4.87	0.65	
262	209	212	690.0	12.0	150.0	3434.94	9.75	13.40	
263	210	211	688.0	12.0	150.0	-40.48	-0.11	0.00	
264	211	214	400.0	12.0	150.0	1674.32	4.75	2.05	
265	212	213	530.0	12.0	150.0	1720.14	4.88	2.86	
266	214	216	900.0	12.0	150.0	1633.83	4.64	4.41	
267	216	215	100.0	12.0	135.0	1633.83	4.64	0.60	
268	213	215	900.0	12.0	150.0	1720.14	4.88	4.86	
269	215	217	490.0	8.0	150.0	9.81	0.06	0.00	
270	217	218	807.0	8.0	150.0	9.81	0.06	0.00	
271	215	219	810.0	12.0	150.0	44.17	0.13	0.00	
272	218	219	528.0	8.0	150.0	9.81	0.06	0.00	
273	219	220	320.0	12.0	150.0	13.49	0.04	0.00	
274	98	221	450.0	18.0	135.0	-3304.49	-4.17	1.37	
275	221	223	520.0	18.0	135.0	-3304.49	-4.17	1.59	
276	223	224	950.0	18.0	135.0	-3358.47	-4.23	2.99	
277	97	222	540.0	12.0	120.0	0.00	0.00	0.00	c
278	222	225	800.0	12.0	120.0	0.00	0.00	0.00	c
279	225	226	1100.0	12.0	120.0	0.00	0.00	0.00	c
280	224	227	1200.0	18.0	135.0	-3358.47	-4.23	3.77	
281	226	229	2600.0	12.0	120.0	0.00	0.00	0.00	c
282	227	228	700.0	18.0	135.0	-4905.79	-6.19	4.44	

Tillamook Water Commission Master Plan

Proposed System Hydraulic Analysis

Pipe Table

Input						Output			Input
Pipe	UpNode	DnNode	Length	Diameter	Roughness	Flow	Velocity	HeadLoss	Status
			ft	in		US gpm	ft/sec	ft	OPEN
283	228	243	1100.0	18.0	135.0	-4919.28	-6.20	7.01	
284	243	230	270.0	18.0	135.0	-4951.67	-6.24	1.74	
285	230	232	4600.0	18.0	135.0	-4994.85	-6.30	30.15	
286	229	244	650.0	12.0	120.0	0.00	0.00	0.00	c
287	244	231	600.0	12.0	120.0	0.00	0.00	0.00	c
288	231	233	2900.0	12.0	120.0	0.00	0.00	0.00	c
289	233	235	250.0	12.0	120.0	0.00	0.00	0.00	c
290	232	234	250.0	18.0	135.0	-5008.34	-6.32	1.65	
291	234	237	3100.0	18.0	135.0	-5270.13	-6.65	22.44	
292	235	236	3100.0	16.0	120.0	0.00	0.00	0.00	c
293	236	237	100.0	16.0	120.0	0.00	0.00	0.00	c
294	237	238	150.0	24.0	120.0	-5378.08	-3.81	0.35	
295	238	239	1250.0	12.0	120.0	121.45	0.34	0.08	
296	238	240	1220.0	24.0	135.0	-5499.52	-3.90	2.35	
297	240	241	900.0	24.0	135.0	-5499.52	-3.90	1.74	
298	241	242	480.0	24.0	135.0	-5499.52	-3.90	0.93	
299	242	900	200.0	24.0	135.0	-5499.52	-3.90	0.39	
300	22	23	600.0	12.0	150.0	384.76	1.09	0.20	
301	110	186	300.0	6.0	150.0	3.95	0.04	0.00	
302	186	187	300.0	6.0	150.0	3.95	0.04	0.00	
303	187	188	300.0	6.0	150.0	3.95	0.04	0.00	
304	188	192	300.0	6.0	150.0	82.62	0.94	0.17	
305	188	183	300.0	6.0	150.0	-78.67	-0.89	0.16	
306	209	205	1000.0	8.0	150.0	-879.85	-5.62	11.23	
307	248	20	500.0	6.0	150.0	33.19	0.38	0.05	
308	105	251	300.0	12.0	150.0	-586.99	-1.67	0.22	
309	251	252	300.0	12.0	150.0	-586.99	-1.67	0.22	
310	252	253	300.0	12.0	150.0	-536.51	-1.52	0.19	
311	253	198	300.0	12.0	150.0	-494.24	-1.40	0.16	
312	198	197	300.0	12.0	150.0	-494.24	-1.40	0.16	
313	197	196	300.0	12.0	150.0	-452.11	-1.28	0.14	
314	194	252	300.0	4.0	135.0	50.48	1.29	0.60	
315	193	253	300.0	4.0	135.0	42.27	1.08	0.43	
316	196	190	300.0	12.0	150.0	-452.11	-1.28	0.14	
317	197	191	300.0	6.0	70.0	-42.13	-0.48	0.20	
318	190	189	300.0	12.0	150.0	-468.13	-1.33	0.15	
319	189	181	300.0	12.0	150.0	-468.13	-1.33	0.15	
320	175	176	500.0	8.0	150.0	-28.87	-0.18	0.01	
321	176	177	500.0	8.0	150.0	-28.87	-0.18	0.01	
322	174	175	1000.0	8.0	150.0	-28.87	-0.18	0.02	
323	127	128	300.0	12.0	150.0	806.29	2.29	0.40	
324	128	131	300.0	12.0	150.0	806.29	2.29	0.40	
325	131	133	600.0	12.0	150.0	806.29	2.29	0.80	
326	97	98	500.0	12.0	150.0	-512.36	-1.45	0.29	
327	54	254	650.0	12.0	150.0	634.92	1.80	0.55	
328	254	255	1300.0	12.0	150.0	634.92	1.80	1.11	
329	255	104	1500.0	12.0	150.0	634.92	1.80	1.28	

Tillamook Water Commission Master Plan

Proposed System Hydraulic Analysis

Pipe Table

Input						Output			Input
Pipe	UpNode	DnNode	Length	Diameter	Roughness	Flow	Velocity	HeadLoss	Status
			ft	in		US gpm	ft/sec	ft	OPEN
330	24	256	1500.0	12.0	150.0	196.66	0.56	0.15	
331	256	257	2100.0	12.0	150.0	196.66	0.56	0.20	
332	257	258	1600.0	12.0	150.0	196.66	0.56	0.16	
333	258	259	1400.0	12.0	150.0	196.66	0.56	0.14	
334	259	4	900.0	12.0	150.0	196.66	0.56	0.09	
335	227	226	100.0	12.0	135.0	1547.32	4.39	0.54	

Tillamook Water Commission Master Plan
Proposed System Hydraulic Analysis
Node Table

Demand = 5500 gpm

Flowfactor = 2.7

	Input		Output		Input	
Node	Elevation	Demand	Pressure	HGL	Status	Demand
	ft	US gpm	psi	ft		Avg.
1	30.0	13.5	42.93	129.17		5.0
2	30.0	0.0	42.93	129.17		0.0
3	40.0	0.0	38.60	129.17		0.0
4	44.0	0.0	36.88	129.19		0.0
5	43.0	13.5	37.27	129.10		5.0
6	30.0	0.0	42.93	129.17		0.0
7	30.0	0.0	42.93	129.17		0.0
8	30.0	0.0	42.92	129.14		0.0
9	35.0	0.0	0.00	0.00	closed	0.0
10	30.0	13.5	42.91	129.11		5.0
11	30.0	0.0	42.96	129.24		0.0
12	30.0	13.5	42.98	129.28		5.0
13	30.0	0.0	43.00	129.34		0.0
14	30.0	0.0	43.01	129.34		0.0
15	20.0	13.5	47.36	129.39		5.0
16	20.0	0.0	47.39	129.48		0.0
17	20.0	13.5	47.30	129.26		5.0
18	32.0	0.0	42.03	129.10		0.0
19	35.0	0.0	40.73	129.08		0.0
20	38.0	13.5	39.39	128.99		5.0
21	38.0	0.0	39.36	128.92		0.0
22	35.0	0.0	40.73	129.08		0.0
23	38.0	0.0	39.34	128.88		0.0
24	25.0	13.5	45.42	129.92		5.0
25	20.0	67.5	48.20	131.34		25.0
26	20.0	8.1	48.66	132.42		3.0
27	20.0	0.0	48.82	132.78		0.0
28	20.0	0.0	48.64	132.36		0.0
29	20.0	13.5	48.61	132.29		5.0
30	20.0	0.0	48.34	131.66		0.0
31	20.0	13.5	48.31	131.59		5.0
32	20.0	0.0	48.53	132.10		0.0
33	20.0	0.0	48.45	131.92		0.0
34	20.0	13.5	48.41	131.83		5.0
35	20.0	0.0	48.43	131.88		0.0
36	20.0	0.0	47.95	130.76		0.0
37	20.0	0.0	47.65	130.08		0.0
38	20.0	0.0	47.57	129.90		0.0
39	20.0	13.5	47.30	129.27		5.0
40	20.0	0.0	47.41	129.51		0.0
41	20.0	0.0	47.13	128.88		0.0
42	20.0	0.0	47.15	128.93		0.0
43	20.0	0.0	47.69	130.17		0.0

Tillamook Water Commission Master Plan
Proposed System Hydraulic Analysis
Node Table

Demand = 5500 gpm

Flowfactor = 2.7

	Input		Output		Input	
Node	Elevation	Demand	Pressure	HGL	Status	Demand
	ft	US gpm	psi	ft		Avg.
44	20.0	13.5	47.79	130.40		5.0
45	20.0	0.0	47.40	129.49		0.0
46	20.0	0.0	47.20	129.04		0.0
47	20.0	0.0	46.99	128.54		0.0
48	20.0	0.0	46.94	128.43		0.0
49	20.0	13.5	46.98	128.53		5.0
50	20.0	0.0	47.00	128.56		0.0
51	20.0	0.0	46.92	128.38		0.0
52	20.0	0.0	46.74	127.96		0.0
53	20.0	0.0	46.56	127.55		0.0
54	20.0	13.5	46.56	127.56		5.0
55	20.0	0.0	46.73	127.94		0.0
56	20.0	0.0	46.93	128.41		0.0
57	20.0	0.0	46.51	127.43		0.0
58	20.0	0.0	46.42	127.24		0.0
59	20.0	13.5	46.27	126.87		5.0
60	20.0	48.6	46.47	127.35		18.0
61	20.0	0.0	46.73	127.94		0.0
62	20.0	0.0	46.17	126.65		0.0
63	20.0	0.0	46.47	127.35		0.0
64	20.0	13.5	46.47	127.35		5.0
65	20.0	0.0	46.02	126.31		0.0
66	20.0	0.0	46.48	127.36		0.0
67	20.0	0.0	46.69	127.86		0.0
68	20.0	0.0	46.92	128.39		0.0
69	20.0	13.5	45.87	125.95		5.0
70	20.0	0.0	45.73	125.63		0.0
71	20.0	0.0	45.66	125.48		0.0
72	20.0	40.5	46.47	127.34		15.0
73	20.0	0.0	46.69	127.85		0.0
74	20.0	13.5	46.43	127.26		5.0
75	20.0	0.0	46.69	127.85		0.0
76	20.0	0.0	46.96	128.47		0.0
77	20.0	0.0	46.94	128.43		0.0
78	20.0	0.0	47.19	129.01		0.0
79	20.0	13.5	47.15	128.92		5.0
80	20.0	0.0	47.44	129.58		0.0
81	20.0	0.0	0.00	0.00	closed	0.0
82	20.0	0.0	47.42	129.54		0.0
83	20.0	0.0	47.69	130.17		0.0
84	20.0	13.5	47.69	130.16		5.0
85	20.0	0.0	47.69	130.17		0.0
86	20.0	0.0	47.91	130.67		0.0

Tillamook Water Commission Master Plan
Proposed System Hydraulic Analysis
Node Table

Demand = 5500 gpm

Flowfactor = 2.7

Input			Output		Input	
Node	Elevation	Demand	Pressure	HGL	Status	Demand
	ft	US gpm	psi	ft		Avg.
87	20.0	0.0	48.12	131.17		0.0
88	20.0	0.0	48.22	131.38		0.0
89	20.0	13.5	48.50	132.04		5.0
90	20.0	0.0	48.16	131.25		0.0
91	20.0	0.0	47.93	130.72		0.0
92	20.0	0.0	48.18	131.29		0.0
93	20.0	0.0	48.42	131.86		0.0
94	20.0	13.5	47.93	130.72		5.0
95	20.0	40.5	47.69	130.17		15.0
96	20.0	0.0	47.46	129.64		0.0
97	20.0	40.5	48.63	132.34		15.0
98	20.0	0.0	48.75	132.62		0.0
99	20.0	13.5	47.18	128.99		5.0
100	20.0	40.5	46.93	128.41		15.0
101	20.0	0.0	46.69	127.84		0.0
102	20.0	0.0	46.41	127.21		0.0
103	20.0	0.0	46.06	126.39		0.0
104	20.0	40.5	45.29	124.62		15.0
105	20.0	40.5	45.77	125.72		15.0
106	20.0	0.0	46.22	126.77		0.0
107	20.0	0.0	46.35	127.07		0.0
108	20.0	0.0	46.48	127.36		0.0
109	20.0	13.5	46.23	126.79		5.0
110	20.0	0.0	46.36	127.08		0.0
111	20.0	40.5	46.60	127.65		15.0
112	20.0	0.0	46.78	128.06		0.0
113	20.0	0.0	46.82	128.16		0.0
114	20.0	13.5	46.97	128.49		5.0
115	20.0	0.0	47.16	128.93		0.0
116	20.0	0.0	47.32	129.31		0.0
117	20.0	0.0	47.51	129.74		0.0
118	20.0	13.5	47.73	130.26		5.0
119	20.0	8.1	47.72	130.22		3.0
120	20.0	40.5	47.95	130.77		15.0
121	20.0	0.0	47.86	130.57		0.0
122	20.0	0.0	48.01	130.91		0.0
123	20.0	13.5	48.18	131.30		5.0
124	20.0	0.0	48.40	131.81		0.0
125	20.0	40.5	48.42	131.85		15.0
126	20.0	0.0	48.55	132.16		0.0
127	20.0	0.0	48.55	132.16		0.0
128	20.0	0.0	48.38	131.76		0.0
129	20.0	0.0	0.00	0.00	closed	0.0

Tillamook Water Commission Master Plan
Proposed System Hydraulic Analysis
Node Table

Demand = 5500 gpm

Flowfactor = 2.7

Input			Output		Input	
Node	Elevation	Demand	Pressure	HGL	Status	Demand
	ft	US gpm	psi	ft		Avg.
130	20.0	0.0	0.00	0.00	closed	0.0
131	20.0	0.0	48.21	131.36		0.0
132	20.0	13.5	47.93	130.72		5.0
133	20.0	0.0	47.86	130.57		0.0
134	20.0	0.0	47.66	130.09		0.0
135	20.0	0.0	0.00	0.00	closed	0.0
136	20.0	0.0	47.58	129.92		0.0
137	20.0	13.5	47.21	129.05		5.0
138	20.0	0.0	47.02	128.62		0.0
139	20.0	0.0	47.14	128.90		0.0
140	20.0	0.0	46.81	128.12		0.0
141	20.0	0.0	46.96	128.48		0.0
142	20.0	13.5	46.93	128.40		5.0
143	20.0	0.0	46.82	128.16		0.0
144	20.0	0.0	46.89	128.31		0.0
145	20.0	0.0	46.89	128.31		0.0
146	20.0	0.0	46.88	128.30		0.0
147	20.0	13.5	46.83	128.18		5.0
148	20.0	0.0	46.74	127.96		0.0
149	20.0	0.0	0.00	0.00	closed	0.0
150	20.0	0.0	46.62	127.68		0.0
151	20.0	0.0	46.59	127.63		0.0
152	20.0	13.5	46.57	127.57		5.0
153	20.0	0.0	46.55	127.53		0.0
154	20.0	0.0	46.54	127.50		0.0
155	20.0	0.0	46.44	127.28		0.0
156	20.0	121.4	46.39	127.16		45.0
157	20.0	0.0	0.00	0.00	closed	0.0
158	20.0	13.5	46.66	127.79		5.0
159	20.0	0.0	46.75	128.00		0.0
160	20.0	0.0	46.80	128.11		0.0
161	20.0	0.0	46.56	127.55		0.0
162	20.0	0.0	46.55	127.52		0.0
163	20.0	13.5	46.53	127.48		5.0
164	20.0	0.0	46.55	127.54		0.0
165	20.0	0.0	46.52	127.46		0.0
166	20.0	0.0	46.50	127.41		0.0
167	20.0	0.0	46.41	127.21		0.0
168	20.0	40.5	46.34	127.04		15.0
169	20.0	0.0	46.34	127.04		0.0
170	20.0	13.5	46.28	126.90		5.0
171	20.0	0.0	46.39	127.15		0.0
172	20.0	0.0	46.38	127.15		0.0

Tillamook Water Commission Master Plan
Proposed System Hydraulic Analysis
Node Table

Demand = 5500 gpm

Flowfactor = 2.7

Input			Output		Input	
Node	Elevation	Demand	Pressure	HGL	Status	Demand
	ft	US gpm	psi	ft		Avg.
173	20.0	0.0	46.36	127.09		0.0
174	20.0	67.5	46.38	127.15		25.0
175	20.0	0.0	46.39	127.17		0.0
176	20.0	0.0	46.40	127.18		0.0
177	20.0	13.5	46.40	127.19		5.0
178	20.0	0.0	46.41	127.20		0.0
179	20.0	0.0	46.39	127.17		0.0
180	20.0	0.0	46.38	127.14		0.0
181	20.0	0.0	46.42	127.24		0.0
182	20.0	13.5	46.42	127.23		5.0
183	20.0	0.0	46.42	127.24		0.0
184	20.0	0.0	46.47	127.34		0.0
185	20.0	13.5	46.51	127.45		5.0
186	20.0	0.0	46.36	127.08		0.0
187	20.0	0.0	46.36	127.08		0.0
188	20.0	0.0	46.36	127.08		0.0
189	20.0	0.0	46.36	127.09		0.0
190	20.0	13.5	46.30	126.95		5.0
191	20.0	0.0	46.27	126.88		0.0
192	20.0	0.0	46.28	126.91		0.0
193	20.0	0.0	46.23	126.79		0.0
194	20.0	0.0	46.22	126.77		0.0
195	20.0	13.5	46.32	127.01		5.0
196	20.0	0.0	46.24	126.81		0.0
197	20.0	0.0	46.18	126.68		0.0
198	20.0	0.0	46.11	126.51		0.0
199	12.0	13.5	45.64	117.44		5.0
200	12.0	40.5	46.61	119.67		15.0
201	12.0	0.0	42.79	110.83		0.0
202	12.0	0.0	42.08	109.22		0.0
203	12.0	0.0	41.03	106.77		0.0
204	12.0	13.5	39.30	102.78		5.0
205	13.0	40.5	38.40	101.69		15.0
206	13.0	0.0	38.39	101.69		0.0
207	12.0	0.0	36.40	96.08		0.0
208	12.0	0.0	35.18	93.27		0.0
209	12.0	0.0	33.97	90.46		0.0
210	12.0	40.5	27.88	76.41		15.0
211	11.0	0.0	28.32	76.41		0.0
212	11.0	0.0	28.60	77.06		0.0
213	12.0	0.0	26.93	74.20		0.0
214	12.0	40.5	26.99	74.36		15.0
215	17.0	3300.0	22.66	69.35		15.0

Tillamook Water Commission Master Plan
Proposed System Hydraulic Analysis
Node Table

Demand = 5500 gpm

Flowfactor = 2.7

	Input		Output		Input	
Node	Elevation	Demand	Pressure	HGL	Status	Demand
	ft	US gpm	psi	ft		Avg.
216	17.0	0.0	22.92	69.94		0.0
217	17.0	0.0	22.66	69.35		0.0
218	17.0	0.0	22.66	69.34		0.0
219	17.0	40.5	22.66	69.34		15.0
220	17.0	13.5	22.66	69.34		5.0
221	20.0	0.0	49.35	133.99		0.0
222	20.0	0.0	0.00	0.00	c	0.0
223	20.0	54.0	50.03	135.58		20.0
224	20.0	0.0	51.33	138.57		0.0
225	20.0	0.0	0.00	0.00	c	0.0
226	20.0	13.5	52.73	141.80		5.0
227	20.0	0.0	52.96	142.34		0.0
228	20.0	13.5	54.88	146.77		5.0
229	20.0	0.0	0.00	0.00	c	0.0
230	20.0	43.2	58.67	155.52		16.0
231	20.0	0.0	0.00	0.00	c	0.0
232	35.0	13.5	65.22	185.67		5.0
233	35.0	0.0	0.00	0.00	c	0.0
234	35.0	261.8	65.94	187.32		97.0
235	35.0	0.0	0.00	0.00	c	0.0
236	100.0	0.0	0.00	0.00	c	0.0
237	100.0	108.0	47.51	209.75		40.0
238	100.0	0.0	47.66	210.10		0.0
239	200.0	121.4	4.34	210.02		45.0
240	110.0	0.0	44.35	212.45		0.0
241	150.0	0.0	27.79	214.19		0.0
242	180.0	0.0	15.20	215.11		0.0
243	20.0	32.4	57.91	153.78		12.0
244	30.0	0.0	0.00	0.00	c	0.0
245	30.0	16.2	42.93	129.17		6.0
246	30.0	0.0	42.93	129.17		0.0
247	37.0	0.0	39.84	129.03		0.0
248	35.0	0.0	40.71	129.04		0.0
249	20.0	0.0	46.75	127.99		0.0
250	20.0	0.0	48.53	132.11		0.0
900	185.0	0.0	13.20	215.50		0.0
901	0.0	0.0	55.92	129.17		0.0
902	0.0	0.0	60.22	139.11		0.0
251	20.0	0.0	45.86	125.95		0.0
252	20.0	0.0	45.96	126.17		0.0
253	20.0	0.0	46.04	126.35		0.0
254	20.0	0.0	46.32	127.01		0.0
255	20.0	0.0	45.85	125.90		0.0

Tillamook Water Commission Master Plan
Proposed System Hydraulic Analysis
Node Table

Demand = 5500 gpm

Flowfactor = 2.7

Input			Output		Input	
Node	Elevation	Demand	Pressure	HGL	Status	Demand
	ft	US gpm	psi	ft		Avg.
256	30.0	0.0	43.19	129.77		0.0
257	29.0	0.0	43.54	129.57		0.0
258	35.0	0.0	40.87	129.41		0.0
259	44.0	0.0	36.92	129.28		0.0

APPENDIX H

JOHN H. TUTHILL
ATTORNEY AT LAW
HABERLACH BUILDING
2406 THIRD STREET • P. O. BOX 544
TILLAMOOK, OREGON 97141
TELEPHONE (503) 842-6601
FAX (503) 842-6263

COPY

January 20, 1994

George McKibbin
Simpson Timber Company
2310 First Street
Tillamook, OR 97141

Re: Meeting of January 19, 1994/Tillamook Watershed

Dear George:

The purpose of this letter is to memorialize our discussion which occurred in my office on January 19, 1994. At that time, you were present along with Mr. John Washburn of Simpson Timber Company, Rich Adams, of Tillamook Water Commission, and myself.

Initially we discussed my September 24, 1993, letter to Mr. Goodwing and Mr. Michie. You disclosed your displeasure about the Water Commission having written directly to these gentlemen rather than to you. In addition, you brought up a number of points that you felt were not correct in my September 24th letter. Mr. Adams and I responded regarding why we felt the letter was necessary and hopefully addressed the concerns that you raised.

After discussing the letter, we began to address the general issues regarding access to the watershed. Mr. Adams and I suggested that the Water Commission and Simpson Timber enter into an agreement implementing a permit system whereby individuals and/or companies having authorization to be in the watershed would receive a permit. Simpson would be able to issue permits as would the Water Commission.

Initially, you and Mr. Washburn thought that this might be a system that would work; however, you wanted a more concrete proposal in writing. I indicated to you that Mr. Adams and I would put together a draft of such an agreement and submit it to you for your review. It would be our hope that we would be able to meet again to work out the details.

In addition to the permit system, there was discussion about the Water Commission putting up signs along the road notifying parties when they are entering the watershed and in general, when they enter the watershed owned by the Water Commission. The purpose of these signs would be to place persons on notice as well as to give them instructions if problems were to occur. In addition to these signs, the Water Commission will be putting up no trespassing signs in appropriate places on its land.

There was discussion regarding the activities undertaken by Simpson to control the padlock on the gates entering the area. It is my understanding that the current situation is that there is a padlock with multiple keys out. Simpson had expressed some concern about not being able to control who had those keys or whether or not copies were made. Therefore, it is my understanding that Simpson is moving toward a patented keyway system. This would limit the number of keys available as well as limit the blanks available to the general public for replication.

During our conversation, Mr. Adams indicated that the gate located east of Skookum Lake on state land where state and Simpson land adjoin has been padlocked and the road restored. Mr. Washburn expressed some concern about that situation. Mr. Adams indicated that the gate and lock and immediate area is monitored on a weekly basis by Tillamook Water Commission staff. So far, there have been no problems that the Water Commission is aware of regarding access. If access cannot be controlled in that area, it would be the position of the Water Commission that the roadway would be dug up again so that no one could travel, authorized or unauthorized, on Simpson land from that location.

I believe that these are the major items reviewed by the parties during the meeting. The Water Commission appreciates the opportunity to meet with you and Mr. Washburn and to discuss our mutual concerns. It is clear to me that both Simpson Timber and the Tillamook Water Commission have a joint interest in minimizing access to the watershed area. It is also clear that irrespective of what might have happened in the past, both parties are willing to work together to their common good.

If your rememberance of our meeting is not consistent with the contents of this letter or there are items that I have inadvertently left out, please contact me.

Sincerely,

JOHN H. TUTHILL

JHT/dlh
cc: Rich Adams, Superintendent
Tillamook Water Commission

something goes wrong. Also, a reduced amount of information but basically the same thing on the back side of the access permit that is placed in the vehicle.

5. Agreement would be open ended for a year or two. We will argue on this one. It would be open for review to determine whether or not any problems exist. Either party, during this period of time, can approach the other to work out specific problems and amend it providing both parties agree on the amendment.

6. We might want to include some language on the signs in that agreement, agreeing as to where the signs would be. Simpson and TWC would have to go onto the site itself and make agreements about this is where we are going to put signs, this is where we are not going to put signs in a general sense. There needs to be identification of responsibility - who is responsible for putting up the signs and maintaining them. Clearly, both of those are the Water Commission.

7. We may even address the issue of gate keys. Clearly, TWC will need a gate key. If we screw up in some way by unauthorized people getting it through our source, we may need to be responsible for replacing it (they are expensive, at least under the system that they are proposing). We may very well have the same system ourselves, so what's good for the goose is good for the gander if they are losing keys, etc.

Rich will sit down and utilize these notes to come up with a rough draft of an agreement, and he and I will mull it over thereafter. He will also come up with a rough draft of the permit and we will work on that, too. He wants a copy of these notes so that he can have them available to him.

Appendix XV. Reservoir Storage

A. Reservoir storage:

(1) Renovation of the Port of Tillamook Storage reservoir to 1.25 MG (million gallons).

TABLE T: RAMIFICATIONS OF POPULATION ON TILLAMOOK STP

Population Equivalent	BOD5* (lbs/day)	AVG FLOW** (mgd) Winter	Summer	PEAK FLOW*** (mgd)	Unit Modif	Req'd Trtmnt
0	0	1.29	0.36	1.29		
4,000	800	1.85	0.92	2.80		
5,000	1,000	1.99	1.06	3.04		
6,000	1,000	2.13	1.20	3.35		
7,000	1,400	2.27	1.34	3.54		1, 4
8,000	1,600	2.41	1.48	3.87		2
10,000	2,000	2.69	1.76	4.51		3, 5
12,000	2,400	2.97	2.04	5.15		
14,000	2,800	3.25	2.32	5.60		

* BOD5 @ 0.20 lb/cap/day
** Flow @ 140 gpcd + anticipated 1997 I/I
*** Peaking Factor from Fig. 5.5 Facilities Plan

1. New larger raw sewage pumps (New pump station?)
2. Additional Secondary Clarifier (750 gpd/ft2)
3. Additional Digester(s)
4. New Primary Clarifier(s)
5. Additional Secondary Treatment (RBC's)

(2) Construction of a new 2.0 MG reservoir on the Port site.

B. System Development

(1) Fawcett Creek supply intertie

(2) Additional Reservoir storage

(3) Possible source augmentation

(4) Two high capacity wells

(5) 5-year upgrading plan

Project reservoir storage requirements are shown below:

	Year - 1979	Year - 2000
Average Daily Need	1.00 MGD *	2.00 MGD
Storage Element		
(1) Normal Storage Needs (3 days)	3.00 MG *	6.00 MG
(2) Fire Flow Needs	1.05	1.05
Total Storage Needs	4.05 MG	7.05 MG

Appendix XVI: City of Tillamook Wastewater Facilities Plan, 2003

THIS PLAN IS AVAILABLE FOR REVIEW AT:
TILLAMOOK CITY HALL
210 LAUREL AVENUE
TILLAMOOK, OR 97141

FOR FINAL APPROVAL

AUTHORIZATION

The Storm Water Master Plan Update project was authorized by the City on July 6, 2011.

ACKNOWLEDGMENT

The assistance of City Manager Paul Wyntergreen, Public Works Director Arley Sullivan and their staffs was instrumental in the preparation of this Storm Water Master Plan Update.

PURPOSE

The purpose of this Storm Water Master Plan Update is to expand the coverage area of the Master Plan to include the areas annexed into the City since the original Master Plan was completed in 2005. This area is shown on Exhibit 1. This Update also reviews areas in the current Urban Growth Boundary outside of the City Limits lines to be sure that any recommended improvements include an allowance for serving any development in areas currently outside of the City but within the UGB. The maintenance needs of storm water conveyance systems in the Update area will be addressed. The capacity requirements of new sewers recommended in the Update area will be presented.

Another purpose of this Update is to prepare a Capital Improvements Plan (CIP) which expands and modifies the CIP in the original master plan to include projects in the expanded geographical area described above. The expanded Capital Improvements Plan is the basis for the Storm Drainage System Development Charge Study to be developed after this Master Plan is accepted.

This Update will also examine the Cross Connection Study which is ongoing and which is being completed by the City in response to the Oregon Department of Environmental Quality letter dated May 25, 2011. This Cross Connection Study will recommend work to be completed on both the sanitary and storm sewers. The estimated cost of this work will be summarized in this Update and appropriate projects included in the storm sewer Capital Improvement Program.

Ongoing studies commissioned by ODOT of the storm drainage needs along Highway 6 entering Tillamook are reviewed and summarized in the Master Plan as they will serve areas now in the City Limits and UGB.

INTRODUCTION

The original Storm Water Master Plan reviewed and established design criteria recommended to analyze existing storm water systems and those to be used for designing new storm water systems. It also recommended maintenance requirements for the storm drainage system. Funding options were also included in this study.

Since the original Storm Water Master Plan Study was completed in 2005, the City has begun to address the significant water quality issues which the Study identified in relation to the Storm Sewer System. In 2011 the City signed a letter of intent with the Oregon Department of Environmental

Quality to investigate the sources of these cross connections. This work is ongoing, with the intent to identify as many of these cross connection sources as possible and to develop a construction program to eliminate them. This work is currently scheduled to be completed by the Summer of 2013.

The original Master Plan included a Capital Improvement Plan (CIP) for the storm sewer system. Since adoption of this CIP the City has completed the following projects:

- Cleaning of the Holden Creek culverts at Miller Avenue
- Reconstructed Front Street, Main to Cedar, which included storm drainage upgrade to inlets

SOILS IN THE UPDATE AREA

The soils in the update area are shown on Exhibit 2. Soil types in the Update area are as follows:

Map Unit	Map Unit Name	Rating for Septic Tanks/Absorption
3A	Coquille silt loam, 0-1 % slopes	Very Limited
45B	Hebo silty clay loam,1-5% slopes	Very Limited
80B	Quillamook medial silt loam, 0-7% slps	Somewhat Limited
103A	Coquille silt loam, 0-1 % slopes, diked	Very limited
173B	Tillamook-Ginger medial silt loam, 0-7 % slps	Very Limited

The above information is from the US Department of Agriculture, Natural Resources Conservation Services, National Cooperative Soil Survey. This information is given to review the runoff potential of the soils and also how adequate they are for the septic systems which are being utilized for much of the Update area. This information indicates that the runoff potential of all of these soils is high (percolation into the soils is low) and that septic systems are expected to have problems in these areas.

EXISTING STORMWATER SYSTEMS IN THE UPDATE AREA

Drainage patterns in the Update area are determined by two ridge lines-one is located roughly parallel to 3rd Street which separates the flows going either to Highway 6 or to Holden Creek; and the other (in the UGB-not the current City limits), located in the southeastern-most area (west of McCormick Loop) separates flows going to Holden Creek or the Trask River. The majority of the developed residential area in the Update area (in UGB but not in the current City limits) does not have a piped storm water conveyance system serving it. Roadside ditches are the predominate method used to convey storm runoff away from the developed areas. Exhibit 3 illustrates the storm drainage systems in the City and UGB areas. Exhibit 3 also indicates areas where the storm drainage facilities are under the control of the City or Tillamook County.

The following subdivisions have a storm drainage system consisting of street inlets and a storm water conveyance system:

- Champion Park apartments (private system)
- Brookfield Meadows
- Kenway Subdivision (in UGB but not current City limits)

These subdivisions discharge their storm flows to a pond system which then discharges to Holden Creek (Champion Park), directly to Holden Creek without detention, (Brookfield Meadows) or to developed ditches which discharge to Holden Creek (Kenway).

The government-owned buildings and developments located on 3rd Street in the Update area have internal storm drainage systems providing for the roof and parking lot runoff. The Oregon Department of Forestry complex has a developed storm sewer system in front of it in 3rd Street-which discharges to the west in a roadside ditch in front of the Fairgrounds property. This system serves the roof drains and parking lot areas in front of the Department of Forestry. The ditch runs in front of the Fairgrounds building and then crosses 3rd Street to discharge to the ditch on the west side of Wilson River Loop. The maintenance facility located on the west and south parts of the Department of Forestry property are served by another conveyance system which discharges to the roadside ditch on Mountain View Drive just east of the fairgrounds property. This flow is conveyed onto the fairgrounds property; it then enters the north-south ditch which discharges to the ditch at the north side of Brookfield.

Government properties on the north side of 3rd Street have parking lot and roof drainage systems which discharge either directly to the undeveloped property north of them (BLM, Department of Human Services) or to an infiltration swale located on the north side of the property with an overflow (rarely used) discharging to the property to the north (Northwest Senior and Disability Services). The parking area in front of the BLM building discharges to an area inlet which drains to the ditch on 3rd Street.

There is an infiltration system which serves the area along Brookfield from Marolf Loop to near the east side of the fairground property. In addition, the area of 3rd Street east of Marlolf Loop extending almost to Wilson River Loop is served by an inlet which discharges to this infiltration system-in a pipe running from 3rd southerly along the east side of the TBCC parking lot. This infiltration pipe system is located at the north edge of Brookfield. It discharges both to the ditch on the east side of Marolf Loop and to the ditch west of the eastern entrance to Brookfield Meadows subdivision near the east line of the fairgrounds property. As indicated above, the soils types found in this area are not conducive to an infiltration system being very effective.

The flow in the Marolf Loop ditch north of Brookfield flows northerly, then crosses Marolf Loop to the ditch running westerly, then turns south and runs behind the lots fronting on Meadow to discharge to Holden Creek. The discharge from the Brookfield infiltration pipe south of the fairgrounds property is to the ditch on the north side of Brookfield, then continues in this ditch until it backs up to a high enough level to flow easterly through a culvert to the ditch along the east side of the fairgrounds

property. The culvert which crosses Brookfield at the end of the Brookfield infiltration pipe south of the fairgrounds has been capped.

Currently there are no water quality facilities treating storm water runoff in the Update area.

Holden Creek

Information on the Holden Creek drainage area is shown on Exhibit 4. Holden Creek serves all of the drainage area in the Update area south of the drainage divide which roughly parallels 3rd Street, except for the southerly area which drains to the Trask River. The drainage area of Holden Creek begins east of Trask River Road. It flows westerly and crosses Trask River Road, McCormick Loop, Marlolf Loop, Murray Way, Evergreen, and Miller before joining with another drainage area (south fork of Holden Creek) just upstream of its crossing of Highway 101. Holden Creek discharges to the Trask River west of Ivy Street. Three tide gates have been constructed across Holden Creek at its confluence with the Trask by Tillamook County. These tide gates have resulted in limiting fish passage in Holden Creek.

Holden Creek drainage area upstream of its confluence with the south fork of Holden Creek area near Highway 101 is approximately 1,270 acres. It forms the southern boundary of the urban growth boundary from McCormick Road to Trask River Road. The area south of the creek between McCormick and Trask River Road is currently pasture, as is the area east of Trask River Road before the ground rises to the east in forested land.

Over the past year or so, the Holden Creek channel from Highway 101 upstream to about 1 mile above the high school has been improved by volunteer efforts mainly coming from Tillamook High School. These improvements have included removing debris and trees from the flow and riparian area immediately adjacent to the stream bank. Work of this type is allowed by existing regulations as long as it is conducted within the existing flow channel (up to the existing high bank of the channel) and the property owners agree to this work being done in the channel on their property. However, this work is recommended to be coordinated with the Oregon Department of Fish and Wildlife to be sure that there is no harm to fish and wildlife resources due to these activities.

Staff gauges at culverts have been added to assist in determining flow levels during storm events. Beaver dams in the areas just upstream of Highway 101 have also been removed (one still remains). Water quality studies have also been conducted by high school students. This work has significantly improved the flow carrying capacity of Holden Creek in the areas addressed so far. Holden Creek has been modeled as part of this Update, using the Hydro CAD hydraulic model. This modeling includes estimating the runoff from the various sub-drainage areas flowing to Holden Creek from its source east of Trask River Road downstream to Miller Avenue. The culverts at Trask River Road, McCormick, Marolf Loop, Murray Way, Evergreen, and Miller Road were included in the model. The existing character of the development in each sub-drainage area was input into the model. The creek was modeled under the effects of a 25-year storm event (5.90" in 24 hours). The model was verified using the historical data on which areas have flooded under heavy rainfall events. The model indicated that the culverts located at Miller Avenue have inadequate capacity to handle the 25-year storm. The model indicates that Miller Avenue is overtopped during this storm event (by about 2

feet). Upsizing of these culverts was included in subsequent model runs to come up with recommended new culvert sizes for these locations which will allow the 25 year storm event to be adequately passed.

The hydraulic model indicates that there is not a problem at Evergreen Avenue with flooding during the 25 year storm event. This we know is not the case but subsequent investigation has indicated that one of the 60" culverts in the log yard is significantly blocked by a 30" diameter log which is lodged at one of the 45 degree bends in this culvert. Also a piling has been driven through one of the culverts. Had these been taken into account, flooding at Evergreen Avenue would have been indicated by the model.

Highway 6 Drainage

Highway 6 coming into Tillamook from the east has historically been an area where flooding has occurred routinely during and after the heavier storm events. Flooding particularly occurs under the railroad bridge over (depressed) Highway 6 located east of Miller Road. Storm drainage improvements for Highway 6 are the responsibility of the Oregon Department of Transportation. In 2011, a study was completed on the areas along Highway 6 beginning east of the railroad bridge and extending out to past Olsen Road. This study included recommendations to improve the water quality of the runoff from the highway in this area as well as to manage the peak flows from these areas. The recommended improvements include bioswales, vegetated strips along the highway, improved culverts at road crossings, improving and maintaining existing ditches, and a biofiltration pond located adjacent to the Highway 6/Wilson River Road intersection.

The biofiltration pond was sized to handle the drainage areas on Wilson River Loop south of the pond location, but only for the east side of Wilson River Loop and the north side of 3rd Street.

BACTERIAL CONTAMINATION OF SURFACE WATERS

Surface waters in the Tillamook area have been studied for bacterial contamination by the Oregon Department of Environmental Services (DEQ), the Tillamook Estuary Partnership, and others, for a number of years. The original Storm Water Master Plan report dealt with this issue and identified several areas where sanitary sewage was entering into surface waters, mainly through unidentified (as to specific location) cross connections between the sanitary sewer and storm sewer systems.

These studies have shown elevated levels of total coliform and E. Coli in Holden Creek as well as in the Hoquarten Slough and Trask River. The most recent testing of the City's outfalls by DEQ occurred in July 2011. These tests continued to show elevated levels of bacterial contamination at the following locations:

Location	E. coli MPN/100ml
Outfall at end of Williams Avenue	337

Outfall at end of Meadow Avenue	10
Manhole at 12th and Elm	284
Outfall to Hoquarten Slough at Highway 101	24,190

It should be noted that the levels indicated above for the outfalls at Williams and 12th and Elm are higher than expected in the absence of cross connections. This being said, the outfall at the end of Williams Avenue has been visited as a part of this Master Plan Update study and no evidence of sewage flows in it or evidence of sanitary waste in or near the outfall was observed during dry weather conditions.

The level indicated at Hoquarten Slough was due to a raw sewage cross connection to the storm sewer which has been identified. The drainage system upstream of the Manhole at 12th and Elm has been studied by the City using smoke testing procedures and indirect cross connections (because of faulty joints) have been noted. Both of these cross connections are scheduled to be eliminated in Summer 2012 by rehabilitation of the sanitary sewer lines, and no work on the storm sewer lines in these areas is included at this time. Other improvements to correct the cross connections between the sanitary and storm sewer systems are noted in the Capital Improvements Plan of this study. In addition, two bypasses from the sanitary sewer to the Trask River-one at a manhole at 12th and Elm and the other at a manhole near 9th and Chestnut are scheduled to be eliminated (plugged) by City maintenance crews.

The unsewered (sanitary) areas which are currently served by septic tanks are a probable source of some bacterial pollution found in Holden Creek. As the existing septic tank/drain field systems in these areas age and fail, the bacterial pollution of Holden Creek from this source may become a serious problem if sanitary sewers are not available.

OVERVIEW OF STORM SEWER NEEDS

As stated, much of the Update area does not have a storm drainage piped system, but relies on roadside ditches and driveway culverts to convey storm water away from developed areas. These ditches and culverts are in need of routine maintenance to establish a system which does not cause ditch flooding and culvert surcharging.

The areas currently served by storm drainage systems (i.e. having street inlets, manholes and storm drainage pipes serving the area) are in fairly good condition, with adequate capacity to serve these areas. These systems all discharge to ditches which run to Holden Creek (Update area). These ditches are in need of routine maintenance to enhance their ability to efficiently discharge flow to Holden Creek and to prevent backups onto private property.

Holden Creek has a history of flooding, as indicated above, and future development, which will add additional impervious areas, could exacerbate these problems in peak rainfall event periods. Therefore the recommendations of this report will attempt to negate these negative consequences by requiring proper engineering design of new storm drainage systems serving new developments in the Update area.

In order to relieve the flooding on Holden Creek currently experienced in the Evergreen Street area, the possibility of diverting a portion of the flow through a gravity storm sewer routing southerly to the South Fork of Holden Creek –a distance of about 800 feet-was modeled. During the 25 year storm event, this pipe would remove about 2.5 % of the peak flow if an 18-inch diameter line was constructed or 12 % if a 36-inch diameter line was constructed. However, an easement for this would be required, and possibly basin transfer issues would need to be addressed if this was considered. Since we believe that the Holden Creek flooding issues can be addressed otherwise as indicated in this report, the construction of this diversion line is not recommended at this time.

The City has recently acquired the old Safeway site which has historically flooded during peak storms. The storm drainage from the Safeway site flows to a ditch which begins at the north side of Hadley Road and runs northerly to the Dougherty Slough. This site was served by two adjacent storm water pumping stations which were ineffective and will be abandoned.

Many of the storm drainage systems in the City discharge to drainage ditches which flow out of the City before they discharge to a larger creek or slough. Many of these ditches are in need of maintenance to restore their peak flow- carrying capacities. The unmaintained ditches located on private property and not within storm drainage easements have the potential to be a problem for the City if they cause damage due to backups on property located within the City Limits.

Some of the storm water outfalls are inaccessible without trespassing over private property. The existence of storm drainage easements for all storm sewer lines, storm sewer outfalls and storm outfall structure access is necessary for the City to adequately maintain these lines and outfall structures.

Currently there is not a strong review process in place and mandated for the City to review building permits and prevent encroachment on storm drainage facilities by new development. This can cause problems if new structures are built over or adjacent to storm drainage facilities when maintenance or replacement of these is required in the future.

The City's storm sewer ordinance is in need of review and updating. This review process should include the incorporation of new regulations to require water quality facilities and water detention facilities on new subdivision, commercial and industrial projects.

There are currently several tide gates located at the mouth of drainage courses where they discharge to larger bodies of water. These drainage courses serve areas within the City and they then continue outside of the City in several cases. It is important that the City is aware of the condition of these tide gates as they must function properly to prevent undue flooding within the City.

RECOMMENDED IMPROVEMENTS

For currently undeveloped areas, owners of new development should be required to install new storm drainage systems which will discharge to either existing ditches or to new trunk storm sewers which can be installed as part of a development plan. In the Update area, these new storm sewers will flow either to Highway 6 (for property on the north side of the drainage divide paralleling 3rd Street) or to Holden Creek (if on the south side of this divide, or on the south side of Holden Creek).

The drainage area in the southeastern-most area of the Update area will discharge to areas outside of the City limits, tributary to the Trask River. These discharges must be coordinated with the landowners outside of the City and with Tillamook County officials. All of these new storm sewers are recommended to be designed to handle the 25 year storm event as recommended in the original storm water master plan and with County Design standards when necessary.

All new storm drainage systems are recommended to be designed so that the peak runoff for the design storm from these newly developed areas does not exceed the peak runoff under the pre-development conditions. This will require a detention system in most cases. In addition, the water quality from the developed areas should be improved through the implementation of new water quality facilities serving these areas. Water quality facilities can be natural systems using vegetation or commercially available systems installed in catch basin type facilities. Refer to the Appendix for examples of these types of systems. Typical water quality facilities design criteria are recommended so that treatment is provided for most small storms but larger storms can pass through the facility without damaging it. Specific design criteria for the Tillamook area are recommended to be developed for both the detention and water quality facilities when the storm drainage ordinance is written.

The areas within the City Limits in the Update area which currently are not served by storm sewers (which rely on roadside ditches or road shoulders where water ponds and then infiltrates or runs off to lower areas) and the recommended storm drainage improvements for them are shown on Exhibit 5. The recommended storm sewer sizing and peak design flows for the 25 year storm event are also indicated for these lines. The two areas on the west side of Tillamook included in the recently annexed areas are not included because the storm drainage needs of these areas depend on how or if they ever develop.

In order to adequately serve the Miller Avenue area under a 25-year storm event, a 10' x 6' high three sided box culvert is recommended to be installed at Miller Avenue, to replace the 2-48" diameter culverts there now. Assuming this new culvert is in place, the hydraulic model referred to above then shows that the peak water surface elevation during a 25 year storm event is lowered by about 6.5 feet after installation of the new culvert, resulting in no flooding at Miller Avenue. This culvert, when installed, will be "fish friendly" and will allow for better fish passage through this area in Holden Creek if the tide gates are removed from the mouth of Holden Creek at the Trask River.

After the model was calibrated a 100 year event (7.0" in 24 hours) was modeled on Holden Creek assuming that the upsized culvert at Miller Avenue was in place. This model run showed that this flow was successfully passed at both Evergreen Avenue and Miller Avenue in addition to all upstream culverts. Refer to the Appendix for information on the model runs. (Note that this assumes the log in the log yard culvert is removed)

The benefits of the clearing work recently completed on portions of Holden Creek, as indicated above, have been recently demonstrated by the improved performance of the creek during extremely wet conditions in Tillamook during March and April of 2012. In order for these benefits to continue, the improved channel areas need to maintained on an established maintenance schedule.

The improvements recommended in the update master plan are shown on Exhibit 5 and include the following:

1. Improving the streambed and stream bank areas of Holden Creek upstream to Trask River Road
2. Constructing the Phase 2 portion of the 3rd Street storm sewer project-from just west of Marolf Loop to just west of Wilson River Loop
3. Construct a new storm sewer in 3rd Street from the east side of the Department of Forestry (beginning at the ditch) westerly in 3rd to Wilson River Loop discharging to the ditch on the west side of Wilson River Loop. This project also includes serving the area just west of Wilson River Loop on 3rd Street.
4. Construct a new storm sewer in 3rd Street at the Schild Road intersection
5. Construct a new storm sewer in Brookfield from Marolf Loop to near the Brookfield Meadows eastern entrance
6. Construct a new storm sewer on Brookfield at the east edge of the fairgrounds property
7. In all storm sewer projects serving existing street areas, include water quality facilities to treat the storm runoff-in specially designed treatment style catch basins
8. Improve the channel characteristics (by clearing out the channel of debris and trees) of the drainage ditch which begins across from TBCC at west side of Marolf Loop (and south of Kilchis House), flows westerly to the back lot lines on Marolf Loop/Meadow, then southerly to Holden Creek
9. Coordinate with the log yard to clean and maintain the two parallel storm culverts on Holden Creek on their property-in particular removing the debris, large log and (if possible) the piling from one of these culverts.
10. Coordinate with ODOT and the Port of Tillamook Bay Railroad on the maintenance of the ditch serving as the outlet for the Highway 6 underpass and the 3rd Street area which also drains to this ditch.
11. A review of the original Storm Water Master Plan study has indicated that the following projects recommended in that study-refer to original Master Plan exhibits for these project locations (parenthesis number refers to original CIP number) should be constructed:
    a. Birch Avenue Outfall (B2)
    b. Front/Elm Sewer Replacement (B3)
    c. Front/Stillwell Outfall Pipe Repair (B4)
    d. Miller Avenue Holden Creek Culvert (B7)
    e. Lower Williams Avenue Sewer Replacement (B10)
    f. 8th Street Sewer at Laurel (C6)

    All other projects included in the original Master Plan not mentioned in this Master Plan Update have been determined to not be required and therefore are not included in the Capital Improvement Plan.
12. Develop a maintenance program for all areas served by ditches to include routine ditch maintenance and culvert cleaning/maintenance-to also include all Holden Creek culverts at road crossings. (For areas outside of the City Limits, coordinate with Tillamook County for these maintenance activities to occur).

13. Develop and implement new storm drainage regulations which require new development to implement both storm water detention and water quality facilities to help protect the downstream users from increased flooding and to help protect and improve the environment.
14. Institute a System Development Charge for Storm Drainage Improvements Citywide so that all development will pay its fair share of storm drainage improvement costs related to new development
15. Institute a Storm Drainage Maintenance Charge to be assessed to all property on a monthly basis to assist with providing sufficient revenue to properly maintain the storm drainage system.
16. Negotiate an Intergovernmental Agreement with Tillamook County so that a storm water System Development Charge can be implemented across both the City and Tillamook County where drainage facilities will serve areas both in the City and County
17. Coordinate with Tillamook County in encouraging Local Improvement Districts to be formed for the construction of sanitary sewers in areas not currently served.
18. Research existing storm sewer easements to determine which storm sewers outside of public rights-of-way are currently covered.
19. Develop a list of all tide gates which serve areas within the City.
20. Determine if access easements exist for outfall locations. Where they do not negotiate with property owners to acquire these.
21. Investigate the need for improvements to existing drainage ditches serving storm drainage originating within the City Limits but which run outside of the City Limits on private property
22. Assemble and file all public drainage easements at one central location.
23. Coordinate with Tillamook County on a study of the tide gates at the confluence of Holden Creek and the Trask River, and their actual benefits in relation to limiting fish runs in Holden Creek
24. Provide for jurisdictional transfers of drainage facilities between the County and City as necessary to optimize efficiencies in maintenance and operations.
25. Review and revise as necessary the City's process for issuing building permits to mandate that requirements to protect existing City facilities (storm drainage and others) be required to be met and that all City regulations are met.

CAPITAL IMPROVEMENT PLAN

The estimated project costs for the construction improvement projects listed above are indicated in Table 1 –Update Area Capital Projects, Table 2-Original Master Plan Capital Projects, and Table 3-DEQ Cross Connection Repair Projects. The tables list unit prices for work included in each project. The project costs include a 25% construction contingency and a 20% Engineering/Legal item to arrive at the total project costs. The unit costs and other costs for the recommended projects are as experienced by recent (2011-2012) ODOT projects, and NW Engineer's experience when these were not available. All costs will need to be increased per the CPI factors as the years go by.

These projects are in no priority order of implementation, but the Holden Creek culvert replacement and culvert maintenance -because of the possibility of flooding damage in those areas- should receive attention as soon as possible. Other projects will be driven by development pressure in the

project's vicinity. The maintenance of the Holden Creek channel and riparian areas and other ditch channels should also receive high priority in that property flooding because of blocked channels and culverts can be significant.

The capital improvement plan costs are summarized below:

• Update Area Capital Projects (Table 1)	$1,836,750
• Original Master Plan Capital Projects (Table 2)	$ 768,938
• DEQ Cross Connection Repair Projects (Table 3)	$ 275,663
• Storm Sewer System Development Charge Study	$ 20,000
• Storm Drainage Maintenance Charge Study	$ 7,500

Projects listed above located in roadways may be completed as part of a complete road upgrade project. However, for purposes of this Update, they are assumed to be stand-alone projects.

SYSTEM DEVELOPMENT CHARGE IMPLEMENTATION

For purposes of the System Development Charge Study, which will be based on the recommendations of this Master Plan Update report, the Reimbursement Fee, which is assessed on new development which will use a portion of existing facilities which were designed and installed to accommodate growth, is recommended to be calculated based on the below-indicated percent of the project cost for the following projects:

1. Front Street ODOT storm sewer improvements-25% (completed in 2010)
2. 3rd Street enhancement project storm sewer-25% (under construction)

The Improvement Fee, which is assessed on new development which will use new facilities or improvements to existing facilities which will serve new development and will provide an increase to the facilities' level of performance, is recommended to be calculated based on the percent of project costs of the following projects, as follows:

1. Phase 2 3rd Street project Marolf Loop-WR Loop-50%
2. Dept. of Forestry to Wilson River Loop Int.-25%
3. 3rd Street/Schild Road-25%
4. Brookfield Line-Marolf Loop to Brookfield Meadows-50%
5. Brookfield Storm Sewer-0% (maintenance only)
6. Replacement of Lower Williams Avenue sewer-25%

The above percentage estimates are recommended to be revisited for confirmation during the preparation of the Storm Drainage System Development Charge study.

APPENDIX

25 year Storm Event Model Hydrographs-Existing Conditions

25 year Storm Event Model Hydrographs-Existing Conditions with new Miller Avenue Box Culvert

100 year Storm Event Model Hydrographs-Existing Conditions with new Miller Avenue Box Culvert

Examples of Water Quality Facilities

STORM WATER DRAINAGE MASTER PLAN

CITY OF TILLAMOOK, OREGON
OCTOBER, 2004

PREPARED BY

LDC
DESIGN GROUP, INC.

EXECUTIVE SUMMARY

The City of Tillamook and its environs possess several unique factors that affect the characteristics of stormwater runoff from the City and the near vicinity.

The City is located at or near the confluence of several rivers and sloughs, and most of the City is low-lying in relation to those water bodies. It also possesses a storm drainage infrastructure that is rather antiquated and undersized in some areas, and is adequate for current and future needs in other areas of the City.

Within both the City and the general vicinity, there are concerns about the quality of the stormwater runoff and streamflows that ultimately flows into Tillamook Bay. There are many factors that contribute to these concerns, and the City's urban stormwater runoff is one of those factors.

This Storm Water Drainage Master Plan addresses the diverse needs for improvements to the City's many existing stormwater conveyance systems. Due to the limited scope of this Plan and the complex nature of the above factors, this plan does not include specific or final designs of any recommended improvements. Rather, this Plan is a comprehensive, planning level document by which the City and other entities can prioritize and implement improvements to both the conveyance and the quality of the City's urban stormwater runoff.

The results of this Plan are numerous, and are depicted both in the written sections of this report and on the detailed maps that are included within this report. All of the recommended Capital Improvements will benefit the hydraulic capacity of the City's storm drainage infrastructure. Also, some of these Capital Improvement recommendations, plus the Operations/Maintenance and Design Guideline recommendations, will have a significant beneficial effect on the quality of the City's runoff that is discharged to the receiving water bodies.

I
INTRODUCTION

A. Background

The City of Tillamook, Oregon lies at or near the confluence of several surface water bodies, which comprise a substantial portion of the Tillamook Bay basin. The City sits at a relatively low elevation adjacent to these surface waters, and there is a close interrelationship between manmade facilities and the naturally occurring waterways.

As the City has evolved over many decades, there have been many relatively small, localized stormwater systems developed to convey storm runoff to one or more of these surface water bodies. In many cases, there may not have been much strategic planning to develop those systems within the context of providing the best functional values to the City as a whole. There also does not appear to have been much consideration given to the possible effects of municipal development on the quality of the stormwater that is being regularly discharged into those water bodies.

In the more modern era, however, it has now become necessary for Tillamook to address the effects of its municipal stormwater discharges on stream water quality. The impetus for this change in priorities is the federal Clean Water Act, as implemented through the authority of the Oregon Department of Environmental Quality (DEQ).

B. Objectives and Approach

In addition to addressing water quality concerns, the City also desires to evaluate its existing stormwater conveyance infrastructure and to develop a Master Plan for the ultimate buildout of the City's stormwater facilities. This Master Plan, therefore, addresses the conveyance capacities and efficiencies of its existing and future facilities, and it also addresses the diverse water quality issues that have been raised by DEQ and other entities.

In summary, the Master Plan provides a comprehensive, integrated "roadmap" for the City to follow in implementing improved stormwater controls and conveyance systems. This "roadmap" contains both steps the city can take in the near future, such as operational changes affecting existing systems, and longer term solutions such as Capital Improvements that will result in improving stormwater quality as time progresses.

C. Acknowledgments

LDC Design Group, Inc. would like to express sincere appreciation to the City Manager, the Planning Department, and the Public Works Department of the City of Tillamook, whose generous time and cooperation provided valuable assistance and information throughout the study.

II

STUDY AREA CHARACTERISTICS

A. Topography, Setting and Study Area Limits

The City of Tillamook is located in the lowlands near the Tillamook Bay estuary, adjacent to the northwestern coastline of Oregon. The entire watershed that drains into the Bay is comprised of some 580 square miles of land area. Much of this area is steep, forested uplands. Urban areas and agriculture dominate the lowland areas closest to the Bay.

Of the five rivers that drain into Tillamook Bay, the Trask and Wilson Rivers flow directly adjacent to the Tillamook City southerly and northerly boundaries, respectively, very near their respective downstream points of confluence with the Bay. Holden Creek drains local areas along the southerly side of the City. Hoquarten Slough similarly drains local areas along the northerly side of the City's downtown business district.

Sheet 1 of the Insert Maps, located at the back of this report, provides an overall view of the City and all of the open watercourses in the vicinity. As shown on Sheet 1, most of the developed portion of the City is bounded by the Trask River, Holden Creek, and Hoquarten Slough.

The study area is primarily concerned with the area bounded by the City Limits. To evaluate the flow patterns and runoff volumes, it was also necessary to evaluate the entire watershed areas that are tributary to each open water course shown on Sheet 1. Some of those watersheds are shown in tabular form in this report, but are not shown on any of the Insert Maps.

B. Existing Stormwater Conveyance Systems

The City's existing network of stormwater drainage, or conveyance, systems is shown on Sheets 2, 3 and 4 of the Insert Maps. These maps were developed as a result of a substantial field investigation performed jointly by the City and by KDC Design Group, Inc. These maps depict the primary components of the City's existing public storm drainage systems, as well as some private facilities that are closely interconnected with the City systems. It should be noted that many of these systems are very old, and little if any documentation was available on these systems. Therefore, the information shown on the Insert Maps represents the best available information that was obtainable within the scope of this study.

In general, the existing stormwater systems provide a beneficial means of conveying rainfall runoff away from surface areas, and discharging that runoff into one of the adjacent open watercourses as shown on the Index Maps. These systems will be discussed in more detail, in Chapter IV of this report.

C. Land Use and Zoning

Many of the City's existing land use characteristics have evolved slowly, over a period of many decades. There is a downtown commercial business core area. Then there are more dispersed residential areas, consisting primarily of single - family uses and some limited multi – family areas as well.

Within the existing City Limits, the majority of the land has been developed, with some areas still available for expansion.

D. Regulatory Setting and Project Goals

This Storm Water Drainage Master Plan ("Plan") was initiated through a prioritization procedure, as implemented by the Oregon Department of Environmental Quality (DEQ). This project was partially funded by the US Environmental Protection Agency through DEQ's "319 Program", with the balance being funded by the City.

The DEQ has prioritized this project on the basis of its potential benefits to water quality within the adjacent streams and within Tillamook Bay. In compliance with this objective, this Plan evaluates the water quality characteristics of the City's urban stormwater runoff. This evaluation includes the following elements:

1. A comparison of the City's runoff characteristics with urban runoff parameters that are typical of most urban areas.
2. A more in-depth delineation of critical water quality parameters that may have a deleterious effect on receiving waters.
3. A comprehensive evaluation of the general magnitude of impacts that these critical water quality parameters may have on the adjacent watercourses, as well as on Tillamook Bay itself.

In addition to water quality concerns, the other primary goal of this Plan is to identify and map out the City's existing stormwater drainage infrastructure, and then to develop recommendations for needed improvements to that infrastructure. Those improvements will benefit both the hydraulic capacity and the water quality characteristics associated with this infrastructure.

It should be noted that this Plan does not specifically address the periodic flooding events that are caused by overflowing adjacent watercourses, either by overtopping their embankments or by their causing excessive impoundment of City runoff during major storm events. The Plan's recommendations do include feasible measures, e.g. tide gates where appropriate, to help mitigate or reduce the effects of such catastrophic flooding events. The issues associated with City-wide flooding problems are being dealt with through other mechanisms, such as the City's "Flood Mitigation Action Plan" and the Federal Emergency Management Agency's (FEMA) assistance programs provided to local communities.

III

EXISTING CONDITIONS AND EVALUATION CRITERIA

A. Hydraulic System Capacities

A1. Existing City Drainage Systems

The City's existing stormwater infrastructure is shown, in detail, on the Insert Maps. Sheet 1 shows the entire City in a schematic manner. Sheets 2, 3 and 4 show the complete layout of all systems identified by this Plan. A substantial portion of the City is served by these systems. Existing pipe sizes (diameters) are shown, wherever they are known. In a few locations, due to the lack of manholes or other structures on main lines, pipe sizes are not known. Typical structures including catch basins and manholes are also shown, wherever they have been identified.

During the field mapping work as discussed in Chapter II, a reconnaissance survey was also performed to develop approximate slopes of the existing pipes within the various stormwater conveyance systems. This was accomplished by the use of a hand-held level, known spot elevations on nearby ground surfaces, and by measuring down to pipe inverts or flowlines at manholes on the main lines. While it was only possible to obtain approximate pipe slopes, the information obtained is of sufficient accuracy to develop pipe carrying capacities within reasonable accuracy limits. The implications of this type of planning-level data are discussed further in section A2 below.

Once the City's existing storm drainage systems had been mapped as completely as possible, computer modeling was then used to evaluate the capacities of these systems. **Appendix A** presents the individual basin maps and the calculated results for each system. Individual sub-basin areas tributary to each system were located using existing topographic mapping of the City, provided by Tillamook County. Each system, including individual or groups of main line pipe segments, was then analyzed using the computerized Santa Barbara Urban Hydrograph method (SBUH). This method was chosen because of its widespread use in the Pacific Northwest region. It is also an appropriate method for smaller drainage basins of less than 200 acres in size, and all of the City of Tillamook's storm drainage systems serve relatively small, local drainage basin areas that are much smaller than 200 acres in land area.

The next consideration was the selection of the appropriate design storm for evaluation of the existing systems. Design storms are established on the basis of recurrence interval, or probability of occurrence within a given year. Appendix A shows the SBUH results for both the 10-year and 25-year storm events. Typically, the 25-year storm is most commonly used for design of new

stormwater conveyance systems. However, there is also an overriding duty of the design engineer to ensure public safety and avoidance of flooding of improved structures, such as houses, during storm events that are larger than the theoretical design storm. Therefore, the decision was made to use the 10-year storm as the basis to evaluate existing systems, given that system overflows due to undersized pipes are relatively rare. When overflows do occur, the majority of flooding problems in Tillamook are related more to the adjacent flooding watercourses, than they are to undersized pipe systems. Consideration was also given to the relative age of existing systems in comparison with new systems.

A2. Proposed System Upgrades or Expansions

Sheets 5, 6 and 7 of the Insert Maps show the Plan's recommendations for upgrading or expanding the City's existing systems. These maps are color coded to show where existing system components are deemed adequate, and where high or low priority improvements are recommended. The majority of recommended improvements consist of replacement of existing pipe network segments, usually because the existing pipes are undersized. A few of the recommendations are for expansions of existing systems into local areas of the City that are not now adequately served by piping systems. As is the case for the maps of the existing systems, Sheets 5, 6 and 7 do not show recommended pipe slopes – these would be determined as part of the final engineering design of any particular improvement project.

It needs to be emphasized that this Plan is intended to be used as a comprehensive planning tool, to enable the City and other entities to implement specific Plan recommendations. Those implementation programs would include certain essential elements such as funding, land surveys, detailed engineering designs, construction and permitting elements. Since this Plan does not provide the level of detail or precision inherent in those implementation elements, its primary benefit is that it provides guidelines for those subsequent implementation programs. The implication of this discussion is that the recommendations shown on Sheet 5, 6 and 7 are to be used for planning purposes, and not for direct conversion into final design assumptions or construction activities. There are many details to be addressed in any implementation project, that are beyond the scope and level of detail presented by this Master Plan.

The sizes of the recommended piping improvements are based on the 25-year storm using the SBUH method, as discussed in Section A1 above. Since all City storm drainage systems discharge into adjacent open watercourses, the effects of high river or slough levels, and of tidal influences, were considered in the system hydraulic analyses. The Mean High Water (MHW) elevation in Tillamook Bay was obtained from the National Oceanic and Atmospheric Administration (NOAA). River watershed data were obtained from the US Geological Survey

(USGS), and local slough basin areas were determined using available topographic mapping sources. Data thus obtained were then interpreted to estimate the free water surface ("tailwater") elevations at the City systems' stormwater outfalls (labeled "OF" on the Insert Maps).

The next step was to take the hydraulic data for each system, shown in Appendix A, and determine an approximate "hydraulic grade line" throughout each main piping run. This procedure allows determination of whether or not a pipe run would be surcharged during the design storm event. Engineering judgment was then applied to ensure that any surcharging would not cause storm runoff to "pop out" onto the ground surface at any catch basin or manhole locations. The end result of this work, again as shown on Sheets 5, 6 and 7 of the Insert Maps, is the delineation of storm pipe sizes needed to adequately convey the design storm event.

B. Water Quality Concerns and Criteria

As discussed in Chapter II, water quality concerns are a primary motivation for the creation of this Master Plan. This report section provides a general description of existing water quality problems in Tillamook Bay, and the methodology used to establish the water quality characteristics of Tillamook City's stormwater discharges to adjacent open watercourses.

B1. Background

DEQ's "319 Program" grant approval document (December 2002) for this Plan describes urban runoff as a source of degradation of "the water quality of local rivers, sloughs, and the Tillamook Bay". This document identifies two major plans, which address the water quality issues associated with the Bay and a broad list of other related topics concerning the entire Tillamook Bay watershed. These two plans are as follows:

1. The DEQ's establishment of Total Maximum Daily Loads (TMDLs) for temperature and bacteria within the Tillamook Bay basin's surface waters.

2. The Tillamook Bay National Estuary Program's (TBNEP) "Comprehensive Conservation and Management Plan (CCMP) (1999).

It is important to note that the City of Tillamook occupies a very small land area, in relation to the entire Tillamook Bay watershed area (1.5 square miles vs. 582 square miles = 0.25% of total watershed area). This suggests that the potential effects of the City's urban runoff should be viewed in the context of relative effects on water quality, as well as the measured local runoff characteristics presented in this Plan.

As part of the development of this Storm Water Master Plan for the City of Tillamook, considerable research was performed in reviewing the most pertinent documentation available on water quality issues in the Tillamook Bay watershed, with special emphasis on the open watercourses that receive urban runoff directly from City drainage systems. During the performance of this research, it was noted that a substantial amount of applicable water quality data have been developed by a few key agencies, most notably the Oregon DEQ and, to a lesser extent, the U.S. Environmental Protection Agency.

Collectively, these documents have put together a large amount of useful data concerning the water quality and related (e.g. riparian/fisheries habitat) issues facing the Tillamook Bay watershed. It was also noted that these documents give considerable attention to the effects and implications of storm runoff at selected locations within the entire, 582 square-mile watershed. However, due to the sheer magnitude of the watershed and its myriad water quality issues, it is understandable that these documents do not address the City of Tillamook's water quality characteristics to any great extent. Therefore, it is quite appropriate that the DEQ has charged this Stormwater Master Plan with the task of providing more definitive data and evaluation of the City's urban runoff.

The primary documents and research tools used in the background research for development of this Plan are the following:

- DEQ's online laboratory analytical database, for water quality monitoring results at selected stream locations around the City.

- DEQ's Report entitled "Determination of Major Source Areas of Fecal Coliform Bacteria along the Lower Reaches of the Wilson and Trask Rivers" (April, 2003).

- DEQ's report entitled "Tillamook Bay Watershed Total Maximum Daily Load (TMDL)" (June, 2001).

- U.S. EPA's report entitled "Results of the Nationwide Urban Runoff Program, Volume I" (December, 1983) ("NURP").

B2. Methodology for Water Quality Evaluation

In order to evaluate the quality Tillamook's urban runoff, it was first necessary to inventory all of the City's existing stormwater conveyance systems as discussed in Chapter II of this Plan. Part of that inventory also included location of the outfalls, or discharge locations, of those systems to the adjacent open watercourses that run through the City. All known outfall locations are shown on the Insert Maps.

Next, a strategy was developed to characterize the relative effects of City runoff on stream water quality, as discussed earlier. Due to time and budgetary limitations, it was necessary to conduct a limited sampling and laboratory analysis program at selected locations. Two sets of water quality data were thus obtained, on February 24 and on March 25, 2004. Since the work to develop this Master Plan was first started in November of 2003, it was not feasible to perform this work earlier during the rainy season. There were two other criteria that dictated the selection of these dates for the sampling work: there was a fairly typical amount of rainfall occurring on and before these dates, typical for the time of year; and, it was necessary for the sampling to coincide with a very low tide event during daylight hours, since some City storm outfalls are submerged by the receiving streams most of the time.

By extrapolation of data thus obtained during relatively typical rainy period conditions, it was possible to make some projections of the City's overall runoff water quality characteristics. Also, when City outfall samples were taken along a given stream reach, samples were also taken from the receiving stream itself, both upstream and downstream of all City outfalls along that stream reach. Using this approach, it was then feasible to develop an approximate mass balance of runoff constituent loadings between the stream reach outfalls and the stream itself.

The "streams" thus analyzed include the Trask River and the Hoquarten Slough, since these two streams receive over 95% of the City's runoff, and they are "linear" features that facilitate this type of analysis. The Trask River analysis also includes Holden Creek and its City outfalls, since Holden Creek is a significant tributary with significant influence on Trask River water quality. The northerly strip of the City, along U.S. Highway 101, crosses several streams (sloughs), with a very small percentage of the City's total runoff draining to these sloughs. Also, there are no known City storm drainage systems that discharge into the Wilson River. Therefore, the Trask and Hoquarten systems are considered highly representative of all City runoff, and the data evaluated can be extrapolated to include all City runoff at all locations.

B3. Findings

Section B1, above, identified the two major plans that address Tillamook Bay's water quality issues. This Plan has identified key elements of the City's stormwater runoff, as it relates to those documents. These elements are as follows:

a) Pertaining to the goals of the CCMP:

- Most of the City's runoff is generated at point sources, i.e. piped stormwater conveyance systems, rather than non-point sources as

- previously assumed. Runoff from non-point sources is relatively minor and is typically not characteristic of urban runoff, e.g. from woodlands, agricultural and grazing fields, and open meadows.
- Stream temperature enhancements will primarily involve better cooperation from private property owners along streambanks, through better enhancement and maintenance of riparian vegetation features that can provide stream shading.
- Suspended sediments in most City runoff are at very minor concentrations, and have little impact compared with stream sediments generated during flooding events. It is estimated that the City contributes approximately 1-2% of the total amount of suspended sediments to the Trask River and Hoquarten Slough, which together receive over 95% of the storm runoff generated within the City limits.

b) Pertaining to the DEQ's TMDLs for bacteria:

E. coli bacteria in runoff from some of the City's outfalls appear to exceed DEQ's TMDL criteria for the Trask River. This determination was made in relation to the estimated flow rate of the Trask River (1800 CFS), when the two sets of water quality samples were obtained. The E. coli concentration (counts/100 ml) TMDL limit varies with the Trask River flow rate. By interpolating the data points in the DEQ (2001) document, the limit at 1800 CFS would be approximately 450 counts/100 ml.

The tables on the following two pages present the results of the laboratory analytical results for E. coli bacteria. The analyses were performed by the Tillamook Estuaries Partnership's laboratory in Garibaldi, Oregon. The "Upper" and "Lower" "Trask" and "HQ" samples indicate the in-stream locations on the Trask and Hoquarten watercourses, respectively, that are immediately upstream and downstream of the series of City outfalls to each watercourse. The numbered "T" and "HQ" series represent the City outfalls to the Trask and Hoquarten, and "T6" is the Holden Creek outfall to the Trask River. "HC" samples are in-stream Holden Creek samples, with "HC-1" at the Miller Avenue crossing and "HC-5" being the furthest upstream sample, located at the Trask River Road crossing. "HLD" samples are at City outfalls to Holden Creek.

It is interesting to note that the background bacteria count, at the most upstream location on Holden Creek, is higher than that on all of the City's outfalls to Holden Creek. This would indicate that the upstream land uses, notably agriculture and farming, have a larger impact on Holden Creek bacterial water quality than does the urban runoff from the City. It is again important to remember that the upstream uses are

mostly non-point sources, and the City's runoff is primarily from point sources.

A related comment can be made, concerning the background bacteria levels in the Trask River and in Hoquarten Slough. Some results were within the TMDL limits, and some were not. Again, the elevated background limits are likely the result of various rural land use practices, largely outside the jurisdiction and control of the City of Tillamook.

Finally, this Plan has identified several locations in the City, where there appear to be some cross-connections between storm drainage and sanitary sewer systems. The general locations of these conditions and descriptions of field observations are shown on fold-out exhibit maps, immediately following this page. This Plan envisions solutions to these conditions, as part of the Capital Improvement Recommendations in Chapter IV.

c) Pertaining to the extent of other City runoff constituent concentrations:

- General. **Appendix B** contains all of the laboratory analyses that were performed, on runoff constituents other than bacteria. These analyses were all performed by Environmental Services Laboratory, Inc. of Portland, Oregon.

  Table 1, on the next page, gives a summary of the ranges and median data values for all runoff constituents tested, and compares these values with typical urban runoff as presented in the U.S. EPA's "NURP" report cited in section B1, above. A review of the data in Table 1 indicates that Tillamook's water quality, in general, compares quite favorably with typical urban runoff parameters.

- Total Suspended Solids. The median TSS value tested is near the lower (cleaner) end of the typical range of urban values. This condition exists, even in the absence of any water quality treatment facilities on most City outfalls. As also discussed under section B3.a) above, these TSS levels are so low that they do not contribute to the degradation of the receiving streams, nor to the quality of Tillamook Bay itself.

- Nitrates. Nitrate levels were generally below typical urban values. It is interesting to note that both Holden Creek and Hoquarten Slough contained the highest levels of nitrates analyzed. Further, these levels were reduced as these streams flowed past the City's storm drain outfalls. Measured values in the outfalls themselves were also significantly less than those in the streams.

Table 1
City Outfall Samples
Laboratory Analytical Results

Runoff Constituent	Concentration		Typical Urban Values (mg/l) 1/
	Range (mg/l)	Median (mg/l)	
Total Suspended Solids 2/	ND3/-89	32	35-100
Nitrates 4/	0.092-2.12	0.250	0.30-1.75
Phosphorus 5/	N.D.	N.D.	0.18-1.50
BOD	2.0-10.9	4.06	4.0-15.0
Lead	N.D.	N.D.	0.04-0.35
Zinc	0.020-0.086	0.057	0.06-0.50

1/ from U.S. EPA "NURP" Report
2/ A.K.A. "Sediments"
3/ None Detected
4/ Used partially as an indicator of septic system effluent influence
5/ Only one outfall analyzed

From this evaluation, it is evident that these streams are being contaminated primarily from sources upstream of the City limits. It should be noted that both septic disposal systems and livestock farming will generate significant nitrates in either subsurface disposal or in surface runoff. It has been noted by the City of Tillamook that there are failing septic systems, especially near Holden Creek, both within and outside (upstream) of the City limits. While these system failures can contribute to elevated stream nitrate levels, the data collected for this Plan indicate that background levels further upstream are even more significant in their impact on stream water quality.

- Other Constituents. The other water quality parameters noted on Table 1 are well within typical urban levels.

B4. Summary.

The quality of stormwater runoff in the City of Tillamook is, in general, typical of many urban areas. Overall, the City's runoff is of relatively good quality, with two notable exceptions. The more significant exception is that of the bacteria (measured as E. coli counts) levels in many of the City's stormwater outfalls. The other exception is the significant increase in total suspended solids (TSS) in the lower reach of Holden Creek, above its confluence with the Trask River. Some of the causes of these exceptions are identified in this Plan, and other causes will require additional detailed study.

Although the water quality sampling and analysis component of this plan was limited in both scope and duration, an effort was made to set forth an approximation of the relative amount of bacteria in the City's runoff in comparison with the total bacteria amounts in the adjacent watercourses. Based on a very preliminary mass balance analysis, then, it is estimated that the City's stormwater runoff contains approximately 30% to 40% of the total bacteria loadings within the Trask River. This estimate was then extrapolated to the entire Tillamook Bay watershed, based on relative watershed areas only. Since the Trask River watershed area is approximately 30% of the Bay's total watershed area, it is roughly estimated that about 10% to 15% of the total bacteria loading in Tillamook Bay arises from the City's runoff.

The next chapter, "Recommended Capital Improvements", contains recommended improvements that would benefit both the hydraulic capacity and water quality elements of the City's existing stormwater infrastructure.

IV
CAPITAL IMPROVEMENT RECOMMENDATIONS

A. Basis for Recommendations

As discussed throughout this report, this Master Plan is intended to address the larger scale, most important elements of the City's stormwater drainage facilities and characteristics. These elements include both the hydraulic capacities and the water quality characteristics of the City's stormwater infrastructure and its urban runoff to adjacent streams.

It is intended that this Plan's primary benefit is its use as a strategic planning tool. The recommended improvements and their associated budgets are, therefore, approximate and indicative of the general magnitude and relative importance of the various recommendations. For actual implementation of any specific improvement project, the total scope and budget for the project will need to be refined and updated. It should also be noted that the recommended budgets are for improvements to the storm drainage network alone, and that related improvements to sanitary sewer or other nearby systems would be in addition to the recommended budgets shown herein.

The recommended improvements are arranged in order of relative priority. The Highest Priority Improvements are intended to result in significant benefits to both runoff water enhancements, and to hydraulic conveyance carrying capacities. The High Priority Hydraulic Improvements are based on significant shortfalls in the capacities of the existing systems, where those shortfalls are on the order of 50% or more of the needed capacities. Lower Priority Hydraulic Improvements are generally on localized branches of storm drainage systems, and in some cases are extensions into areas not currently served, where the hydraulic shortfall or other factors are not as critical as the higher priority projects. Also, some of these improvements are upsizing existing pipes to the minimum recommended main line size of 12 inches in diameter.

B. Planning Level Capital Improvements and Budgets 1/

A. Highest Priority Improvements 2/ 3/ – These are the known, substantial projects that will result in significant water quality and hydraulic capacity enhancements:

1. Improvements to large, multi-branched system with its piping network converging at Elm Avenue and 12th Street. This includes multiple disconnection of existing cross-connections with the sanitary sewer system: $700,000

2. Improvements to linear system with its outfall manhole at Chestnut Avenue and 9th Street. This includes elimination of apparent direct connections into the sanitary sewer system: $235,000

3. Improvements to a local, branched system with its outfall manhole located south of Laurel Avenue and 11th Street. This includes elimination of sanitary lateral connections to the storm drainage system: $195,000

4. Improvements to an ODOT main line in Main Avenue, from 6th Street to the outfall to Hoquarten Slough. This includes elimination of all sanitary system connections to the storm drainage system: $290,000

1/ Planning level budgets include estimated costs of engineering, surveying, construction and contingencies. Budgets do not include administration, legal fees or permitting costs. Budgets should be refined through a more detailed evaluation process, prior to implementation.

2/ Ranked in order of potential benefits to both water quality and capacity enhancements within the existing storm drainage systems.

3/ It was not possible to identify all cross-connections between storm drainage and sanitary sewer systems. Therefore, more detailed studies are needed to address this problem, and more CIP's for water quality enhancement are likely to result therefrom.

B. <u>High Priority Hydraulic Improvements</u> 1/ - These are the projects that will correct significant hydraulic deficiencies in the existing systems:

1. Piping improvements and relocation of the system outfall, at the local system that currently outfalls near Beachwood Avenue and 7th Street. Includes a low flow bypass to the existing adjacent marsh area for water quality benefits: $215,000

2. Piping improvements along Birch Avenue, from 5th Street to 1st Street, including the outfall: $180,000

3. Piping improvements at two adjacent, separate systems that outfall from Front Street along Elm and Fir Avenues, respectively: $97,000

4. Piping improvements at two adjacent, separate systems that both outfall from Front Street and Stillwell Avenue: $320,000

5. Improvements to large, partially ODOT linear system with the main line in Pacific Avenue, outfalling to Holden Creek: $500,000

6. Reconstruction of the crushed outlet pipe across the lumber mill property, from 8th Street near Park Avenue to Holden Creek. $150,000

7. Replacement of the Holden Creek culvert at Miller Avenue with 2 – 36-inch diameter pipes. $50,000

8. Improvement to the hydraulic capacity of Holden Creek, from Evergreen Drive to Miller Avenue. 2/

9. Replacement of existing branch pipes near Alder and Maple Street, which are part of the Evergreen Avenue system that outfalls to Holden Creek. $70,000

10. Replacement of the lower Williams Avenue system that outfalls to Holden Creek. $160,000

11. Replacement of the lower Meadow Avenue system that outfalls to Holden Creek. $82,000

1/ Not ranked in any particular order. It is unknown whether or not these improvements may result in water quality enhancements; further studies are needed to identify these potential benefits.

2/ Costs are unknown. This project would involve significant environmental permitting and associated costs.

C. Lower Priority Hydraulic Improvements 1/ - These are the projects that will correct relatively localized deficiencies in the existing systems:

1. Replacement of the upper branch lines in the system that outfalls westerly of Beachwood Avenue, within 9th Street and Cottonwood and Ash Avenues. $110,000

2. Replacement of the upper branch pipe in 5th Street, that connects to the main line in Birch Avenue which outfalls near 1st Street. $34,000

3. Replacement of the upper branch lines in 4th Street and Elm Avenue, that connect to the main line in Elma Avenue which outfalls to Hoquarten Slough. $88,000

4. Replacement of pipes in Ivy Avenue, that are part of the system which outfalls to Hoquarten Slough. $32,000

5. Replacement of branch lines in 2nd, 3rd and 4th Streets, between Laurel and Ivy Avenues, which are tributary to the main ODOT line in Main Avenue that outfalls to Hoquarten Creek. $84,000

6. Addition of branch line in 8th Street, to the main line in Laurel Avenue that outfalls to Holden Creek. $65,000

7. Replacement of branch lines in 3rd and 4th Streets, between Nestucca and Park Avenues which are tributary to the same ODOT line as in Item 5. above. $115,000

8. Replacement of the upper system in DelMonte Avenue, which connects to the High Priority lumber mill property outlet pipe. $190,000

9. Replacement of local branches, in Linden Drive and Hawthorne Lane, which connect to the main line in Evergreen Drive that outfalls to Holden Creek. $95,000

10. Replacement of local branch lines at and near Alder Lane, which are tributary to the main line in Williams Avenue that outfalls to Holden Creek. $72,000

1/ Not ranked in any particular order. It is unknown whether or not these improvements may result in water quality enhancements; further studies are needed to identify these potential benefits.

V

FUNDING ALTERNATIVES

A. General

The City of Tillamook currently has no funding mechanism that addresses the public storm sewer system either for capital improvements or maintaining the existing system. Repair and maintenance revenues come directly from the City's operations and maintenance budget for street repair as is typical for many cities, which do not have a separate Surface Water Utility.

It is becoming increasingly more burdensome as Oregon cities comply with state and federal mandated requirements to implement best storm water management practices or even to keep up with the demands of development. It is prudent for the City of Tillamook to address these needs by developing sound funding and financing options. It is also necessary that these funds be dedicated for the strict purpose of maintaining and building the storm drainage system and not be diverted for other purposes. This chapter addresses some of revenue and financing options that are available for construction, operations and maintenance of the storm drainage system.

B. Operations and Maintenance Funds

Surface Water Utility / Storm Drainage Service Fee

The Storm Drainage Service Fee is a monthly service charge that is based upon the annual cost to provide Operations and Maintenance to the existing storm drainage system. It is similar to monthly water and sanitary sewer utility fee. It is generally based on the amount of the impervious area of a property. For instance, the fee may be related to the impervious area of a typical residential lot. Through the formation of a surface water utility as an enterprise fund capital improvements can be funded as well as recovering reasonable costs for administration of the program. Billing is generally accomplished along with water and sewer utility bills.

Another element of this fee may be Water Quality Program Costs. Some jurisdictions have established water quality data for various land uses. Using a weighting factor, fees may be established that are related to the property use. Properties that provide their own water quality facility or pollution reduction measures would be exempt or receive a discount.

Storm drainage service fee factors, as mentioned above, may be considered separately or collectively in determining a fee schedule. Typically storm drainage

service fees generally range from $1.50 per month to $6.00 per month and have been successfully used in numerous cities within Oregon and Washington.

C. Capital Improvement Program Funding

The funding options available for storm sewer improvements are similar to those funding options available to other existing enterprise activities. Most of the methods identified below are in effect in one or more communities in Oregon and all are applicable in Oregon.

General Fund Revenues (property tax, franchise fees, local income tax)
Sanitary Sewer Utility Revenue
Surface Water Utility Revenues
Special Assessments
Serial Levy
Bonds/ Local Improvement Districts
Developer Funding
System Development Charges

C1. General Fund

The general fund is an established source of revenue for any purpose the city wishes, including construction, maintenance and repair of drainage related projects. It is generally heavily drawn upon for the normal operations of a city and historically general fund revenues are having a difficult time keeping up with inflation and a city's growth. It may be argued that the use of general fund taxes to provide revenue for drainage related items is an inequitable practice. These taxes are based on assessed property value and do not relate to the property's generated runoff.

C2. Sewer Utility Revenues

It is the practice in some cities to utilize a portion of the revenues collected with the sanitary sewer service fees for financing storm drainage projects. This is not a recommended practice unless a combined utility is formed with a rate structure which supports both types of service, surface water and sanitary.

C3. Special Assessments / Serial Levy

Theoretically, a special assessment may be levied against properties in a city or against special portions of a city for a specific benefit. This may be a one-year only assessment for capital improvements and operations and maintenance of

the drainage system. It has the disadvantage of not being a reliable source of revenue and must be periodically approved by the voters. A serial levy for operations and maintenance can be imposed for up to five years before it would need to be reauthorized by the voters.

C4. Bonds/Local Improvement Districts

Under Oregon law, a city has the power to issue general obligation and revenue bonds. Bonds are available to fund capital improvements, but are not for the purpose of funding the operations and maintenance of the storm drainage system.

The Local Improvement Districts (LID) generally provides funding for localized drainage improvements. Funds come from the assessment of the properties within the district. The city will issue bonds (Bancroft Bonds) that allow the property owners within the district to repay over time. The formation of a LID is either by petition by a property owner seeking improvement to a property or through council approval. Both require public involvement and hearings. It is often difficult for the LID to request for additional funds to account for inflation. These bonding mechanisms are appropriate to fund capital improvements in conjunction with other sources of funding. These mechanisms are not available or are not appropriate to fund operations and maintenance.

C5. System Development Charges (SDC)

The Storm Drainage Master Plan is the only rational nexus for basing the calculations of an SDC. The SDC is a common source of funding in the State of Oregon. It is paid by new connections to the storm drainage system. The SDC is based on the demand placed on the system by the new user and the capital cost associated in meeting that demand. Methodologies for developing system development charges may be based on cost of existing and new facilities, outstanding debt, etc. Once the cost basis is developed, the system capacity may be used to estimate the unit costs that are assigned to the new connection. SDC revenue is often used in conjunction with bond revenues or other sources of capital (developer donated capital) to fund capital projects.

C6. Developer Funded

Often developers are required to extend a storm drain line from its connection to the existing system or proposed outfall location to the most upstream end of the project site. The requirement for the extension is to be sized to accommodate the proposed project and future contributing developments. Some cities will pay or credit the developer the difference between associated project storm drain costs and the upsized pipeline. This "credit" may be allowed in the context of an

SDC charge methodology. For this reimbursement, the city must have another funding mechanisms in place.

C7. Urban Renewal District

Funding for capital projects may be obtained through revenue from urban renewal districts. The source of this funding is tax increment financing. The assessed value of each property within the district (for taxation by entities other than the urban renewal district) is frozen at its value at the time the district is formed. As the market value of the property rises above its value at the time the urban renewal district was formed, that increased value is taxed at the same rate, but all taxes collected on that increased value go to the urban renewal district.

C8. Real Estate Transfer Tax

The real estate transfer tax is a tax placed on all sales of property within the City. It is a variation of the system development charge.

C9. Loans

Loans administered by the Oregon Department of Environmental Quality through the Revolving Loan Fund, may be available for capital projects, which improve water quality. These are low interest obligations for which projects must meet certain criteria to qualify.

C10. Grants

While grants are not a usual method of funding stormwater activities they should not be ruled out as a possible source of capital. An innovative project may qualify for a grant as a "demonstration project". Grants may also be available from industry or private foundations to fund projects, which protect unique or valuable resources or have other special benefits.

VI

OPERATIONS AND MAINTENANCE

A. General

Presently the City has no scheduled maintenance program to systematically evaluate and clean the storm drainage lines, catch basins, manholes, and outfalls. Maintenance is based on an "As Needed" basis by which problems (i.e. flooding, debris, or broken pipes) are addressed when observed or when complaints are received at City Hall.

B. Operation and Maintenance Objectives

The operations and maintenance program should include the following objectives:

- Provide for public safety.
- Provide for and promote water quality protection.
- Maintain capacity and integrity of storm drainage system.
- Reduce potential of property damage by obstructed system facilities.
- Reduce nuisance water on public streets.
- Reduce impact to City's resources.
- Evaluate and upgrade maintenance priorities.
- Identify future maintenance needs.
- Provide public awareness of drainage system maintenance needs.
- Improve public awareness regarding activities which cause water quality .problems (erosion, soap, and chemical discharges).

C. Maintenance Requirements

To develop a viable maintenance program, it is necessary to identify and define the various elements

- It is vital to identify and define the various elements that help to make the program successful. The following are a few of such operations and maintenance elements:
- Storm drainage facilities need to be separated into major and minor systems. Individual structures and elements should be identified within each type of system. Major system elements are given a higher ranking than minor system elements.
- Damaged elements should be identified as to the severity of damage. Major structural elements are given immediate attention and resources while minor repairs may receive lesser attention.
- Street flooding that is a result of plugged culverts and pipes are identified as to their location and their effect on major and minor drainage systems.

D. Program Recommendations

The following recommendations are provided to assist the City in developing an operations and maintenance program:

- A Capital Maintenance Budget should be established for repairs of storm drainage facilities. Various funding programs previously referenced should collect revenue for this budget.
- A schedule of routine inspection of system elements should be implemented. Catch basins, culverts, outfalls, etc. should be observed for debris accumulation, structural condition, and any irregularities. Observed conditions should be rated for system type (major or minor), urgency, required materials, personnel and cost.
- A storm drain database should be developed to inventory system elements, record maintenance and action, and monitor public concerns (complaints of local problem areas).
- Regularly evaluate the database to determine operations and maintenance patterns and develop manpower and budgetary requirements.
- Provide an emergency fund to deal with catastrophic events effecting storm drainage facilities.
- Obtain easements from private owners to access public facilities (where necessary).
- Establish maintenance standards to define the level of service to be provided as shown in Table 8-1 for pipes and culverts and Table 8.2 for catch basins.
- Outfalls with tide gates should be inspected after every major storm event. Other outfalls should be inspected twice annually in the fall and spring.

Table 8-1 Maintenance Standards for Pipes and Culverts

DEFECT	CONDITIONS WHEN MAINTENANCE NEEDED	MAINTENANCE RESULTS
Sediment and debris	Accumulated sediment that exceeds 20 percent of the pipe diameter	Pipe cleaned of all sediment and debris
Vegetation	Vegetation that reduces free movement of water through pipes	All vegetation removed so water flows freely through pipes
Damage	Protective coating is damaged; rust is causing more than 50 percent of deterioration to any part of pipe Any dent that decreased the end area of pipe by more than 20 percent	Pipe repaired or replaced
Debris barriers	Trash or debris plugging more than 20 percent of the barrier opening	Barrier clear to receive capacity flow
Damaged/missing bars	Bars are bent out of shape more than 3 in (7.62 cm)	Bars in place with no bends > ¾ in
	Bars are missing or entire barrier missing	Bars in place according to design
	Bars are loose and rust is causing 50 percent deterioration to any part of barrier	Repair or replace barrier to design standards

Table 8-2 Maintenance Standards for Catch Basins

DEFECT	CONDITIONS WHEN MAINTENANCE NEEDED	MAINTENANCE RESULTS
Trash and debris (including sediment)	Trash or debris of more than ½ ft^3 located in front of the catch basin opening or blocking capacity of basin by > 10 percent	No trash or debris located immediately in front of catch basin opening
	Trash or debris in the basin that exceeds 1/3 to ½ the depth from the bottom of basin to invert of the lowest pipe into or out of the basin	No trash or debris in catch basin
	Trash or debris in any inlet or outlet pipe blocking more than 1/3 of the height	Inlet and outlet pipes free of trash or debris
	Dead animals or debris that could generate odors that would cause complaints or dangerous gases	No dead animals or vegetation present
	Deposits of garbage exceeding 1 ft^3	No trash or debris in catch basin
Structural damage to frame and/or top slab	Corner of frame extends more than ¾ in past curb face into the street (if applicable)	Frame is even with curb
	Top slab has holes larger than 2 in^2 or cracks wider than ¼ in (to ensure that all materials run into basin)	Top slab is free of holes and cracks
	Frame not sitting flush on top slab-i.e., separation of > ¾ in of the frame from top of slab	Frame is sitting flush on top of slab
Cracks in basin walls or bottom	Crack wider than ½ in and longer than 3 ft (0.91 m), any evidence of soil particles entering catch basin through cracks, or structure is unsound	Basin replaced or repaired to design standards
	Crack wider than ½ in and longer than 1 ft at any joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through crack	No cracks more than ¼ in wide at joint of inlet/outlet pipe
Settlement/misalignment	Basin has settled more than 1 in or has rotated more than 2 in out of alignment	Basin replaced or repaired to design standard
Fire hazard	Presence of chemicals such as natural gas, oil, and gasoline	No flammable chemicals present
Vegetation	Vegetation growing across and blocking more than 10 percent of basin	No vegetation blocking opening to basin
	Vegetation (or roots) growing in inlet/outlet pipe joints > 6 in tall and < 6 in apart	No vegetation or root growth present
Pollution	Nonflammable chemicals of > 12 ft^3 per 3 ft of basin length	No pollution present other than surface film

VII
RECOMMENDED DESIGN GUIDELINES

The City of Tillamook currently has adopted official documents that pertain to the design, development and operation of municipal storm drainage systems. The City's Comprehensive Plan sets forth policies that address storm drainage issues. The City's General Development Standards set forth numerous criteria and guidelines for control of urban runoff, including erosion control aspects. Also, the City's Public Works Department has adopted "Design Standards and Standard Details", which include specific design criteria, requirements and Standard Construction Details for many aspects of stormwater management. Finally, there are state and national codes and ordinances, such as the Uniform Plumbing Code (UPC) and APWA Standards which, if properly enforced, would more substantially benefit the City's stormwater infrastructure.

There are amendments and additions that can be made to these documents, especially with respect to water quality safeguards within the Development Standards and the Public Works criteria. Due to the limitations in the Scope of this Storm Water Drainage Master Plan, however, this Plan does not contain any detailed or in-depth proposed revisions to the above documents.

Further, it is important to put "Design Guidelines" per se within the context of the Plan's findings and its recommended priority projects. As discussed in Chapter III.B. of this plan, concerning urban runoff water quality, there is one single contaminant (bacteria) that far exceeds all other water quality parameters in its importance. This contaminant exists in relatively high concentrations in many City stormwater outfalls. This situation largely exists, due to violations of standard UPC and other criteria for proper separation of storm drainage and sanitary sewerage facilities. The other notable contaminant, suspended solids, is of primary concern within a limited section of Holden Creek, and can be addressed in a very site-specific manner.

All other water quality parameters tested were well within acceptable levels for the City's urban runoff. Therefore, from a water quality standpoint, there is only a small improvement in water quality, which might be achieved through the adoption of structural controls that would address water quality parameters. The adoption of the Plan's Operations and Maintenance recommendations (Chapter VI) would provide greater overall water quality benefits, than would the adoption of structural controls.

For all of the above reasons, then, it is recommended that the findings and recommendations set forth in early chapters of this Plan be adopted and implemented, as the most effective means of addressing Tillamook's stormwater issues.

Appendix XIX - City of Tillamook Recycling Plan, 2003

City of Tillamook and Tillamook County
Implementation of General and Expanded
Education and Promotion Programs for Residential, Commercial and Institutional Generators of Solid Waste
Revised October 2003

The City of Tillamook is the only city in Tillamook County with a population over 4,000. The City is responsible for implementing three program elements within the city limits. Three program elements must also be offered within the City of Tillamook urban growth boundary (UGB). Information efforts designed to meet the Expanded Education and Promotion program element will sometimes overlap the City of Tillamook, the UGB and the County boundaries. The City of Tillamook, with the cooperation of the franchise holder, will take responsibility for implementing the program elements within the City and the UGB. Tillamook County will provide some support for the Expanded Education and Promotion program element countywide.

The City of Tillamook and UGB are required to meet two general requirements:

- Provide on-site collection service for source separated recyclable materials at least monthly (Alternative Recycling Program application is attached.);

- Provide a general public education and promotion program (the general program is covered by the plans described for the expanded education and promotion program.).

In addition, the City of Tillamook and the UGB will implement the following three additional program elements (to a large degree these program elements are being implemented. This plan formally documents existing practices and supplements the programs in some areas related to Expanded Education and Promotion):

- Expanded Recycling Drop-off Depots (described in the Alternative Recycling Program application);

- Expanded Education and Promotion (described in this document);

- Commercial and Institutional Recycling (the expanded education and promotion component of the commercial program is described in this document; detailed information on the commercial businesses and institutions to be served, the materials to be collected and the promotion of the service is attached).

The following program description primarily describes how program requirements for the City of Tillamook and the UGB will be met. Some activities that are described will have a countywide impact. Expansion of the required program elements to areas outside of the City of Tillamook and UGB are voluntary on the part of Tillamook County.

A. Provide new customer brochure or packet to each new residential and commercial service customer. Brochure or packet shall include the following:

   1) Description of the materials collected; the schedule for collection and service provider; explanation of proper preparation of materials for collection; a list of the reasons why source separation of materials for recycling is necessary; and

   2) Information about waste prevention, reuse and composting.

In year 1 of this program, the new customer brochure or packet will be sent to existing as well as new residential and service customers. The new customer brochure or packet will be updated every five (5) years.

The residential brochure or packet will be specifically designed to meet the needs of residential generators of solid waste.

The commercial brochure or packet will be specifically designed to meet the needs of commercial generators of solid waste.

On December 31st of each calendar year, the City of Tillamook will request a list of all new residential and commercial businesses that have received the above information from City Sanitary. The City of Tillamook will additionally request documentation that an annual mailing has gone out to all residential and commercial customers of City Sanitary. Documentation will include: examples of two separate brochures, one brochure targeted towards residential customers and the second brochure targeted towards commercial customers; the number of customers receiving brochures broken down by residential and commercial; and a receipt showing payment for the mailing.

B. Provide promotion to all residential and commercial service customers. All residential and commercial service customers shall be informed annually through the provision of quarterly education and promotion of the following:

1) Description of the materials collected; the schedule for collection and service provider; explanation of proper preparation of materials for collection; a list of the reasons why source separation of materials for recycling is necessary; and

2) Waste prevention and reduction methods;

3) Reuse of materials and composting techniques; and

4) The benefits of waste prevention, reuse and composting.

The City of Tillamook and its Franchise hauler, City Sanitary Service of Tillamook, and Tillamook County Government will provide and promote the following alternative recycling program (this proposal will be reviewed annually and any proposed changes submitted to DEQ for approval):

a) City Sanitary will be responsible for an annual mailing to all residential and commercial customers on the benefits of recycling and waste prevention, the procedure for preparing materials for collection and the types of materials recycled during the past year (Year 1 this was met through the "new" customer brochure or packet); the annual mailing sent to commercial customers shall specifically address commercial recycling and waste prevention; this annual mailing will be updated at least every five (5) years;

b) The City of Tillamook and Tillamook County will place articles in the Headlight Herald, and other publications, on recycling, waste prevention, composting and alternatives to household hazardous waste on at least a quarterly basis. These articles will count as two quarterly promotions each for residential and institutional/business customers as long as at least two articles are targeted towards residential generators and two are targeted towards commercial generators;

c) The City of Tillamook and Tillamook County will provide one or more public service announcements (PSA's) per year on the local county radio stations with a focus on reducing waste, reuse or composting; and

d) Cable television may be utilized to present messages on recycling, reuse, waste prevention and composting.

C. Annual Recycling Information. This requirement is met by "a)" under the quarterly promotion.

D. Participate in one or more community or media events per year, which promote recycling, waste prevention or composting.

1) The City of Tillamook and Tillamook County will work together on a annual basis to determine how to participate in one event (besides the household hazardous waste collection event) to meet this requirement: activities may include booths at events such as the Tillamook County Fair or the Tillamook County Home and Garden Show, Tillamook County Saturday Farmers' Market. Promotion will be targeted at both residential and commercial generators of solid waste.

2) The County of Tillamook will provide information on alternatives to household hazardous waste at its annual household hazardous waste collection event.

E. Utilize a variety of materials and media. The City of Tillamook and Tillamook County will meet this goal by utilizing direct mail, the Headlight Herald, PSA's, the placement of educational materials in county libraries and city halls, and possibly cable television. There will also be participation in one community event annually, such as the annual county fair, the County's annual household hazardous waste event, and the Farmer's Market.

F. Roles of the City of Tillamook, City of Tillamook Franchise hauler, City Sanitary Service of Tillamook, and Tillamook County Government.

1) City of Tillamook's role will be to:

a) promote recycling by having recycling materials available for the public at City Hall;

b) promote via at least one or more PSA's a year the benefits gained by recycling, reducing, and reusing;

c) provide via the City's water and sewer bills, a mailing that encourages customers to reduce, reuse and recycle;

d) volunteer time in the booth at a public event in the Urban Growth Boundary with the County and City Sanitary regarding efforts to recycle, reuse and reduce;

e) have on hand, for the public, at City Hall information on the merits of recycling, reuse and reducing materials that go into the waste stream.

2) City Sanitary's role will be to:

a) manage the three (3) depots, collect residential recyclables on request on route and keep written record of amount collected each time and each location for annual report to the City, County and State of each request;

b) collects the following from commercial customers:
- Cardboard,
- Newspaper,
- Magazines,
- Office paper,
- Glass,
- Tin;

and keep written record of amounts and types collected for annual report to the City, County and State, of each request;

c) provide the following information at the recycling depots and shacks:
- Reasons why people should recycle; list of materials that can be recycled; and instruction for the proper preparation of recyclable materials,
- Reasons why people should reduce waste, reuse materials and compost,
- How to reduce waste, reuse materials and compost;

d) provide to all of their commercial and residential accounts/customers an annual mailing on the reasons and the "how to's" to reduce, reuse, and recycle:
- This mailing shall occur in October of each year;
- Two separate brochures shall be distributed to residential; and commercial customers;

e) participate in a volunteer effort to man the booth at the Tillamook County Fair along with the County on the merits of recycling, reuse and reduce as well as composting; and

f) be responsible for implementing the opportunity to recycle and will be responsible for the education, promotion and notification activities via their customer mailing list. The City of Tillamook will be responsible for recycling education and promotion to the general public as per sub question C.

3) Tillamook County's role will be to:

a) participate in one or more community or media events per year which promote recycling, waste prevention or composting;

b) design and staff a booth at the county fair each August;

c) provide information on alternatives to household hazardous waste at its annual household hazardous waste collection event; and

d) provide information, at various other County events including but not limited to the annual Home and Garden Show at the Tillamook County Fair Grounds, on the positive aspects of recycling, reducing and reusing products to divert items from going into the garbage can.

4) The Combined role of City of Tillamook, City Sanitary and Tillamook County is to provide the following:

a) At the depot sites and shacks –
1) reasons why people should recycle; a list of materials that can be recycled; instructions for the proper preparation of recyclable materials;
2) reasons why people should reduce waste, reuse materials and compost;
3) how to reduce waste, reuse materials and compost; and
4) provide recycling information, once a year, via a mailer through City Sanitary Service to present and new commercial and residential customers;

G. Recyclable materials which will be recovered using the alternative recycling program are as follows:
- Cardboard
- Newspaper
- Glass
- Magazines/ catalogs
- Office paper
- Tin
- Ferrous and nonferrous scrap
- Aluminum
- Refrigerators/Freezers
- Washer/Dryers
- Tires
- Motor oil

- Batteries

H. City Sanitary shall additionally provide the following information in its annual Recycling report to the City, County and State DEQ:

1) The City of Tillamook's annual waste shed recovery rate compared to State rate requirements, using the alternative program, for both sources - State DEQ and Tillamook County generated numbers.

2) Estimates of recyclables collected, as described in F(2)(a & b) above.

3) Improvements/Investments with respect to recycling efforts in the City of Tillamook;
City Sanitary Service has in the recent past done the following in terms of its investment plans with respect to recycling equipment and structures:
Fenced their yard at their office (cost $30, 000) black topped their site (cost $35,000) in preparation for using their site as one of the three depot sites. A cardboard collection truck was purchased for $95,000. Numerous drop boxes and roll off containers at $30,000.

4) Assist in the development and promotion of a city curbside recycling service for its residential and commercial customers through a public process and, promotion of the three (3) depot stations, which are in convenient locations for Tillamook residents within ¾ mile distance of most residential areas.

5) Report the City Population served annually as a percent of the total City of Tillamook population. The highest projected population increase to the planning period 2020 is 1.5% a year.

6) Identify the methods of service currently being used, to include depots, on-route, and on call recycling service. All of these services are conveniently accessible to all Tillamook residents and commercial businesses.

I. As part of this application and understanding changing circumstances, the City of Tillamook, through utilization of/participation by the Citizens Advisory Committee, Planning Commission and City Council, is committed to conducting a one (1)-year review of the effectiveness of the current/proposed alternative recycling program.

Approved by City Planning Commission October 2003
Approved by City Council November 2003

Appendix XVIII - City of Tillamook Flood Mitigation Action Plan, Update 2010

Acknowledgement

This Flood Mitigation Plan Update (the Update) was prepared with review, editing, and updated information provided through the efforts of the City of Tillamook Flood Mitigation Plan Oversight Committee members, as well as city, county and natural resource agency staff.

The Update is constructed around the original document and in many cases uses the identical information. This is especially seen in the Appendices. *Appendix A* was updated to reflect changes in organizations and contact information; *Appendix B* contains the information about the 2009 process; *Appendix C* has minor edits to include new information; and *Appendices D and E* remain unchanged.
Some of the photo inserts and sidebars remain from the original text and in some cases, the original text was unedited.
Contact information from the original document is below.

Oversight Committee Members

Andy Neal, Tillamook Chamber of Commerce
Butch Parker, Tillamook County Community Development
Denise Lofman, Tillamook Bay Watershed Council
Don Hurd, Tillamook Urban Renewal District
Doug Henson, Tillamook Revitalization Association
Doug Rosenberg, Tillamook Bay Habitat and Estuary Improvement District
Gordon McCraw, Tillamook County Emergency Management
Jan Stewart, Tillamook Planning Commission
Joe Martin Tillamook City Council
Judy Mammano, Tillamook Bay Habitat and Estuary Improvement District
Larry Davy, Tillamook County General Hospital
Leo Kuntz, Nehalem Marine Manufacturing
Leon Vellinga, Drainage Districts
Lisa Phipps, Tillamook Estuaries Partnership
Margaret Page, Business Owner/County Board of Realtors

Mark Labhart, Tillamook County Commission
Matt Mumford, Tillamook Transportation District
Matt Streeter, Business Owner
Rudy Fenk, Tillamook County Soil & Water Conservation District
Shawn Reiersgaard, Tillamook Cheese
Val Folkema, Tillamook Estuaries Partners

Other Stakeholders
Gus Meyer, Citizen
Tilda Chadwick-Jones, TBHEID Staff
Oregon Department of Fish & Wildlife
Oregon Solutions Program

Executive Summary

Background and Purpose

> *"The local mitigation plan is the representation of the jurisdictions commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards."* CFR 201.6

Following the flood and landslide disaster in February 1996, the City of Tillamook and Tillamook County participated in Federal Emergency Management Administration's (FEMA) emergency preparedness programs. In November 1996, Tillamook County completed the ***1996 Flood Damage and Recovery Plan*** that inventoried disaster-related losses and damages, evaluated economic impacts, and proposed economic recovery strategies.[1] This was followed by the ***Tillamook County Flood Hazard Mitigation Plan*** that set goals and policies to reduce flood related hazards and damages; reduce environmental impact of flood control; and reduce the long-term cost of flood control and floodplain management. The county's plan focused only on flooding along the rivers throughout Tillamook County.

In November 2001, the Tillamook City Council passed Resolution No.1354 to adopt the Tillamook County plan and agreed to apply for federal funding to develop a flood mitigation plan for the city. In December 2002, the City adopted the ***City of Tillamook Flood Mitigation Action Plan*** with Resolution 1402.1. The Oregon Natural

[1] 1996 Tillamook County Flood Damage and Recovery Plan Final Report, p1

Hazards Workgroup, from the Community Service Center at University of Oregon, worked with a City appointed Steering Committee that guided the process, and developed the original plan with funding from Flood Mitigation Assistance Program.

In December 2006, the Tillamook County adopted its Multi-Jurisdictional Hazard Mitigation Plan. This plan set out to look at all potential hazards in the county and its cities. The County Commission directed its agencies to identify available funding to implement proposals and actions to lessen the adverse impacts of any future natural disasters. Businesses, industries, and community groups were encouraged to be involved with plan updates and expansions in the future. At the same time, all seven city councils adopted their city's section within the county- wide plan.[2]

Flooding in Tillamook

Most flooding in the City of Tillamook occurs along US Highway 101, also known as N. Main, from the overflow of the Wilson and Trask rivers, and to a lesser extent, Dougherty, Hall, Hoquarton sloughs on the north side of the city, and Holden Creek on the south.

Historical alterations to courses of local rivers, creeks, and sloughs and development in the floodplain have changed the nature of flooding in Tillamook.[3]

As a result of recently completed projects, alterations to the floodplain provided more open space. An example is the result of a FEMA funded buy –out at the Dean property. Removal of the buildings and 12,000 CY of rock and debris from the floodway allows flood waters to quickly subside once the weather conditions change.

Flood Mitigation Plan

The city's flood mitigation plan became a catalyst for agency coordination and public involvement. It set goals and actions to protect life and property; define future mitigation projects; attract project funding; and reduce flood insurance premiums. It recommended strengthening partnerships between local and regional government agencies, community organizations, and citizens to hasten response and recovery. This was to be carried out through a strong program of public education and outreach for preparedness and mitigation.

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[2] STORM Safe, FEMA and Oregon Office of Emergency Management, p1

[3] City of Tillamook 2002 Flood Mitigation Plan, p v

Strengthened Partnerships

After the disasters of 1996, Tillamook County became a Project Impact Community. Tillamook County Emergency Communications District became Oregon's first 9-1-1 District in 1998 a coordinated interagency response system that quickly goes into action during disasters. Reverse 9-1-1 now provides early flood warning, coordinated and timely response during a disaster with coordinated recovery support following. Through the efforts of elected officials, Oregon Governor's office approved formation of an Oregon Solutions Flooding Project to focus on reducing the effects of flooding in the Tillamook Area.

Public Outreach & Involvement

The city's website provides improved public access to information and links to the Tillamook County and FEMA's web site for flood information. The Tillamook County Emergency Communications District website has links to all partner agencies.

The City of Tillamook continues to provide the most current information about flood maps and flood insurance to realtors and lenders each year; At City Hall the staff provides information about flood impacts and requirements for specific properties upon request.

The Tillamook Bay Habitat and Estuary Improvement District (TBHEID) provide excellent public information presentations about flood hazards and mitigation efforts. These sessions provide information to the community, including print materials produced by FEMA, Oregon Emergency Management, and others.

Tillamook County Economic and Small Business Development distributes the *"Tillamook County Disaster Preparedness Guide for Business"*, co-developed with community leaders, to city halls and Chamber of Commerce offices throughout the county. They are also offering to provide trainings to business groups regarding the contents and how to use the guide as a tool for a business.

Attracting Funds for Mitigation Projects

City of Tillamook successfully used the 2002 plan to document mitigation activities; as a needs assessment to justify applying for grants such as FEMA's Flood Mitigation Assistance Program (FMA); and to apply for updated Flood Insurance Rate Maps. This plan meets criteria needed to apply for FEMA Hazard Mitigation Grant Program funding used to elevate, relocate, or buy-out severe repetitive loss properties.

Tillamook Bay Habitat and Estuary Improvement District formed in June 2002 in north City of Tillamook as a non-profit self-taxing water control district. District funds matched partners' funds for maintenance and reduction of flood-ecosystem damages to area north of the City of Tillamook.
The Oregon Solutions project brought seed money to leverage larger grants, and in some cases perhaps even loans, to fund mitigation projects.

Gained Eligibility for the Community Rating System

By adopting the 2002 Flood Mitigation Plan, City of Tillamook became eligible to enroll in FEMA's Community Rating System (CRS).The city is rated at 8 out of 10 categories, with 1 being the best. Points are earned and the rating number goes down as a community completes more mitigation work. Following receipt of the 8 rating, city residents and businesses received a 10% reduction in their flood insurance premiums through the National Flood Insurance Program (NFIP). Annual reviews and applications demonstrating continued compliance keep the city eligible for the CRS program. A new rating calculation occurs every 5 years when the national FEMA office reviews applications and determines the value of mitigation activities.

Tillamook Flood Mitigation Goals[4]

The flood mitigation goals are statements of desired outcomes for reducing community risk from floods. These goals remain the same as the original plan. They become a filter when selecting and/or prioritizing projects.

A. Protect Life and Property
B. Preserve Natural Areas Related to Flooding
C. Coordinate and Enhance Emergency Services
D. Improve Structural Projects
E. Enhance and Promote Public Education
F. Improve and Promote Partnerships, Coordination, and Implementation

Flood Mitigation Action Accomplishments

The action items were detailed recommendations for activities in which local, regional, and state agencies could participate to reduce future losses from flood events. City of Tillamook was listed as the coordinating agency for all projects. Projects were divided into short term (1-2 years) and long term (3-5 years) activities. A summary of each is below.

[4] City of Tillamook 2002 Flood Mitigation Action Plan

Summary of Short-term Mitigation Actions (1-2 Yrs)

Action	Goals	Listed Partners	Status
S-T #1 Institute a Flood Mitigation Plan Oversight Committee	E,F	County, Drainage Districts, TBHEID, TBWC, TEP, Chamber of Commerce, County Emergency Mgt., TCCA, TCGH, Oregon Solutions Group, Tillamook County Transportation District, Tillamook SWCD, Tillamook Chamber of Commerce, Tillamook Revitalization, Tillamook Urban Renewal Dist, 9-1-1 District	Committee convened in May 2009 to update the 2002 plan. Plan due for 5 year update in 2010
S-T #2 Community Rating System Participation	A,B,E,F	County Emergency Mgt, FEMA, Insurance Services Organization, Inc., County Community Development	City met qualifications, reduced flood insurance premiums by 10%, current rating is 8
S-T-#3 Develop commercial district Floodplain Mgt Strategy	A, B	County, Drainage Districts, TBHEID, TBWC, TEP, Chamber of Commerce, County Emergency Mgt., TCCA, TCGH, Oregon Solutions Group, Tillamook County Transportation District, Tillamook SWCD, Tillamook Chamber of Commerce, Tillamook Revitalization, Tillamook Urban Renewal Dist, 9-1-1 District	Using FEMA funds city offers 75% of the cost to buy or elevate repetitive loss property. City is developing plan for best use of vacant land along N. Main and looking at potential receiving sites for future businesses volunteering for this program. New construction must follow city ordinances for construction in the floodplain
S-T #4 Residential property mitigation	A, B	TBHEID, County, EDC, Chamber, Homeowners Assn., TEP, Realtors	No residential property owners requested assistance
S-T #5 Develop comprehensive public outreach and education program	A, C, E, F	Chamber, local realtors, businesses, schools, TPUD, TCGH, TCCA, Headlight Herald, TBHEID, County Emergency Mgt., TBCC, TBWC, American Red Cross. TEP	No comprehensive outreach program exists, although many partners offer outreach and education within their mission.
S-T #6 Improve access and update city's flood map info.	E, F	Corps of Engineers-Portland office; Water Resources Department, TBWC, FEMA	City maps digitized, and amended Amendment letters are available on the county website.

Summary of Long-Term Actions (3-5 yrs)

Action	Goals	Listed Partners	Status
L-T #1 Develop City Storm Water Mgt. Plan	A, D	Bay City, TEP, County Public Works, Drainage Districts, TBWC, NRCS, TBHEID, Community Solutions Team	Plan was completed: includes preliminary engineering and cost estimates
L-T #2 Develop a flow regime project	A, D	TEP, TBHEID, ODFW, TBWC, *Oregon Solutions Flooding Project*	HEC-RAS model developed; Project Exodus designed
L-T #3 Develop a city emergency response system	A, C, F	National Weather Service, ODF, USGS, TBHEID, OEEM, American Red Cross, TCGH, fire/police, KTIL, POTB, ODOT, Drainage Districts, Tillamook Youth Authority, TBWC	Reverse 9-1-1 now provides early warning to business and home owners when floods threaten; a Command and Control Center is set up at the 9-1-1 Center
L-T-#4 Restore riparian areas, floodplains and wetlands; protect water quality	A, B, C, D, F	County TBWC, TEP, TSWCD, NRCS,TBHEID, DEQ, ODFW, County Emergency Mgt.	Hoquarton Trail provides interpretation in a riparian area; plan in the works looking at active and passive treatments in the N. Main area. Project Exodus 30% design
L-T #5 Strengthen land use planning and zoning	A, F	DLCD, County, TBHEID	As buy-outs occurred, zoning changes to Open Space on those parcels. No permanent structures on those sites Elevation of BFE for new construction

Section 1:

Introduction

Tillamook Community Profile

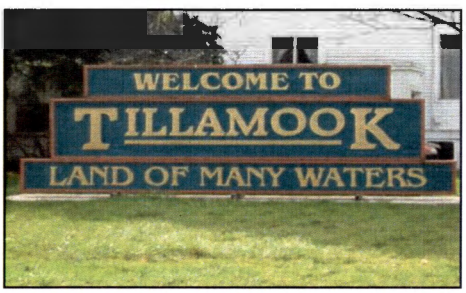
Population and Demographics

Rivers run through it and they all feed into Tillamook Bay! City of Tillamook is located in Central Tillamook County at the intersection of US Highway 101 and Oregon Highway 6, on Oregon's north coast. The Wilson River forms the north boundary, Holden Creek runs through the south side, and the Trask River borders the south west edge of the city where it is joined near tidewater by the Tillamook River. Running through the low lying N. Main Ave. commercial district are Hoquarton, Dougherty, and Hall sloughs. Timber and wood products, dairy production, commercial and sport fishing, and tourism are the traditional industries for this region.

Tillamook is a small city with an estimated 4700 residents in 2008. It is the largest jurisdiction in the county and has steadily grown over the last decade, growing on average 0.94% a year since 2000[5]. The city annexed new areas to the east and west of its boundaries in 2005 which accounts for some of the population increase. Nearly 32% of Tillamook's resident population is younger than 20, about 47% are between 20 and 50 years old, and just over 21% are over 50 years old. Approximately 11% of the total population is Hispanic or Latino. Median household is $27,550 and 65.7% of the population has low or moderate income.[6]

Housing and Development

With the annexation of land on the east side to the city, a large number of housing units were added to the city's inventory. These include multi-family dwellings with the exception of one new development. Most of the structures are 0 -15 years old.



Welcome sign on U.S. Highway 6. *Source: ONHW*

In addition to elevation, flood proofing, and relocation of repetitive loss commercial buildings along N. Main Ave., the city saw public and private investment on the west side of town that included construction of large new facilities for a public library, medical offices near the hospital, Safeway, Bank of Astoria and the TLC Federal Credit Union. Tillamook Bay Community College built a new main

[5] Reid Johnson, Economic Opportunity Analysis, October 2009, p7

[6] Income Survey, 2005

campus on the east side of the city. Fred Meyer significantly expanded its facility, a new Burger King, another retail building, currently occupied by Denney's Restaurant were all completed on N. Main Ave. and Wilson River Loop.

Employment and Industry

As the Tillamook County Seat, regional offices of state and federal government agencies are located in the City of Tillamook. Tillamook School District 9, Tillamook Bay Community College, and several small private schools provide employment and, in some cases are partners in employee training programs. The food products industry includes dairy production and specialty meat products. In addition there are wood products companies and a fairly wide variety of retail businesses. Tourism is a large sector of the economy as well. Visitors from the Portland area arrive via Oregon Hwy 6 and other travelers moving north or south along the Oregon Coast all travel through Tillamook. The Tillamook Cheese Factory Visitor Center sees nearly a million visitors a year and hunters and sports fishermen stay in Tillamook motels and frequent the restaurants in the fall. There is a growing medical services economy in the area as Tillamook County General Hospital expanded and the new medical office buildings have been constructed in the same neighborhood.

Overview of the Flood Mitigation Plan Update

Purpose of the plan update

Flood mitigation plans assist communities in reducing risk from flood damages by identifying resources, information, and strategies for reducing flood risk, meanwhile helping guide and coordinate mitigation activities & public investment throughout a defined area.

The purpose of this Flood Mitigation Plan Update is threefold:

1. Evaluate the 2002 Action Plan to assess completion and effectiveness.
2. Propose new action items and expected outcomes.
3. Remain in compliance with federal assistance program requirements.

Methodology

This updated document is based on information gathered and compiled by VLG Consulting. That included written comments from members of the Oversight Committee following review of the City of Tillamook 2002 Flood Mitigation Plan; interviews with city and county staff; written comments from ODFW staff; reports from Oregon Solutions, the US Army Corps of Engineers, and the Project Exodus Draft Final Report, prepared by Northwest Hydraulic Consultants & HBH Consulting Engineers. In addition to the previous flood mitigation plans, FEMA requirements and tools on the FEMA Oregon Emergency Management (OEM) and Environmental Systems Research Institute (ESRI) websites were used to prepare a comprehensive review and analysis.

Oversight Committee

A City of Tillamook Flood Mitigation Oversight Committee convened to review and evaluate implementation of action items and perform the formal review

process. The Oversight Committee consists of a broad base of stakeholder members from the following local government, agencies, and organizations:

Business and property owners

City Council

City Planning Commission

Oregon Solutions Program

Tillamook Bay Habitat and Estuary Improvement District

Tillamook Bay Watershed Council*organization's*

Tillamook Chamber of Commerce

Tillamook County Department of Community Development

Tillamook County Department of Emergency Management

Tillamook County General Hospital

Tillamook Estuaries Partnership

Tillamook Revitalization Association

Tillamook Soil and Water Conservation District

Tillamook Urban Renewal District

Trask and other local drainage districts

Stakeholder:

Person, group, or organization that has direct or indirect stake in an organization because it can affect or be affected by the actions, objectives,

Organization

Section 1: Introduction provides a brief community profile and describes the purpose, methodology, and organization of the *Action Plan*

Section 2: Flooding in the City of Tillamook updates data for mitigation plan activities, and retains discussion about various factors that affect flooding to illustrate the need for continued flood mitigation in the City of Tillamook.

Section 3: Flood Hazard Assessment explains the hazard identification, vulnerability assessment, and risk analysis and provides limited analysis

Section 4: Community Flood Issues updates actions on issues facing community

Section 5: discusses existing mitigation programs and resources available and some actions taken by local regional state and federal agencies, organizations as well as private businesses and individuals.

Section 6: 2003 Plan Goals and Action Item Status reiterates the goals of the Mitigation Plan and provides a status on action items from the 2003 Plan.

Section 7: Evaluation of 2003 Plan Goals and 2009-2014 Action Items presents successes and unfinished work for achieving the plan goals and recommends flood mitigation action items including cost information and sources of funding to implement.

Section 8: Plan Maintenance and Evaluation *offers recommended changes to strengthen this element and assure that regular review and evaluation occur.*

Appendix A: Flood Resource Directory provides local, regional, state and national sources of flood mitigation information.
Appendix B: Public Process presents methods used to collect information from the Steering Committee, stakeholders, and citizens.
Appendix C: Acronyms outlines acronyms for organizations referenced in the plan.
Appendix D: Cost-Benefit Analysis provides information from the State of Oregon and FEMA on how to conduct an economic analysis of mitigation strategies.
Appendix E: Flood Terminology provides technical descriptions and information about common flood terms.
Appendix F: Written comments received: shows final written comments received during formal public comment periods

Flooding in the City of Tillamook

Tillamook is a Native American word from the Kilamuck Tribe that translates to "Land of Many Waters." Five rivers, with a long history of flooding, feed into Tillamook Bay: the Kilchis, Miami, Tillamook, Trask, and Wilson. City of Tillamook has experienced flooding throughout its history, but more recently, severe flood events occurred frequently during the 1990s and the first 9 years of the 21st century. Flooding poses a threat to life and safety, public and private property, and can cause great disruptions to the local economy.



1972 flood. *Source: Tillamook Historical Society*

Flooding in the City of Tillamook occurs along US Highway 101 from the overflow of the Wilson and Trask rivers, and to a lesser extent, Dougherty, Hall, Hoquarton sloughs, in the north and Holden Creek at the South. The damaging floods in the North Main commercial district and the low lying dairy land within the city limits are primarily due to flooding of the Wilson River. Table 2.1 show historic crests on the river since 2002, with 1964 and 1996 as comparators. Prior to 2006 these were the highest floods recorded.

Table 2.1
Historic Crests on the Wilson River

December	22	1964	20.26
February	8	1996	19.51
February	1	2003	14.80
January	10	2006	15.60
January	30	2006	13.27
November	7	2006	22.84
December	3	2007	20.50
November	13	2008	15.92
January	2	2009	13.86
January	8	2009	15.92

Source: NOAA Weather Service and Tom Manning, Tillamook County Emergency Management

Flood stage on the Wilson River is 11 feet. Table 2.2 shows what to expect at various flood levels on the Wilson River.

Table 2.2
Flood Affects by flood level

Wilson River Flood Level	Impact
12.0	Minor flooding of low-lying dairy and pasture land north of Tillamook
14.0	Widespread lowland and dairy land flooding begins; sloughs north of the city (mainly Dougherty) begin to overflow along the river; minor flooding begins in the business district north of Tillamook and along N. Main Ave.
15.5	Expect widespread flooding in the north part of Tillamook along N. Main Ave to the vicinity of Tillamook Cheese Factory; the most noticeable flooding impacts are to businesses near Dougherty slough; widespread flooding of low lying dairy pastureland along with numerous rural access roads outside of Tillamook.
19.0	Widespread flooding in the town of Tillamook and surrounding areas; N. Main Ave. through the northern portion of Tillamook has historically been closed at this and higher stages.
21.5	Expect flooding as devastating as the February 1996 flood
22.5	Expect flooding as devastating as the December 1998 and December 1996 events.

Source: NOAA Weather Service and Tom Manning, Tillamook County Emergency Management

National Flood Insurance Program

As of July 31, 2009 there were a total of 178 claims filed for flood insurance, and only 1 was still open. Total payments for damages are $7,364, 288.72.Since adopting the Flood Mitigation Plan, City of Tillamook has assisted 2 businesses to re-locate, 2 business owners to elevate their buildings, and 4 businesses with sever repetitive losses voluntarily participated in the FEMA Buy-out program. Table 2.4 shows those businesses and the action taken. The City purchased the Tillamook Inn before the 2002 plan was in place, and the Tillamook Veterinary Clinic used assistance from the city to elevate its facility prior to that time.

FEMA funds can be used to purchase a property at 75% of it's appraised value; elevate a property using FEMA funds for 75% of the actual cost to elevate; or relocate a structure, which is defined as physically lifting and re-locating the structure. None of the Tillamook projects was actually completed under the relocation category, although 2 businesses used their buy-out payments to relocate their businesses to higher ground. Table2.3 shows assistance to businesses owners for buyout or elevation since 2002.

Table 2.3
City of Tillamook Flood Mitigation

Property	Year Complete	Buy-out	*Relocate*	Elevated	Mitigation Cost
Tillamook Inn	Aug. 2000	X			$513,654
Coast Tire	Sept. 2003	X			$255,770
North Port Plaza	Oct. 2007			X	$1,504,922
Dean Motors	July 2006	X			$771,341
Rental Center	Oct. 2007	X	relocation		$217,796
Western Royal	Dec. 2004			X	$161,200
RV Repair	Oct. 2009	X	relocation		$470,870
Dairy Queen	August 2009	X			$680,776

Source: Tillamook County Community Development Department

What Factors Create Flood Risk?

Flooding occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course. Flooding is a frequent occurrence on many coastal rivers and their tributaries in Oregon. Seasonal flooding is common in the lowlands and usually has little or no widespread or long-term detrimental effects. In Tillamook, geography and climate conditions create chronic flooding that leaves behind a layer of fertile black loam across the valley floor each season. However, an ordinary seasonal flood can turn into a catastrophic event under certain conditions.

Geography and Geology

The City of Tillamook lies in the lowlands of the 582-square mile Tillamook Bay basin. Steep, forested slopes with elevations up to 3,690 feet characterize the uplands of the Tillamook basin. River channels are moderately confined and precipitation on the steep slopes is routed rapidly downhill. Below the 100-foot elevation, the basin begins to level into the flat valley floor where unconfined channels traverse the lowlands to Tillamook Bay. This drowned-river estuary is one of the largest in Oregon, covering up to 12-square miles at high tide.[7]

Historic downtown Tillamook lies 22 feet above sea level, on an ancient riverbank. The Wilson River to the north, and the Trask to the south, border the City's commercial area. Dougherty, Hall, and Hoquarton sloughs cross under the N. Main Ave. corridor. The map on the following page illustrates Tillamook's orientation within the lower Wilson and Trask floodplains.

While most rivers throughout the County reach flood levels at least once every rainy season, the Wilson and Trask rivers flood more frequently, usually cresting above flood stage more than once a year. Records show that in a period of 26 years from 1970 to 1996, the Wilson River exceeded flood stage 93 times and in the 13 years post-1996 there are more than a dozen occurrences.[8]

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[7] City of Tillamook Flood Mitigation Plan, p 11

[8] City of Tillamook 2002 Flood Mitigation Plan, p11 plus info from Tillamook Emergency Mgt. Department

Climate and Precipitation

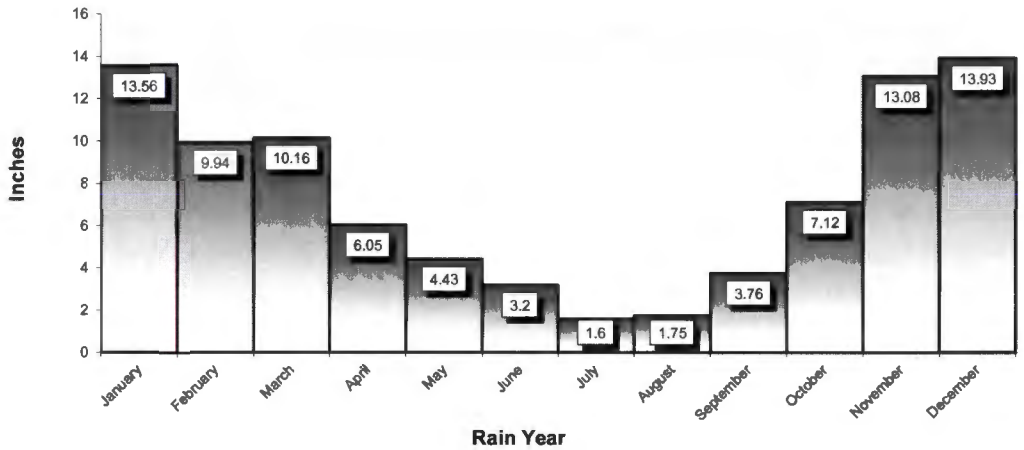
As marine air moves onshore along the Oregon coast, it rises and cools over the foothills of the Coast Range, promoting heavy rainfall in the higher-elevations—often as much as four to six inches in a single day. Steep-gradient coastal streams quickly move floodwaters through the watershed, causing them to concentrate in the rivers' lower reaches before discharging into the Pacific Ocean. While coastal streams are usually at flood stage for less than two days, severe storms of unusually long duration can raise streams above the flood stage for three to four days or more.[9]

The most widespread and potentially dangerous flooding of lowlands occurs when excessive stream flooding combines with adverse coastal conditions. If strong winds and storm surges accompany high spring tides, extensive coastal flooding can result. When extreme river flows then meet high sea levels, floodwaters cannot discharge into the ocean. With no outlet waters backflow into the estuary and flood the low-lying areas.

Weather extremes also contribute to the potential for catastrophic flooding. During the rainy season it is common for a series of back-to-back storms to saturate soils and fill wetlands, ponds, and depressions throughout the floodplain with excess water. With these natural catch basins filled to capacity, if storms persist, or if a particularly large storm system moves onshore, major flooding usually results. Cold spells that bring heavy snowfall to coastal mountains, followed by the fast warming and heavy rainfall that accompany a subtropical front (often referred to as a "Pineapple Express"), can also pose serious flood threats. The flood of 1996 is an extreme example of this type of rain-on-snow event. With an anticipated climatic trend towards warmer winters due to global warming, there is an increased chance for winter rain and rain-on-snow events. Flooding is most common from October through April, when storms from the Pacific Ocean bring intense rainfall to the area. Tillamook receives approximately 88 inches of rain on average each year. During the rainy season, monthly rainfall totals average far higher than other months of the year. Figure 3.1 is based on rainfall data recorded in City of Tillamook from 1961-1990 and is available from the Oregon Climate Service (OCS) website.

[9] City of Tillamook 2002 Flood Mitigation Plan

Figure 2.1.
Average Monthly Rainfall for Tillamook, Oregon



Source: Oregon Climate Service

Land Use

The Tillamook Bay basin was once inhabited by the Kilamuck tribe and frequented by other Native American coastal tribes. Upon discovery of the area's fertile lowlands, productive fisheries, and large expanse of forests, Americans and Europeans began settling in Tillamook in the 1850s. With increased human presence on the landscape, natural processes in both the upland and lowland areas of the basin were affected.

Research suggests coniferous forests of the Pacific Northwest historically have had low frequency, high-intensity fire cycles estimated at 400-year intervals. Fueled by a prolonged drought and ignited by human-caused error, a series of three fires raged through Tillamook's forested uplands in 1933. Termed the "Tillamook Burn", it remains the most destructive fire in Oregon's recorded history. Six decades of severe fires north and south of Tillamook basin preceded the Tillamook Burn and additional fires in the Tillamook basin occurred in 1939, 1945, and 1951. A total of 360,882 acres were burned in only 80 years, severely damaging the soil and inhibiting natural forest regeneration.

Timber logging began in the Tillamook basin valleys in the 19th century with ox teams and horses. With the advent of the steam trains and donkey engines, timber extraction expanded into the uplands. After the Tillamook Burn, large salvage logging programs began and a network of logging roads fragmented this region. The primary effects of these upland changes—fire, logging, and salvage—increased water delivery to streams, transportation downstream, and increased sediment delivery to lowlands.

Early settlers in the lowlands engaged in the traditional practice of reclaiming floodplain lands by constructing levees and dikes and installing drainage networks. To provide both protection from floods and brackish water from incoming tides, multiple landowners and drainage districts erected individual systems of levees and dikes. To maximize the amount of land to be protected and take advantage of the higher ground of natural levees, most of these flood control structures were located immediately alongside rivers and sloughs. To increase the length of the growing

and grazing season, drainage tiles were placed below the surface of agricultural land to remove excess water while also increasing susceptibility to land subsidence.

To aid in navigation, river channels were dredged and large wood was removed to increased channel depth, provide upstream access, and increase river flow capacity. Cut-off dams were constructed to eliminate the bends of winding river channels and, in turn, shorten the course of the river. These simplification measures removed alternative channels for floodwaters to travel during high flow events and increased the erosive action on banks by allowing for increased flow velocities.

Agriculture, primarily associated with Tillamook's dairy industry, is still the most prominent land use within the greater Tillamook valley lowlands. While most of the land is pasture benefiting from new soil deposits from seasonal flooding, livestock health and loss of access to grazing land are risks associated with floods. Very large floods can smother the fields and carry large deposits of weed seeds that render the pastures useless for long periods of time. Clean-up and replanting are costly, as are the additional feed purchases necessary because pastures are unavailable. Confined animal feeding operations can pose a threat to human safety and aquatic habitat when accidentally exposed to floodwaters by releasing concentrated animal wastes into area streams.

Urban land use is the second most extensive use in the 100-year floodplain. Heavier building concentration, roads and other needed infrastructure make the cost much higher in these areas when flooding occurs. Commercial development tends to be located in this region, causing significant disruption to the local economy. Floodwaters often block roadways for long periods, cutting off residents from their homes or employees from work, while associated high winds can take down power lines for an unspecified amount of time. Reduction of flood risk in developed areas has a greater overall effect on reducing the cost from damages. The interaction of human activities with changing natural systems has increased the magnitude, frequency, and impacts of flood events. These events affect water quality through increased erosion and exposure of floodwaters with industrial, agricultural, and urban waste products.[10]

Characteristics of Flooding

In 1997 the US Senate authorized the Tillamook Bay and Estuary, Oregon, General Investigation to evaluate flood damage reduction and ecosystem restoration in the Tillamook Bay Watershed. Products of this study include development of a one-dimensional hydrodynamic modeling tool, Mike 11 that was ultimately converted to the HEC-RAS Model.

Local governments require Elevation Certificates developed by a licensed professional engineer for all proposed developments in the 100 year flood zone. Tillamook City's Zoning Ordinance states that the cumulative effect of any proposed development [in the floodway], when combined with all other existing and anticipated development, shall not increase the water surface elevation of the base flood more than one foot at any

[10] Ibid.

point with the flood zone.[11] Many types of flooding occur in Tillamook. They include riverine flooding, shallow area flooding, urban flooding, and coastal flooding.

Riverine Flooding

Riverine flooding is the over bank flooding of rivers and streams. The natural processes of riverine flooding add sediment and nutrients to fertile floodplain areas. Flooding in large river systems typically results from large-scale weather systems that generate prolonged rainfall over a wide geographic area, causing flooding in hundreds of smaller streams, which then drain into the major rivers. The most severe flooding conditions generally occur when direct rainfall is augmented by snowmelt. If the soil is saturated or frozen, stream flow may increase due to the inability of the soil to absorb additional precipitation. The danger of riverine flooding occurs mainly during the winter months, with the onset of persistent, heavy rainfall, and during the spring, with the melting of snow in the Coast Range. Shallow area flooding is a special type of riverine flooding. FEMA defines shallow flood hazards as areas that are inundated by the 100-year flood with flood depths of only 1 to 3 feet. These areas are generally flooded by low velocity sheet flows of water.

Urban Flooding

As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization of the watershed changes the hydrologic systems of the basin. Heavy rainfall collects and flows faster on impervious concrete and asphalt surfaces. Water moves from clouds to the ground and into streams at a much faster rate in urban areas. Adding these elements to the hydrological systems can result in floodwaters that rise rapidly and peak with what is often violent force.
Almost one-quarter of the area around Tillamook Bay is urbanized, and is comprised of impermeable surfaces that either collect water or concentrate the flow of water in unnatural channels. During periods of urban flooding, streets can become swift moving rivers and basements can fill with water. Storm drains often back up with vegetative debris causing additional localized flooding.

Coastal Flooding

Coastal flooding occurs in low-lying coastal areas, and is caused by heavy rain, large waves, or even tsunamis triggered by underwater seismic events. The areas susceptible to this intense wave action are termed high velocity zones, or "V-zones." Several portions of US Highway 101 in northern Tillamook are below the recorded seasonal high tide of 10.2 feet and therefore subject to coastal flooding.

FIRM Maps and Flood Insurance Studies

Tillamook enrolled in the National Flood Insurance Program (NFIP) in 1978, originating the requirement to elevate facilities constructed in the floodplain. Communities participating in the NFIP may adopt regulations that are more stringent than those contained in 44 CFR §60.3, but not less stringent.[12]

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[11] Ibid. p16

FEMA and the Environmental Systems Research Institute (ESRI) have formed a partnership to provide multi-hazard maps and information to the public via the Internet. ESRI produces GIS software, including ArcView© and ArcInfo©. The ESRI web site has information on GIS technology and downloadable maps. The hazards maps provided on the ESRI site will assist communities in evaluating geographic information about natural hazards. Flood information for most Oregon communities is available on the ESRI web site. Visit http://www.esri.com for more

Floodplain maps are used to implement floodplain regulations and to delineate flood insurance purchase requirements. A Flood Insurance Rate Map (FIRM) is the official map produced by the FEMA, which delineates Special Flood Hazard Areas or floodplains where NFIP regulations apply. Insurance agents and mortgage lenders use FIRMs to determine if flood insurance is required and what insurance rates apply.[13]

Water surface elevations are combined with topographic data to develop FIRMs and illustrate areas that would be inundated during a 100-year flood, floodway areas, and elevations marking the 100-year-flood level. In some cases they also include base flood elevations (BFEs) and areas located within the 500-year floodplain. [14]

Map amendments can be requested when repetitive losses occur in structures that although built above known flood elevations, become repetitive loss properties. Two such properties were amended in January 2006 and those letters appear in the record when one accesses the Tillamook FIRM map on the FEMA website.

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[12] Ibid.7

[13] Ibid.

[14] ibid

Flood Hazard Assessment

Hazard Identification

Hazard identification is the first phase of a flood hazard assessment. Identification is the process of estimating (1) the geographic area at risk from flooding, (2) the intensity of the flooding that can be expected in specific areas of the floodplain, and (3) the probability of occurrence of flood events. This process usually results in a floodplain map. Floodplain maps provide detailed public information that can assist planning jurisdictions in making policy and land use decisions. The hazard identification maps on the following pages are based on the most recent Flood Insurance Rate Map (FIRM).

The FIRM depicts the extent of the 100- and 500-year floodplain in the city, or where floodwaters would extend if there were such a flood. The floodway area is also shown on the FIRM and depicts the area that should remain free of obstructions so as not to impede conveyance of the river system. The 100-year floodplain in Tillamook extends along the Wilson and Trask rivers, reaches of Holden Creek and a series of interrelated sloughs. The predominant flow along these waterways is from east to west but can be exacerbated by high tide in Tillamook Bay when the flows become restricted and variable, causing flood waters to pond. When the tide falls, the floodwaters enter Tillamook Bay through established drainage courses and a series of one-way tide gates.

The FIRM for Tillamook City was first completed in 1978 but no floodway was established as part of the initial Flood Insurance Study because of the complexity of flooding in Tillamook City and the tidal effects on flooding. Floodwaters often flow in many directions away from the rivers and sloughs, as well as down the river channel. Frequent high water events have changed the streambed elevation in Wilson and Trask Rivers and the major sloughs, raising and widening flood levels and potential impacts. Moreover, increased development within Tillamook can also affect the hydrologic characteristics of the basin. In 1980, Tillamook City annexed the US Highway 101 corridor north of Highway 6 to Wilson River Bridge, extending the city limits to lands that were previously in the County's defined floodplain. Prompted by many of these changes, FEMA began the process of studying and redefining Tillamook City's FIRM and establishing a floodway area in 1999. The Tillamook City Council approved adoption of the revised FIRM in September 2002. The City of Tillamook is working with Department of Land Conservation and Development (DLCD) through Oregon Solutions Project #4 to review of properties in the floodplain and floodway that became vacant as a result of the FEMA buy-outs. As part of the program the property's zone was changed from commercial to

FEMA uses FIRMs to identify properties that need to purchase flood insurance and, if developed, need to meet floodplain regulations. Copies of the Tillamook FIRM are available at Tillamook City Hall.

open space. The study is analyzing two things: the best options for new uses of the vacant land, and options to establish receiving sites for those businesses that may not require N. Main Ave. exposure and want to relocate their business out of their flood prone location.

The Oregon Solutions process to address repetitive flood damage losses in the Tillamook Bay area, resulted in an agreement among federal state and local government agencies, local non-profit groups, and local business interests. Three groups emerged from that process: a finance team to seek funding for projects; a land use team to evaluate what land use measures were in place that could be more consistently enforces, and/or what new land use options might need to be evaluated for implementation; and finally the projects generating design team.

Through studies conducted by the US Army Corps of Engineers and the Oregon Solutions Program hydrodynamic modeling of flooding initially identified nearly 60 potential alternative measures that were believed to provide some flood benefit, and/or ecosystem restoration. This number was eventually reduced to 14 after further evaluation to determine which of the alternatives could result in both flood reduction and ecosystem restoration. To get down to the 14 projects the Corps of engineers performed engineering and biological evaluation in the area around the City of Tillamook.[15] After this evaluation there were only two project alternatives that showed some promise for accomplishing both objectives. One the Hall Slough Project that would reconnect the tidal flows in the old slough, allow for high flow flushing from the Wilson River, and setback levees with riparian plantings. This is still a high priority ecosystem restoration project and would eliminate flooding in the N. Main Ave. business district up to approximately the 2-year flood event. The cost to complete this project was seen as prohibitive at the time of the study and the project was set aside.

The other project is the Wetland Acquisition/Swale alternative that would restore tidal marsh/wetland with actions to offset flood increases. The Oregon Solutions process to address repetitive flood damage losses in the Tillamook Bay area, resulted in an agreement among federal state and local government agencies, local non-profit groups, and local business interests. Three groups emerged from that process: a finance team to seek funding for projects; a land use team to evaluate what land use measures were in place that could be more consistently enforces, and/or what new land use options might need to be evaluated for implementation; and finally the projects generating design team.

The group adopted a list of action items and selected 6 infrastructure projects designed to reduce flood impacts. Among those projects were the Hall Slough project and the Modified Wetland Restoration and Swale project. After reviewing these two projects it was agreed by the Design Team and the Corps of Engineers that with some modification these projects could possibly be merged into a new more

[15] Tillamook Bay and Estuary, Oregon General Investigation Feasibility Report Executive Summary, February 2005

complex project that would dramatically improve flooding conditions as well as providing the ecosystem restoration to the floodplain.[16]
The resulting combination was named Project Exodus. Information about Oregon Solutions is available on the internet.

Vulnerability Assessment

Vulnerability assessments combine hazard identification with an inventory of existing or planned property and population within the floodplain. This process helps to identify the number of properties at risk from flooding and the dollar value of that property at risk.
In addition to the elevations, relocations and buy-outs that resulted from the use of FEMA funds, there were two businesses that relocated on their own. While their structures remain in the floodway, they are conducting commerce very successfully in their new locations and no longer have the costs incurred from business closures and clean-up costs. One of these is Valley Fresh Produce whose trade was all local and who relocated to high ground in a very convenient intersection on East Third Street in Tillamook. The other is Safeway. This company was self insured, and had relocated into the floodplain 20 years ago. Following a series of increasingly more difficult flood related situations, the company purchased land at the west edge of downtown Tillamook and built a new facility near their previous location.

The City of Tillamook keeps all 100-year flood building elevation certificates on file in City Hall. Contact the City Manager or City Planner for more information about these records.

To assess vulnerability, Tillamook County GIS used the best data available from the Tillamook County Assessor to estimate property values within the study area and matched this data with the FIRM boundaries. This vulnerability assessment includes most privately owned tax lots with structures within the floodplain boundaries. They lots included in the assessment have any portion of their area within the 100-year floodplain and have an improved value of greater than $1000.
The city recognizes the need to build upon and improve this vulnerability assessment when better data become available. This includes 'ground truthing' existing data sets, improved floodplain mapping (ground elevations) in greater detail (1:200 or 1:100 scale), correlation with high-resolution aerial photographs, and overall better integration with the county's GIS.

Table 2.1 presents a summary of the vulnerability assessment for the 100-year floodplain in Tillamook. The table shows that there is $49.3 million in assessed improved value within the 100-year floodplain. That value is spread over 113 acres of land within the 100-year floodplain. The largest use in terms of both acreage and assessed improved value includes commercial and industrial zoning, covering a total of 90 acres, and with a value of $39.7 million.

[16] Notes from Oregon Solutions Design Team

Table 2.1
Vulnerability Assessment for the 100-year Floodplain

Building Code Category	Number of Properties	Assessed Improved Value	Acreage within 100-year floodplain
COMMERCIAL	77	$27,888,340	66
INDUSTRIAL	9	$11,852,680	20
SINGLE FAMILY RESIDENTIAL	108	$5,650,160	18
MULTI-FAMILY RESIDENTIAL	26	$3,963,730	9
TOTAL	**224**	**$49,564,910**	**113**
Public/Semi Public			30
Open Space			265

Source: Tillamook County GIS, Tillamook County Assessor

Table 2.2 shows the vulnerability assessment expanded to cover the 100-year and 500-year floodplain. This table illustrates that the amount of improved value and the amount of acreage within the floodplain more than when the 500-year floodplain is included in the assessment. Notice that the 500-year floodplain includes more than acres of

Table 2.2
Vulnerability Assessment for the 100 and 500-year Floodplain

Building Code Category	Number of Properties	Assessed Improved Value	Acreage within 100-year floodplain
COMMERCIAL	90	28,172,510	68
INDUSTRIAL	10	11,903,870	26
SINGLE FAMILY RESIDENTIAL	108	9,639,500	34
MULTI-FAMILY RESIDENTIAL	26	4,077,490	10
TOTAL	264	53,793,370	138
			31
Public/Semi-Public			265
Open Space			

Source: Tillamook County GIS

Risk Analysis[17]

Risk analysis is the third and most advanced phase of a hazard assessment, building upon the hazard identification and vulnerability assessment. A flood risk analysis includes two components: (1) the amount of loss to both property and life that may result from a flood event (defined by the vulnerability assessment); and (2) the number of flood events expected to occur over time. Risk analysis involves estimating the damage, injuries, and financial losses likely to be sustained in an area over a given period of time from a flood event.

[17] City of Tillamook 2002 Flood Mitigation Plan

This level of analysis involves using mathematical models. Flow velocity models can assist in predicting the amount of damage expected from different magnitudes of flood events. The data used to develop these models is based on hydrological analysis of landscape features. Changes in the landscape, often associated with human development, can alter the flow velocity and the severity of damage that can be expected from a flood event.

Using GIS technology and flow velocity models, it is possible to map the damage that can be expected from flood events over time and to pinpoint the effects of certain flood events on individual properties.

At the time of publication of this plan, data was insufficient to conduct a full risk analysis for flood events in Tillamook City.

Fostering partnerships between the City, Tillamook County GIS, and the State Floodplain Manager will help support development of improved floodplain data for the City. This plan includes recommendations for building partnerships that will support the conducting a future flood risk analysis in Tillamook City.

Community Flood Issues

What is susceptible to damage during a flood event?

Development in the floodplain and floodway is most at risk from flooding, with damage occurring on a regular basis. The single largest impact on a community from flood events is the potential for loss of life and property. During certain years, property loss resulting from flood damage is extensive and can disrupt Tillamook's residents, visitors, community services and economic activity for days, weeks, or much longer.

Life and Safety

Protection of human life is of primary importance. This issue is tied to several other community issues described below. Keeping homes, businesses, and public infrastructure safe from floodwaters will also help protect human lives. In addition, protection of livestock from injury and death is vitally important to the area's thriving dairy industry.

Private Property Damage

The type of property damage caused by flood events depends on the depth and velocity of the floodwaters. Faster moving floodwaters can wash buildings off their foundations and sweep cars downstream. Pipelines, bridges, and other infrastructure can be damaged when high waters combine with flood debris. Extensive flood damage can be caused by basement flooding. Seepage into basements or daylight basements is common during flood events, not only in or near floodplains, but also on hillsides and other areas that are far removed from floodplains. Much flood damage is caused by water saturating building materials susceptible to loss (e.g., wood, insulation, wallboard, fabric, furnishings, floor coverings, and appliances).

Homes

In many cases, flooding damage to private homes renders them unlivable. The federal government provides disaster funding for people who cannot, or should not, live in their homes because of damage or other disaster related reasons. In the wake of the 1996 floods, Tillamook County received almost $1.9 million in Disaster Housing Assistance Program, Small Business Assistance Home Disaster Loans, and Individual and Family Grant Program funds to help offset flood damage to homes.

Manufactured Homes

According to the Tillamook Planning Department, there are no mobile home parks currently located within known floodplains. However, there are individual manufactured homes that may have some portion of their property in the 100-year floodplain. The safety of these structures requires compliance with the City's flood hazard overlay zoning ordinance, state building codes, and the NFIP. Newly placed structures are to be elevated to a permanent foundation.

Business and Industry

Flood events impact businesses by damaging property and by interrupting commerce. High water can cut off customer and employee access to a business as well as close the business for repairs. Several business owners in City of Tillamook reported that they

expect to close their business at least one day a year or more because of flooding. A quick response to the needs of businesses affected by flood events can help a community maintain economic vitality in the face of flood damage. Responses to business damages can include funding to assist owners in elevating, buy-out, or relocating flood-prone structures.

Public Infrastructure

Publicly owned facilities are a key component of daily life for all citizens. Damage to public water and sewer systems, transportation networks, flood control facilities, emergency facilities, and offices can hinder the ability of city, county and state government to deliver services. Of particular importance during such events are damages to critical facilities located within flood hazard areas (i.e., hospitals, fire stations, police, shelters). Government can take action to reduce risk to public infrastructure from flood events and also craft public policy that reduces risk to private property.

Critical Facilities

Critical facilities are police stations, fire stations, hospitals and shelters, which all provide important services to the community and need to be functional during and after a flood event. Tillamook County General Hospital, located in west City of Tillamook provides emergency care to county residents. The northwest corner of the facility is often inundated with water during more significant flood events, which limits the hospital's capacity to operate its life flight transportation system.

Electricity and Telecommunications

Flooding can impact electrical supply systems, telephone, cable lines, and radio transmission, often referred to as lifelines. Floodwaters and associated high winds and heavy rainfall during a severe event can short out electrical lines or cause transformers to fail. Additionally, debris transported by floodwaters or high winds can knock down power poles and put live, high-voltage lines in the water, posing a serious electrocution threat to people. Underground lines are more resistant to flood damage, but can be exposed and damaged by swift currents. Protection of these lifelines during flood events helps ensure that important information can be relayed to the public and allows for more efficient recovery efforts.

Roads

In addition to access for emergency vehicles of all types, pick-up and delivery to the different businesses is critical for both continuation of business plant, but also for the individual producers.

Tillamook Cheese has an agreement with the County Sheriff that addresses when TCCA trucks can pass through flood waters along the Wilson River Loop Road. There is a road marker at Wilson River Loop Road S-N RD B-694 (mile .362) that has a mark on it at 3'6". The County will close Wilson River Loop Road to cars at some point between 1' and 2' of water over the road, TCCA milk trucks are allowed to travel the loop road until the flood waters reach the 3'6" mark on the road marker.

The reasons for this agreement are:

1. TCCA truck drivers are experienced.
2. TCCA trucks can handle more flood water safely
3. Establishing the mark on the road marker and setting the policy takes the guesswork out of when trucks can pass and when they cannot.

When the Wilson is flooded the Tillamook Transportation District busses use the Wilson River Loop Road and then go back down 101 to Hoquarten Slough as close as they can get to the scheduled route. In 2006, some buses were stranded on the north side of the Wilson River. The District was able to start service the third day after the floodwaters went down enough.

When Hwy. 101 is closed by Rockaway Beach, Garibaldi or Wheeler the busses use Miami Foley road and go behind them and then back through Mohler and down 101 as far as they can to avoid disrupting service any more than necessary.

During natural hazard events, or any type of emergency or disaster, dependable road connections are critical for providing emergency services. Road systems in Tillamook are maintained by multiple jurisdictions. Federal, state, county, and city governments all have a stake in protecting roads from flood damage and lack of access. Tillamook County Public Works is responsible for county road maintenance and aware of roads susceptible to frequent flooding. Road networks often traverse floodplain and floodway areas, the most notable of which is US Highway 101 north of Tillamook's historic downtown to the Wilson Bridge. The highway, maintained by Oregon Department of Transportation (ODOT), is subject to high water annually as it crosses Hall, Dougherty, and Hoquarton sloughs and the Wilson River in less than a two-mile distance.

Funding for county road repair work in Oregon is based upon the number of registered vehicles in the county, not property tax. Many residential properties in Tillamook County are vacation homes and the owners usually have their vehicles registered in the county of their permanent residence. The result is that coastal communities do not receive the appropriate funding to provide the same level of services for a largely visiting public. In addition, federal funding is often population driven, where again second-home owners are not counted. Recently, Tillamook County tried to pass a tax levy for county road funds but it was defeated by voters.

Bridges

Bridges are vulnerable for a number of reasons, and waterlines are commonly attached to bridges, so that when a bridge is damaged by large debris flows or erosion at the abutments, the waterline is also cut off. Throughout the city and the county, bridges are federally, state, county, or privately owned. A state designated inspector inspects all state, county, and city bridges every two years, but private bridges are not inspected and, therefore, can remain a threat to public safety if insufficient.

Storm Water Systems

Storm water systems collect and concentrate rain water and deliver it rapidly into local waterways. During heavy rain and flood events, these systems are often pushed past their capacity and storm water begins to flow over ground, causing additional

infrastructure damage. While storm water systems help capture and remove rain water from the urbanized area, increased flows downstream can be detrimental.

Local drainage problems are common throughout the area. The City's Public Works staff is responsible for property within the city limits and must respond to local drainage threats. City of Tillamook recently completed a Stormwater Management plan that includes preliminary design and cost estimates. The biggest challenge is figuring out how to pay for the implementation. For example completing the projects that would address flooding issues in the areas around Holden Creek is estimated to cost over $1,000,000 not counting the cost of permits.

Water and Wastewater Treatment Facilities

The City Water Department and Fairview Water provide the domestic water supply to Tillamook residents within the urban growth area. Tillamook Wastewater Treatment Plant located on the western perimeter of town provides wastewater management services to approximately 4,700 people. A new wastewater treatment plan is nearing completion. This will be followed by extension of sewer services to an area on the east side of town that is yet to be annexed It is reasonable to expect that when this project is under construction, some of the culvert and piping changes recommended in the Wastewater Management Plan can be included in those plans.

Water Quality

Environmental quality varies among the waterways in Tillamook. Oregon's Department of Environmental Quality (DEQ) has identified the Wilson and Trask Rivers and Dougherty and Hoquarton Sloughs as water quality-limited. Problems include summer temperatures in the rivers and year-round bacteria in each slough. The water is considered too warm to be an ideal habitat for certain cold water fish species during the summer months.

Increased sedimentation from upstream sources, such as logging and road building practices has incrementally increased the sediment loads collecting in the lower rivers and bay. Sedimentation and lack of riparian coverage both contribute to increased water temperatures in these rivers. Agriculture and urban runnoff contributes to high fecal bacteria counts that exceed the standard for water contact recreation.

Floodwaters can further threaten water quality in Tillamook by increasing sediment loads from upstream sources or coming into to contact with concentrated livestock waste, hazardous material storage areas, septic and sewage systems, and waste disposal sites. Currently, some facility upgrades are being undertaken.

Flood Management Opportunities

Maintaining and restoring natural areas helps mitigate the impact of flood events on the built environment. Flooding changes the natural landscape and hydrology of an

affected area. High water replenishes rich nutrients in floodplain soils and can also benefit riparian areas. Often the best flood control techniques control water using natural features, such as wetlands that assist in water storage and bank stability. Preserving natural wetland systems can assist in water absorption during flood events and buffer water level fluctuations.

Tillamook County recently acquired a former dairy farm west of the City to implement a number of restoration projects: returning the land to wetlands and open space, removing levees and lowering the bay levee to high-tide level, and installing fish-friendly tidegates. Collectively, these projects help provide more efficient water storage and conveyance during flood events and keep waters out of Tillamook's commercial district.

Parks and Open Space

Parks and open spaces help provide a buffer between flood hazards and structures. Preserving existing open space in the floodplain can mitigate future flood impacts by reducing the amount of development in flood hazard areas. Current efforts to increase public open space in the City have been paired with the need to restore and preserve natural systems that provide wildlife habitat and water conveyance during flood events.

A study is currently underway to provide alternatives for low impact use of open space that recently became available through flood mitigation activities.

Riparian Areas

Riparian areas are important transitional areas that link water and land ecosystems. Vegetation in riparian areas is comprised of plants that require much water, like willows and cottonwood trees. During flood events, high water can cause significant erosion but well-managed riparian areas can reduce the amount of bank erosion and, in turn, protect water quality. A healthy and dense vegetation cover in riparian areas also buffers the high energy of floodwaters from washing out adjacent lands.

Wetlands

Many floodplain and stream-associated wetlands absorb and store storm water flows, which reduces flood velocities and stream bank erosion. Preserving these wetlands reduces flood damage and the need for more expensive flood control structures. When the rainy season is over, many wetlands augment summer stream flows by slowly releasing the stored water back to the stream system. Wetlands are highly effective at removing nitrogen, phosphorous, heavy metals, and other pollutants from water. For this reason, artificial wetlands are often constructed for cleaning storm water runoff and for tertiary treatment (polishing) of wastewater. Wetlands bordering streams and rivers and those that intercept runoff from fields and roads provide this valuable service free of charge. The United States Fish and Wildlife Service has found Tillamook Bay Estuary wetlands to be an important ecosystem for biodiversity

Site-specific Flooding Issues in the City of Tillamook

The following summary explains some of the areas in the city that present important, often repetitive, flood loss and damage issues. Where available, recommendations have been made and are addressed in the flood mitigation action items recommended later in this document.

Holden Creek

The city's stormwater management plan addresses the flooding issues along Holden Creek and has a price tag of $1,244,000. The community needs to address the best method to pay for these projects, many of which are high priority hydraulic improvements.

North Main Avenue

For businesses that do not rely on tourism traffic, relocating to another place in the City may not affect their business as much as those dependent on tourist traffic. The challenge the City faces is identifying a relocation project that is economically feasible for the property owner. Three repetitive loss businesses found relocation sites that suited their needs and following their relocation are thriving in their new location. They are the exception.

The city completed an economic analysis study to identify potential receiving sites for relocating businesses. These sites must be appropriately zoned, with adequate services, access, space for parking and economically feasible.

Commercial properties purchased by the city are turned into public open space reduces the City's tax base. Leases to temporary or mobile venders generate some revenue, including property tax, but not enough to make up for the revenue lost in the purchase.

One recommendation for further investigation is establishing a 'no net loss of commercial land' policy for the city.

Reclaim low areas, keep floodways open, and concentrate cluster development on high elevation areas and areas where builders can meet the requirements under the City and FEMA rules.

Community Issue Summary

Community Issue		Issue at stake	Potential Solution
Property	Evergreen Dr.	New 132-unit assisted living facility approved, often inundated area	Culvert work and improvement on Holden Ck.
	Neilsen Rd.	Tillamook Care Center residents twice evacuated Failing septic systems (not within City limits)	Must annex to connect to sewer. This is a land use rule issue
	Flood Insurance	High premiums, cost prohibitive	City CRS reduced rates by 10%, new info may change that to even higher discount
	Repetitive loss properties		City worked with FEMA and County to elevate, or buy 8 business properties.
Business and Industry	Tillamook Lumber	Damage during high flood events	Detention pond recently completed Culvert work and improvement on Holden Ck.
	Les Schwab	Trask River and Holden Creek back up and cause flooding	Culvert work and improvement on Holden Ck.
	Chevrolet dealership	Damage to vehicles on lot	Reverse 9-1-1 now in place
	North Highway 101 commercial corridor	Repetitive structural damage, inventory damage, closed to traffic during extreme events Vehicles traversing during high water cause wake damage Undeveloped commercial property	Reverse 9-1-1 now in place Wet and dry flood proofing 2 businesses assisted to relocate New zoning ordinances changed commercial buy-out lands to Open Space. Map changes
Public Facilities	Child care center (Head Start)	Built in accordance with 100-year base flood elevation requirement in 1995 and facility has flooded twice since then	FIRM Maps Revised 4/2006 Culvert work and improvement on Holden Creek
Critical Facilities	Tillamook County General Hospital	Helipad inundated during significant events Ambulance access blocked on South Hwy 101	Currently seeking funding for 4-5 ft. elevation Alternate route is South Prairie, Brickyard, Trask River to Third St.

Community Issue		Issue at stake	Potential Solution
Roads	N. Main Ave.	Access cut-off between north and south county during extreme events	Wilson River By-Pass emergency route recently finished
	Tone Rd, bridge	SW flooding in City	4ft tubes installed for drainage
	Latimer Rd (Wilson loop junction with Hwy 101)	Tends to flood before or same time as Hwy 101	Project Exodus
	KTIL area (Trask & Tillamook R. meet)	Issue during more serious events	Check with EM about this element
Storm Water / Water Facilities	City of Tillamook Storm water system	No storm water management plan	Developed plan; to be implemented, need $$$
	Water Treatment Facility	Trask River and Holden Creek back-up	New WWTP constructed in different location.
	Third Street area septic systems	High groundwater table backs up septic systems	To be connected to sewer as part of city plan
Levees, diversions, and channel modifications	Latimer Rd. / Wilson R. levee	In need of maintenance	Secure funding for maintenance
	South City	Long flood durations, regular winter storms are causing nuisance floods	Stormwater mgt. plan implementation will address this
Parks and Open Space	Hoquarton Slough	Reconnect to Tillamook River	reconnection
	N. Main Ave.		Reclaim low areas, keep floodways open, focus cluster development on high ground
Wetlands	Carnahan Park	Two ponds disconnected from Trask River	Reconnect wetlands to add storage and conveyance

Existing Mitigation Activities

Existing mitigation activities include current mitigation programs and action items that are being implemented by local, county, regional, state, or federal agencies, private businesses, individuals, or organizations.

Local Programs

Acquisition and Protection of Open Space in the Floodplain

In 2000, the City and Tillamook County, and OEM used FEMA's Hazard Mitigation Grant Program (HMGP) to acquire and remove the Tillamook Inn along US Highway 101. The city leases this property to an espresso vender who can hitch up her facility and get it out of the flood hazard in the event of a pending flood event.

This program also allowed the city to assist Western Royal Inn and Northport Plaza to elevate their facilities following significant repetitive flood damage claims. Other property acquisitions include Coast Tire, Tillamook Rental Center, the Dean Motors property, Dairy Queen, and Tillamook RV Repair.

These acquisitions are true mitigation projects that remove damage-prone structures from harms way, keep businesses in place or provide additional open space in the floodplain, and will make the City eligible for more credits for the CRS program.

Drainage Districts

Trask, Stillwell, Sunset, and other drainage districts have been involved in on-going levee maintenance, while some have installed pump stations and spillways with Project Impact funds and others are working with Tillamook Estuaries Partnerships to install improved fish-friendly tidegates.

Tillamook Bay Estuary & Habitat Improvement District

A non-profit, voluntary taxing district formed in June 2002, the Tillamook Bay Estuary and Habitat Improvement District raises funds to implement, support, and maintain flood mitigation projects that alleviate flood impacts in the Tillamook Bay watershed and improve the habitat and estuary around Tillamook Bay and in the Tillamook, Trask, Wilson and Kilchis River drainages.

Regional and State Programs

Wilson River Loop Detour

Oregon Department of Highway Transportation (ODOT) and Tillamook County Public Works, and Tillamook County Flood Control Group worked together to secure State funds to build a detour route around US Highway 101 in the event of a flooding emergency. The flood-prone area lies between First Street and Latimer Road in north Tillamook. Three bridges built on the Wilson River Loop east of town and Latimer Road elevated the road several feet to allow passenger and commercial traffic to flow. The detour serves as a valuable solution to allow continued commercial



Wilson River bypass *Source: ONHW*

and emergency transport during flood events. There are still times when this road is impassible, but this project reduces the occurrence and the duration of flooding.

Tillamook County Comprehensive Plan

The Tillamook County Comprehensive Plan complies with the guidance of *Oregon's Statewide Planning Goals and Guidelines.* Reviewed by the state to meet strict statewide land use requirements, the Comprehensive Plan establishes the guiding goals and principles for land use in Tillamook County. Specifically, the Tillamook County Comprehensive Plan addresses Statewide Land Use Planning Goal 7: Natural Hazards. Goal 7 assures that cities and counties protect life and property from natural disasters and hazards through planning strategies that restrict development in areas of known hazards. Goal 7 requires that local governments base development plans on inventories of known areas of natural disasters and hazards and that the intensity of development should be limited by the degree to which the natural hazard occurs within the areas of proposed development.

Tillamook County Comprehensive Conservation and Management Plan (CCMP)

The *Comprehensive Conservation and Management Plan* was completed and approved in December 1999. This plan outlines specific actions to improve water quality, enhance critical habitats, reduce sediment loading, and improve the floodplain conditions as they affect people, property, water quality, and the natural environment.

Tillamook County Flood Hazard Mitigation Plan

Tillamook County produced the Flood Mitigation Plan in October 1996 after the 1996 floods. The mitigation plan recommended strategies to reduce the occurrence and damages caused by major flood events along the rivers throughout Tillamook County. The plan was developed for the entire county to provide solutions for other jurisdictions to use and benefit from and be implemented in close cooperation with them. Contact the Tillamook County Emergency Manager or Tillamook County Analyst for more information about the County's Flood Mitigation Plan.

Tillamook County Hazard Mitigation Plan

Tillamook County produced an all hazard mitigation plan that looked at tsunamis, earthquakes, landslides, and flooding, and major fire. Each city in the County participated in this plan and included its Vulnerability Assessment and Risk Assessment checklists in the plan. The County and each of the cities adopted this plan in 2004. The county just received funding for an update that is due to Oregon Emergency Management and FEMA in 2011.

Oregon Solutions Tillamook Flooding Project

After the 2006 flood, the State, County, and City representatives sent a letter to Governor Kulongoski requesting that Tillamook flood mitigation efforts be designated an Oregon Solutions project. The Oregon Solutions program provides a structure and process for public and private sectors to collaborate in addressing community needs. After conducting a project assessment in March 2007 the Governor's office made the official designation in April 2007. The Governor assured participation of his staff and appropriate state agencies with other participating public and private partners through

the designation of this effort as an Oregon Solutions Project. A Project Team assembled in an effort to bring partners to the table.

In 2005, the US Army Corps of Engineers completed a 2-dimensional unsteady flow hydrodynamic analysis of the project area that included environmental, economic and real estate analyses using a sophisticated HEC-RAS model specifically developed for the project area.

> *Project Exodus was developed through the Oregon Solutions Flooding Project, and described in the October 2009 report prepared by Northwest Hydraulic Consultants (NHC Report) under contract to Tillamook County. The report provides the background, objectives, and methods used to investigate possible flood damage reduction measures within the flood plain that lies between Hoquarten Slough, Wilson River, and Tillamook Bay. The report also describes evaluation of various alternatives. Finally, the report presents a preliminary (30%) design for a recommended project, consisting of three (3) project elements: The Southern Flow Corridor, the North Bank Wilson River Field Regrading and the South Bank Wilson River Berm. Read more about this project in Section 5.*

National Programs

Federal Emergency Management Agency National Flood Insurance Program

The NFIP is a federal program administered by the Federal Emergency Management Agency (FEMA). The function of the NFIP is to provide flood insurance to homes and businesses located in floodplains at a reasonable cost, and to encourage the location of new development out of the floodplain. The program maps flood risk areas, and requires local implementation to reduce the risk, primarily through restricting new development in floodways and floodplains. The maps are known as Flood Insurance Rate Maps (FIRM).

Community Rating System

Another program under the NFIP is the Community Rating System (CRS). This voluntary program recognizes and rewards local efforts that go beyond the minimum standards of the NFIP. This recognition is in the form of reduced flood insurance premiums for communities that adopt such standards. The Community Rating System encourages voluntary community activities that reduce flood losses, facilitate accurate insurance ratings, and promote flood insurance awareness. Currently, Tillamook County is participating in the CRS program.

Project Impact

Project Impact: Building a Disaster-Resistant Community was a national initiative launched in 1997 by FEMA that aimed to change the way America dealt with disasters. The program encouraged community leaders, citizen and businesses to work together in assessing the community's vulnerability to hazards and implement strategies to limit damage before disasters occurred. FEMA invited Tillamook County to participate as a Project Impact community in 1998 because of its high risk for earthquakes and floods and the presence of systems already in place that would help make the community more disaster resistant. This effort was intended as an investment to enhance and

strengthen the economic structure and long-term stability of Tillamook, regardless of when disasters strike. Projects completed throughout the county during Project Impact include:

- Lower Trask River Drainage pump station and spillway
- Tillamook County Department of Emergency Management expansion and hiring of a full-time director and one staff person;
- Upgraded county flood maps and hazard maps for seismic, landslides and coastal erosion from DOGAMI-GIS;
- Willow tree cuttings and riparian improvement community project completed by Tillamook Junior High Jazz Band;
- Improved, fish-friendly tidegates installed by the National Estuary Project;
- Elevation of several homes and small businesses;
- Construction of "cowpads" (elevated islands for livestock refuge) on dairy farms; and
- Drainage improvements, levee breaching and removal, and levee repair work in the Tillamook Bay basin.

Hazard Mitigation Grant Program

The HMGP administered by FEMA provides grants to state and local governments to implement long-term hazard mitigation measures after the President has declared a federal disaster.

FEMA Region X Policy on Fish Enhancement Structures in the Floodway

The recent designation of several northwest salmon and steelhead runs as threatened or endangered has resulted in an increased effort to restore fish habitat. Restoring habitat often involves placing structures in stream, including fish weirs, log drops, root wads and small rock deflectors, are "encroachments" when placed in mapped floodways. A literal interpretation of the FEMA floodway standard may require a relatively expensive "no-rise" analysis would exceed the cost of the habitat enhancement project.

In order to encourage habitat enhancement projects while still providing communities with information needed to make appropriate floodplain management decisions, FEMA Region X will allow communities to rely on the judgment of a qualified professional regarding the impact of fish enhancement structures on flood elevations. Qualified professionals include hydrologists and hydraulics professionals and staff of fisheries, natural resource, or water resource agencies. This will minimize the cost of getting a "no-rise" analysis. However, the community, while making use of the professional's advice, must still make the ultimate decision on whether to allow the habitat enhancement structure.

For more information on the policy on fish enhancement structures in the floodway, contact FEMA Region X at (425) 487-4682.

Army Corps of Engineers

Advanced Emergency Measures

Designed by the US Army Corps of Engineers Portland office, Tillamook County contracted a series of flood projects in the lower Tillamook Bay watershed, providing flood mitigation directly to areas in the lower Wilson river drainage and Tillamook City. These projects were simple, temporary measures designed to lessen immediate flooding impacts while the community sought other permanent, long-term solutions through the Corps of Engineers' Tillamook Bay Feasibility Study. This was the first time the Portland office secured funding from the USACOE for a multi-complex project. Beginning in 1999 and now complete the three projects cost an estimated $400,000. These projects included:

- 250 feet of rip-rapping on Wilson-Dougherty Slough bank;
- an engineered log jam at the headwater of Dougherty Slough, where spruce trees were layered and anchored to help slow waters entering from its confluence with the Wilson River and debris and sediment were removed from the north and west forks of the Wilson;
- and installation of 12 six-foot tidegates: two at Hall Slough near Makinster Road and the remaining ten installed at the Tillamook Bay dike to provide quicker drainage of floodwaters.

Tillamook Bay Feasibility Study

The 2005 US Army Corps of Engineers studied Tillamook Bay to determine methods to reduce the damage caused by flooding. The goal of the study was to identify and evaluate the problems and opportunities associated with flood damage reduction and ecosystem restoration in the Tillamook Bay watershed and to recommend appropriate actions consistent with federal guidance and sponsor capability. Specifically, the study was to recommend sites with ecosystem restoration and flood mitigation potential.

American Red Cross Response and Shelters

The American Red Cross focuses on meeting people's immediate emergency disaster-caused needs. When a disaster threatens or strikes, the Red Cross provides shelter, food, and health and mental health services to address basic human needs. In addition to these services, the core of Red Cross disaster relief is the assistance given to individuals and families affected by disaster to enable them to resume their normal daily activities independently.

The Oregon Trail Chapter of the American Red Cross operating out of Portland, Oregon serves the citizens of Tillamook County. After the repeated and severe flood events during the 1990s, a Red Cross service center outlet was established in the City of Tillamook and emergency shelters were designated in three locations – north, central, and south county. Central Tillamook County's shelter is The 4-H Dormitory at the Tillamook County Fairgrounds in the east part of town. A part-time coordinator operates the service center located in downtown Tillamook five days a week and coordinates with local churches, service groups, and Tillamook County Department of Emergency Management to provide education on disaster preparedness.

2003 Plan Goals and Action Items Status

Tillamook Flood Mitigation Plan Goals

Reducing risk from flood events can be described in terms of a series of goals, which can be achieved through a variety of mitigation activities. This section describes the six Tillamook flood mitigation goals and provides additional information about potential mitigation activities that will assist the City in reaching these goals. See Table6.1 for a summary of goal statements.

A. Protect Life and Property

Activities that protect structures include elevation or relocation projects, floodwall construction, or sand bagging around affected property. Landowners typically undertake property protection activities on a building-by-building or parcel basis. Designing flow-through foundations and floors to withstand floodwaters or not allowing fiberglass insulation under floor spaces reduces flood damage. Improved building structures can become community flood proofing demonstration projects and repetitive loss properties receive priority for acquisition. Participation in NFIP incentive programs such as the Community Rating System helps lower insurance premiums for home and business owners.

The use and development of flood prone areas is limited through planning, land acquisitions, or regulation. Open space and floodways can be acquired, preserved and enhanced while future development is encouraged in non-floodway areas using zoning and accurate flood maps. New buildings found to increase flooding on neighboring properties can be restricted and development of impervious surfaces minimized

Preserve Natural Areas Related to Flooding

Preserving natural areas includes working with the landscape hydrology to enhance floodplain function and allowing flooding to naturally replenish the lowlands. Existing wetlands can be protected or enlarged to create additional floodwater holding areas. Open space along rivers, sloughs, tributary streams, and the bay can be utilized as public areas. Hazardous materials secured in the floodway and floodplain prevents waters from being contaminated during flood events.

B. Coordinate and Enhance Emergency Services

Emergency services measures undertaken during a flood minimize its impact and save human lives. Communicating vital information, providing individual support, and ensuring emergency vehicle access for the delivery of medical and other necessary services are of key importance during a flood event. A flood warning, response, and clean-up strategy can be coordinated ,implemented, and monitoring response coordination during actual events can improve future response. Hazardous materials secured prior to flood events protect human health. Limiting vehicle speed or closing major thoroughfares to local only traffic during high water events helps protect properties from wake damage.

C. Improve Structural Projects

Structural projects, such as levees or diversions, help keep floodwaters away from an area, while channel modification and restoration can improve water conveyance. Modifying existing structures can improve floodplain connections and allow for improved passage of floodwaters and hydrologic function, such as modifying existing levees to be setback levees. Redesigning culverts and bridges to handle 100-year flood event flows can help maintain road networks while promoting proper movement of floodwaters. Implementation of traditional structural solutions when other options do not exist can protect critical structures or infrastructure. Tie sound resource protection to solutions for flood control.

D. Enhance and Promote Public Education

Providing information and education about flood mitigation efforts creates an informed citizenry and visiting public. Public education activities help people better understand emergency management measures, flooding dynamics, floodplain function, importance of natural features for flood protection, and long-term flood avoidance measures. Information can be distributed by brochure, featured in local newspapers or broadcast on local television and radio stations. Community groups such as TBHEID, SWCD, TEP, TBWC, and students can help engage neighbors and others in targeted public outreach projects. Public information should incorporate local knowledge from residents who have experienced several floods. Promoting good public relations outside the community about the actual danger of flooding is also important.

E. Improve and Promote Partnerships, Coordination and Implementation

Fostering on-going community partnerships and forging new links with other agencies and project partners within and outside the City can help implement flood mitigation projects with the common good involved. To reduce community cost and time, projects should be designed to coordinate with existing plans and projects, such as the Tillamook Bay Comprehensive Conservation Management Plan and the US Army Corps of Engineers Tillamook Bay Feasibility Study.

Implementation refers to strategies for implementing the plan. When possible, permanent and/or low-maintenance solutions to flood problems should be selected. The City should insist funding opportunities go to on-the-ground projects that are tied to appropriate ecological and emergency management solutions. Emphasizing local control and solutions while gaining cooperation from State and Federal government can better facilitate plan implementation.

Table6.1
Summary of 2003 Action Plan Goals & Status

Goal	Recommendation	
Goal A	***Protect Life and Property***	***Status 2010***
	Engage in and promote long-term, cost-effective regional planning and property protection activities that will reduce or eliminate adverse impacts from flooding.	Goal 7 update; Economic Analysis; Project Exodus
	Promote property protection activities on a building-by-building or parcel basis that are consistent with long-term regional planning and target repetitive loss properties.	buy-outs & elevations;
	Participate in incentive programs, such as CRS, to help lower insurance premiums for home and business owners.	Rating = 8, 10% reduction; 2010 review, expect new rating
	Improve coordination and collaboration with Tillamook County Office of Emergency Management to initiate and conduct preventative measures.	Ongoing efforts;
	Promote development methods that do not adversely impact flooding or water conveyance.	Project Exodus; clean up of Dean Property
Goal B	***Preserve Natural Areas Related to Flooding***	
	Preserve and restore natural areas and water conveyance to enhance floodplain function.	Project Exodus
	Protect or enlarge existing wetlands and open areas to maintain or create additional floodwater holding areas.	Buy outs: Dean, Rental Center, Coast Tire, Dairy Queen,
	Preserve and enhance public open space along floodways, rivers, sloughs, tributary streams, and the bay to insure adequate floodplain function.	Study to identify best uses of newly designated open space
Goal C	***Coordinate and Enhance Emergency Services***	
	Promote, strengthen, and coordinate flood warning, emergency response, and recovery strategies.	Reverse 911; participate in all agency disaster response center
	Improve coordination with Tillamook County Office of Emergency Management to initiate and conduct emergency measures.	See above for pre disaster/emergency response, follow-up
Goal D	***Improve Structural Projects***	
	Modify existing structures to improve hydrologic function.	Project Exodus, Holden Cr. Projects designed
	Develop solutions that ensure all non-emergency flood mitigation maintains or enhances natural resource protection.	Incorporated into projects planning process for long term projects
	Implement structural flood mitigation solutions to protect critical structures and infrastructure when other alternatives do not exist.	

Goal E	***Enhance and Promote Public Education***	
	Provide and distribute information and education for local citizens, businesses, and visitors.	Maps, brochures at City Hall; website with links to FEMA info
	Document and utilize local knowledge in flood mitigation planning activities	Long time residents included on Oversight Committee
	Promote good public relations inside and outside the community.	
Goal F	***Improve and Promote Partnerships, Coordination, and Implementation***	
	Foster on-going community partnerships and forge new links with other agencies and organizations within and outside the City when implementing flood mitigation activities.	Oregon Solutions Flooding Group (fed, state, local agencies) City/County coordination
	Develop and coordinate new projects with existing plans and efforts.	County Hazard Mitigation Plan, City Flood Mitigation Plan, Comp Plan, CCMP, etc
	Pursue and implement permanent and/or low-maintenance, cost-effective solutions to flood problems.	Zoning modifications; mobile activities on city property
	Emphasize on-the-ground projects that best meet mutual goals of environmental considerations and flood mitigation.	Included in planning process for project approval.

Evaluation of 2003 Plan and Recommedations of 2010 Action Items

Short-Term Action Item #1: Institute a flood mitigation plan oversight committee
Status:
This recommendation for quarterly and annual reviews was not followed, and no committee was convened until Spring 2009. Once the city staff applied for and received enrollment in the Community Rating System, annual reviews were completed with OEM staff to assure continued compliance. There was never time or staff to perform the proposed quarterly meetings. With the number of partnering agency activities focused on flood mitigation and ecosystem quarterly meetings would appear to be very frustrating and unproductive for all involved. All meetings of a committee working for, with, or under the direction of a public agency are public meetings. Public meetings require a large investment of staff before, during and after a meeting.
The City Council re-appointed the original Steering Committee in the Fall of 2008 and contracted with VLG Consulting in March 2009. The Steering Committee was convened in April, and using the recommendations in the Plan Maintenance section the Oversight Committee was formed. At a meeting in May, the group agreed that there would be only one committee, and that would be the Oversight Committee.
Recommendation:
The following is a synthesis of the suggestions and recommendations of city staff and Oversight Committee members.

- ✓ September is Hazard Preparedness Month and FEMA has a national public information activity that takes place that month.
- ✓ City of Tillamook submits it's CRS application for continued eligibility to OEM for review and additional points, in September each year.
- ✓ Most of the mitigation activities and enforcement happens through the planning department.
- ✓ An important component of the plan is public outreach and information

Each July, the Oversight Committee should review the city's flood mitigation activities with city staff and assist with preparation of the CRS application. This collaboration will assure full implementation as specified. This review will also provide the data required for a public education program, and assist with the acquisition of funding for the projects in the upcoming work plan.
Cost: $2,000 staff time and materials
Source of Funds: City Budget
Short-Term Action Item #2: Reduce federal flood insurance premiums by participating in the NFIP Community Rating System (CRS) program.

Status:
City staff took the workshop, became eligible for the program, received a rating of 8. This rating reduces NFIP insurance premium rates by 10%. The rating should improve

when the City submits the CRS application with the Flood Mitigation Plan Update in 2010.

Recommendation:

At least one City staff should attend free FEMA/NFIP training in Washington DC or complete the on-line course to become a Certified Floodplain Manager.

Cost: $5,000 travel

Source of Funds: Planning Department Budget

Short-Term Action Item #3: Develop a commercial district floodplain management strategy

Ideas for Implementation

Status: *(in italics below each item)*

- Protect existing development and businesses using wet and dry flood proofing and other flood reduction methods.

  Through a cooperative working partnership sandbags and sand are available for use to protect property from flood waters; flood walls can be build around flood prone buildings with proper permits from the city; and new construction requires elevation above the Base Flood Elevation (BFE).

- Target repetitive flood loss or floodway commercial properties for acquisition and/or relocation projects.

  Since the plan was adopted, six properties were assisted through the NFIP program and two others moved on their own. Four were buy-outs and 2 were elevations. Two of the buy-outs used their funds to relocate their businesses.

- Seek funding and technical assistance for a comprehensive business evaluation of the commercial district.

  Funds were awarded by DLCD and the study is underway that looks at who and where relocation could be an option as well as providing options for uses of the lands vacated under the buy-out program.

- Promote cluster commercial development in non-floodway areas and restrict new development in the floodway. Examine concept of a balanced cut and fill. Continue to restrict new or improved developments that increase flooding to adjacent properties in excess of current city standards.

- Utilize the County's Tillamook Bay Feasibility Study and other computer models that run flood scenarios to determine best alternatives for relocation and acquisition.

  Corps of Engineers used a one dimensional hydrodynamic model to determine the likely areas of flooding under different conditions. The results assisted them to determine that the Hall Slough project and the Modified Acquisition/Swale project would reduce flood impacts and restore ecosystem values.

- Effectively clear mapped lowland floodways or floodplain of hazardous materials.

  Several projects were completed including a huge effort to clean the channel to the west of Hwy 101 behind the old Dairy Queen and Dean Motors property. In spring 2008, the Dean Property clean-up removed 12,000 CY of rock and debris from the floodway.

Recommendation:

Investigate establishing a 'no net loss of commercial land' policy for the city, so that when a buy-out causes zoning change from commercial use to open space, other acreage of equivalent economic value is zoned commercial.

Cost: $8,000
Source of Funds: DLCD Planning Grant

Short-Term Action Item #4: Identify, prioritize and mitigate residential properties currently at risk to flooding

Status:

No residential property owners applied for this service, so the action was not implemented. Several residents elevated their own homes without public assistance. Many at risk homes were elevated during the Project Impact efforts following the 1996 flood.
A Holden Creek study group formed to collect information about flood insurance claims from the southeast part of the city in an effort to mitigate future flood impacts in this area. The work is not yet complete.
Given information on new DFIRMS, this becomes a larger issue as more residential properties are indicated to be in the floodplain and/or floodway.

Recommendation:

1) City needs to begin implementation of the Stormwater Management Plan by including engineering and construction of priority projects in the 2010-2011 budget cycle. Implementation will be a long term project because of the time requirement to obtain financing, complete engineering and complete the construction. Cost is included under another item.
2) New Full Vulnerability Assessment must include residential areas and commercial properties in flood hazard areas.

Cost: $ 20,000
Source of Funds: Hazard Mitigation Grant Program

Short-Term Action Item #5: Develop a comprehensive public outreach and education program

Status:

Although some of these activities were completed, there is no comprehensive public outreach and education plan. Without a comprehensive strategy, the various groups within the community determine the scope and content of the public outreach effort.
The City has a link to the County website, and the County links directly to FEMA as well as having good information on the web. There are digitized flood maps at City Hall. The city sends a letter to realtors, lenders, and insurers each year reminding them of the maps and NFIP insurance needs, as well as providing any updates. Those that come to the city with questions about specific properties can get information at the counter.

- Develop a series of maps and brochures that discuss flood hazards, natural benefits of flooding, long-term avoidance measures, flood regulations, and emergency preparedness. Distribute this information annually to local citizens and employees and make available to visitors.
- Establish a centralized flood resource library to house written information.

- Develop a fact sheet, information packet, talking points, and a flood information website to help ensure accurate information and accounts of flood events obtained by the media.
- Sponsor annual hazard information forums/fairs where emergency officials, resource agency staff, and others provide information and/or presentations about flood effects, mitigation, and preparedness or have a booth/demonstration at the county fair. Distribute a list of available presenters to community groups.
- Include students in fairs, local outreach campaigns, and development of education materials, announcements, and/or collection of local flood history as an annual school project.
- Develop a flood/natural history/hazard awareness unit for school teachers or community groups.
- Construct informational kiosks and murals that discuss positive and negative aspects of flooding at key locations, such as Fred Meyer, Safeway, and rest stops.
- Coordinate information at billboard sites to provide flood-related information and advertise flood insurance on an on-going basis.
- Highlight and promote design methods used in new and remodeled buildings to provide citizens ideas and understanding about flood proofing construction. *TBHEID distributes these documents produced by FEMA*
- Provide technical assistance to landowners and service groups.

Recommendation:
City should request assistance from partners to develop a comprehensive Information and Education program around flood hazards and flood mitigation opportunities. This should include participating in FEMA's Disaster Preparedness month activities each September. This partnership should include city, county, chambers of commerce, urban renewal, workforce, school districts, TEP, Watershed Council, TBHEID etc.
Cost: staff time of all partners who will also develop budget for materials and distribution costs.
Source of Funds: Staff time from current budgets; EPA information/education funds; FEMA publications; piggybacking on existing distribution systems, such as newsletters, PSA's, billing inserts, donation, and organization information and education budget pooling.

Short-Term Action Item #6: Improve access and update City's flood mapping information

- Have City FIRMs, flood hazard overlays, and other map information available in GIS and/or electronic format at City Hall and on the Internet.
- *Amended FIRM maps reflect the actual flood levels at Head Start and the Blue Heron. The DRAFT FIRM maps are now accessible through the City of Tillamook Website. It links to the County Community Development site, and to the FEMA site. The City is protesting the new delineation, and notifying citizens there is a public comment period in effect. The full process of review and adoption of new FIRMs takes about a year. . A letter went out to the city's realtor and lender list in February to be sure buyers, sellers, and lenders have the current information. This will have*
- Seek assistance from community groups, retirees, and/or interns to build an electronic City flood information database by compiling elevation certificates, size, occupancy, estimated property and content value, past losses, and other data for structures located within the floodplain.

- Collect and compile all data from rainfall and river gauges and store in GIS format. Obtain wetlands designation maps for city jurisdiction.

Long-Term Flood Mitigation Activities

Long-term flood mitigation activities are mitigation activities that are likely to take more than two years to implement

Long-Term Action Item #1: Develop a City storm water management plan

Status:

The City of Tillamook completed a Stormwater Management Plan. The plan prioritizes project by hydrologic benefit, with many of the high priority projects located in the Holden Creek area. The first step toward implementation is raising the estimated $1,244,000 required to implement the prioritized projects.

Recommendation:

1 City needs to begin implementation of the Stormwater Management Plan by including engineering and construction of priority projects in the 2010-2011 budget cycle. Implementation will be a long term project because of the time requirement to obtain financing, complete engineering and complete the construction.

2 City should consider establishing stormwater feed as a source of debt service for implementation loans.

Cost: $50,000 for design of Holden Creek projects
Sources of funds: 1% loans from DEQ through the Planning Program Funds in the Clean Water Revolving Loan Fund; Loans or CDBG from state Infrastructure Finance Authority for Design and construction; debt service can be paid from Stormwater Implementation Fees; Limited Improvement Districts can be formed; Funding could be secured through Urban Renewal District.

Long-Term Action Item #2: Develop a flow regime project proposal

Status:

In 2005, the US Army Corps of Engineers completed a 2-dimensional unsteady flow hydrodynamic analysis of the project area that included environmental, economic and real estate analyses using a sophisticated HEC-RAS model specifically developed for the project area.

In 2007, Oregon Solutions Tillamook Flooding project is to develop and implement a plan consistent with the Project Team's stated goal. That goal is "reduce flooding and the adverse impacts of flooding while incorporating environmental, social, and economic values in the development of short and long term solutions.

The team prioritized projects in September 2007 and began implementation shortly thereafter. The project list is a mix of capital projects and planning and analysis efforts primarily funded by a legislative appropriation from the state. Recognizing the complexity of flooding in the Wilson River, and that prior work by the Corps of Engineers focused on projects that met both ecosystem restoration and flood reduction criteria, the Project Team combined the Hall Slough and the Modified Wetland

Restoration and Swale project into Project Exodus, and broaden the overall project scope.

The projects in priority order are:

1. Wilson/Trask Spillway
2. Tone Road Spillway
3. Dougherty Slough Permanent Structure
4. Comprehensive Community Vision and Strategic Plan
5. Trask Hook
6. Implement City/County Flood Mitigation Plans
7. Mediated Gravel Agreement/Stream Corridor Management Plan
8. *Hall Slough Project*
9. *Modified Wetland Restoration and Swale*
10. Tomlinson Slough Connection Restoration
11. Study of Drainage Diking District Issues
12. Old Trask Channel Restoration
13. Wilson River Dredging - Mouth & Bay Shoal
14. Wilson River Restoration
15. Upper Basin Storage
16. Implement Storm Water Maintenance Plan
17. Bay Dredging - multiple sites
18. Bay Dredging - East Channel

2009-10 repair and long-term maintenance of the Shilo Levee will be presented as an Oregon Solutions Project .

Project Exodus

Project Exodus is permanent and the public benefits are substantial.
As shown on pages 10- 14 of the NHC Report, during the one hundred (100) year flood there will be up to a one (1 ') foot reduction in flood levels at the south end of the project area along US Highway 101 and up to one point five (1.5') feet flood reduction in flood levels at the north end of the project area along US Highway 101. This portion of the project area, consisting of five hundred (500') feet on each side of US Highway 101 contains a major piece of the City of Tillamook's commercial businesses representing millions of dollars in value. This project will also reduce flooding on the port's railroad up and downstream of the north-south rail line by about six (6") inches in the one hundred (100) year flood. The environmental benefits will also be substantial. Between five hundred and six hundred (500 - 600) acres of salt marsh wetland will be created as a direct consequence of this project with direct benefit to the federally listed Coho Salmon. Also both Hoquarten and Dougherty Sloughs are currently listed by the Oregon Department of Environmental Quality (DEQ) as water quality impaired streams. According to the Director of DEQ, the beneficial effects on water quality in those streams as a direct result of this project will be "immediate and dramatic."

This project will eliminate or substantially reduce the risk of future flood damages to the benefitted section of railroad. As noted elsewhere in this application, the Port of

Tillamook Bay Railroad will continue to be an important asset to the Port. The ability to construct ocean wave energy devices at the Port's industrial park and then transport those oversize devices by rail to the Port of Garibaldi for ocean transport will be critical to the economic viability of this alternative energy project and the region. This project is important in maintaining the rail line as a critical facility for Tillamook County as a whole. In past years when Highway 101 and Wilson River Loop road closed, the railroad was the only transportation link joining the North and South ends of the County. Additionally, Tillamook County General Hospital, as the county's only hospital, is a critical facility. As indicated elsewhere within this application, the limited hospital access issue for much of the county's population will be greatly reduced or eliminated by the project. Despite the substantial flood mitigation benefits from this project, it has large ecosystem restoration benefits and will likely qualify for a streamlined restoration permit. The project has been designated to qualify under the Federal Nationwide Permit (NWP-27) and the General Authorization under the State of Oregon Removal-Fill Law. It has also been designed to comport with NOAA Fisheries restoration programmatic biological opinion (SLOPES IV). Southern flow corridor funding request was submitted to FEMA as part of the Port of Tillamook Bay's Alternate projects.

Recommendation:

The city should continue partnerships and pursuing funding to implement the physical structures identifies by the flow-regime as most likely to reduce flood impacts.

Cost: $7,173,290 (Southern Flow Corridor only)

Sources of Funds: FEMA Alternate Project with OWEB acquisition funds of $2,000,000.

Long-Term Action Item #3: Develop a city emergency response system

- Establish a permanent check-in center for communication and support during floods and other natural hazard events and a dedicated phone number that provides recorded updates. Have information tailored to actual local conditions automatically sent and available on a call-in basis from OEM;
- *The city is part of the Emergency Communication Center's disaster response protocols coordinated by the county and the 911 District. Each affected city, agency, utility, and emergency response provider has a representative present at the center with a phone connection. Reverse 9-1-1is in place for early warning of folks who need to evacuate the low lying areas.*
- Assist ODOT in the closure of US Highway 101 during high water events to minimize further losses caused by wake effect and work with law enforcement to ticket wake creators. Identify and establish alternate transportation routes, immediate use of railroad, including air evacuation and ingress/egress at airport.

  Airport and rail access requires coordination with POTB; local transportation within the county is still viable.
- City Manager will serve as designee to observe, monitor and evaluate response coordination;
- Develop an early flood warning system by increasing the number and location of rain gauges to assist in storm analysis and flood warning.

Document upstream rain gauges and add rain gauges to existing cell towers for timely access to the remote data. Install flood warning lights or siren system;

Emergency management installed 2 new guages

- Document flood levels and resulting damages immediately after a flood event. Work with Watershed Council members to collect data and compile into one information resource.
- Conduct annual flood and other natural hazard event emergency response drills at schools, government institutions, and businesses each fall; *must include coordination between school districts, city, and emergency personnel.*
- Increase and maintain a City sandbag bank for ready availability to homes and business owners; *Sandbags and sand ready at county public works yard.*

Recommendation: City should budget to pay annual fees to support this Partnership

Long-Term Action Item #4: Restore riparian areas, floodplains, and wetlands and protect water quality

Status:

Study of best uses of land left vacant by FEMA buy-outs is nearly complete. Combined with strategic purchases previously made by the city, several options are under consideration.

Between Hoquarten Slough and the north side of Hadley Road, there are 6 vacant properties that are part of this study.

- Coordinate with landowners to identify areas that have a high erosion potential. Support riparian planting of native riparian vegetation to provide bank stabilization and dissipate flood water flow;
- Develop a requirement for sediment control on all off-site construction projects not covered by C1200 permit;
- Work with interest groups and citizens to reconnect wetlands/ponds near parks. Explore partnerships with Nature Conservancy, Ducks Unlimited, Trust for Public Land or other similar organizations to help acquire and manage key wetlands and floodways as public open space;
- Identify natural resource 'best management practices' and provide tax incentives to participating landowners. Identify and map existing levees that can be redesigned as setback levees or removed to promote water conveyance;
- Connect properties with failing septic systems (within the urban growth boundary) to City sewer system. Support existing manure control program on agricultural lands; and
- Identify current and historical hazardous material sites within flood hazard areas and require owners to secure hazardous materials prior to flood events.

Recommendation:

The City should work with the Tillamook Bay Watershed Council, TBHEID, TEP, the SWCD and riparian landowners to develop, implement, and fund riparian restoration projects on the city's streams and rivers.
The city should continue to work with the Oregon Solutions Project to fund and implement the wetland and floodplain projects already planned.
Costs:
Sources of Funds: Oregon Watershed Enhancement Board through SWCD small grants program; EPA through Tillamook Estuaries Partnerships; TCCA for ag land plantings; DEQ through 319 funds for Non-Point Source Pollution Control projects to abate stormwater runoff pollution; Stormwater implementation fees.

Long-Term Action Item #5: Strengthen land use planning and zoning

Status: (in italics below each suggested element)

- Strengthen existing flood ordinances consistent with the State's update of Goal 7 during comprehensive plan periodic review. Consider development an adoption of a repetitive flood loss ordinance and rezoning for known special flood hazard areas;

  City of Tillamook is undergoing periodic review with particular focus on Goal 7. The staff continues to enforce floodplain ordinances FEMA buy-out property is rezoned Open Space with a deed that restricts the construction of permanent structures.
- Establish land use planning and zoning language that requires best available flood hazard data be used;

  This is being included in the city's Goal 7 update.
- Work with the Department of Land Conservation and Development to modify the City's urban growth boundary.
- Coordinate with County Community Development to determine developable land in the City of Tillamook;
- Amend current zoning code to establish lot coverage standards for single-family residential zones.
- Use Transfer of Development Rights or rezoning areas more suitable for infiltration.

Recommendation:
City should consider 'no net loss of equitable commercial lands' policy to mitigate job loss, and loss of tax revenue to the city. Some of this information should be included in the recent Reid Johnson Study

Cost: Staff and Planning Commission workshop with DLCD; possibly need some professional services work for around $8,000
Source of Funds: FEMA Hazard Mitigation Grant funds, and/or DLCD Planning grant; Urban Renewal funds for match.

Plan Maintenance

Evaluating and Updating the Plan

Flood Mitigation Plan Review

Each July, Oversight Committee should review the city's flood mitigation activities with city staff and assist with preparation of the CRS application. This collaboration will assure full implementation as specified. This review will also provide the data required for a public education program, and assist with the acquisition of funding for the projects in the upcoming work plan.

Flood Mitigation Plan Review

A City of Tillamook Flood Mitigation Oversight Committee will consist of stakeholders and will work with City Staff to perform an annual evaluation of the Flood Mitigation Plan using the Evaluation Tool provided by FEMA. This evaluation will take place in July each year and will include a review and evaluation of activities eligible for Community Response System points, as well as a review of and recommendations for city investments in physical mitigation projects. The Oversight Committee will include, but not be limited to, the following organizations:

City of Tillamook Council
County Board of Realtors
Drainage Districts
Homeowners
Nehalem Marine Manufacturing
Tillamook Bay Habitat & Estuary Improvement District
Tillamook Bay Watershed Council
Tillamook Chamber of Commerce
Tillamook Cheese
Business Owners
Tillamook County Community Development
Tillamook County Emergency Management
Tillamook County General Hospital
Tillamook County Soil & Water Conservation District
City ofTillamook Planning Commission
Tillamook Revitalization Agency
Tillamook Transportation District
Tillamook Urban Renewal District

Convening the Oversight Committee

This is the city's plan and the role of the Oversight Committee is one of oversight. This task force has no authority to implement the plan, once the city take action to adopt the plan, they commit to implementation. City Planning Staff will have responsibility for initiating the annual review process. City may choose to contract with an outside party to perform the duties of arranging and managing the meeting each year. This will be a public meeting where official

minutes are kept and a report of recommendations will be repaired for presentation to the City Planning Commission and the City Council.

A presentation and status report will also be conducted annually before the City Planning Commission and the City Council during regularly scheduled meeting times. These meetings will provide the public a forum at which citizens can express concerns, opinions, or ideas about the Plan. The City of Tillamook will maintain public involvement and advertise the presentation via local media and existing community groups. The convener will be responsible for using City resources to publicize these meetings and maintain public involvement through the radio, public access channel, website, and newspaper.

Continued Public Involvement

Annual meetings of the Oversight Committee will be public meetings and they will be advertised as such in the local newspaper, on the city website, and posted at City Hall. The public will be invited to participate during the review meetings and public comments will be taken on the final review before preparation of the CRS application each year.

Appendix XIX - City of Tillamook Recycling Plan, 2003

City of Tillamook and Tillamook County
Implementation of General and Expanded
Education and Promotion Programs for Residential, Commercial and Institutional Generators of Solid Waste
Revised October 2003

The City of Tillamook is the only city in Tillamook County with a population over 4,000. The City is responsible for implementing three program elements within the city limits. Three program elements must also be offered within the City of Tillamook urban growth boundary (UGB). Information efforts designed to meet the Expanded Education and Promotion program element will sometimes overlap the City of Tillamook, the UGB and the County boundaries. The City of Tillamook, with the cooperation of the franchise holder, will take responsibility for implementing the program elements within the City and the UGB. Tillamook County will provide some support for the Expanded Education and Promotion program element countywide.

The City of Tillamook and UGB are required to meet two general requirements:

• Provide on-site collection service for source separated recyclable materials at least monthly (Alternative Recycling Program application is attached.);

• Provide a general public education and promotion program (the general program is covered by the plans described for the expanded education and promotion program.).

Inadclition, the City of Tillamook and the UGB will implement the following three additional program elements (to a large degree these program elements are being implemented. This plan formally documents existing practices and supplements the programs in some areas related to Expanded Education and Promotion):

• Expanded Recycling Drop-off Depots (described in the Alternative Recycling Program application);

• Expanded Education and Promotion (described in this document);

• Commercial and Institutional Recycling (the expanded education and promotion component of the commercial program is described in this document; detailed information on the commercial businesses and institutions to be served, the materials to be collected and the promotion of the service is attached).

The following program description primarily describes how program requirements for the City of Tillamook and the UGB will be met. Some activities that are described will have a countywide impact. Expansion of the required program elements to areas outside of the City of Tillamook and UGB are voluntary on the part of Tillamook County.

A. Provide new customer brochure or packet to each new residential and commercial service customer. Brochure or packet shall include the following:

   1) Description of the materials collected; the schedule for collection and service provider; explanation of proper preparation of materials for collection; a list of the reasons why source separation of materials for recycling is necessary; and

   2) Information about waste prevention, reuse and composting.

In year 1 of this program, the new customer brochure or packet will be sent to existing as well as new residential and service customers. The new customer brochure or packet will be updated every five (5) years.

The residential brochure or packet will be specifically designed to meet the needs of residential generators of solid waste.

The commercial brochure or packet will be specifically designed to meet the needs of commercial generators of solid waste.

On December 31st of each calendar year, the City of Tillamook will request a list of all new residential and commercial businesses that have received the above information from City Sanitary. The City of Tillamook will additionally request documentation that an annual mailing has gone out to all residential and commercial customers of City Sanitary. Documentation will include: examples of two separate brochures, one brochure targeted towards residential customers and the second brochure targeted towards commercial customers; the number of customers receiving brochures broken down by residential and commercial; and a receipt showing payment for the mailing.

B. Provide promotion to all residential and commercial service customers. All residential and commercial service customers shall be informed annually through the provision of quarterly education and promotion of the following:

1) Description of the materials collected; the schedule for collection and service provider; explanation of proper preparation of materials for collection; a list of the reasons why source separation of materials for recycling is necessary; and

2) Waste prevention and reduction methods;

3) Reuse of materials and composting techniques; and

4) The benefits of waste prevention, reuse and composting.

The City of Tillamook and its Franchise hauler, City Sanitary Service of Tillamook, and Tillamook County Government will provide and promote the following alternative recycling program (this proposal will be reviewed annually and any proposed changes submitted to DEQ for approval):

a) City Sanitary will be responsible for an annual mailing to all residential and commercial customers on the benefits of recycling and waste prevention, the procedure for preparing materials for collection and the types of materials recycled during the past year (Year 1 this was met through the "new" customer brochure or packet); the annual mailing sent to commercial customers shall specifically address commercial recycling and waste prevention; this annual mailing will be updated at least every five (5) years;

b) The City of Tillamook and Tillamook County will place articles in the Headlight Herald, and other publications, on recycling, waste prevention, composting and alternatives to household hazardous waste on at least a quarterly basis. These articles will count as two quarterly promotions each for residential and institutional/business customers as long as at least two articles are targeted towards residential generators and two are targeted towards commercial generators;

c) The City of Tillamook and Tillamook County will provide one or more public service announcements (PSA's) per year on the local county radio stations with a focus on reducing waste, reuse or composting; and

d) Cable television may be utilized to present messages on recycling, reuse, waste prevention and composting.

C. Annual Recycling Information. This requirement is met by "a)" under the quarterly promotion.

D. Participate in one or more community or media events per year, which promote recycling, waste prevention or composting.

1) The City of Tillamook and Tillamook County will work together on a annual basis to determine how to participate in one event (besides the household hazardous waste collection event) to meet this requirement: activities may include booths at events such as the Tillamook County Fair or the Tillamook County Home and Garden Show, Tillamook County Saturday Farmers' Market. Promotion will be targeted at both residential and commercial generators of solid waste.

2) The County of Tillamook will provide information on alternatives to household hazardous waste at its annual household hazardous waste collection event.

E. Utilize a variety of materials and media. The City of Tillamook and Tillamook County will meet this goal by utilizing direct mail, the Headlight Herald, PSA's, the placement of educational materials in county libraries and city halls, and possibly cable television. There will also be participation in one community event annually, such as the annual county fair, the County's annual household hazardous waste event, and the Farmer's Market.

F. Roles of the City of Tillamook, City of Tillamook Franchise hauler, City Sanitary Service of Tillamook, and Tillamook County Government.

1) City of Tillamook's role will be to:

a) promote recycling by having recycling materials available for the public at City Hall;

b) promote via at least one or more PSA's a year the benefits gained by recycling, reducing, and reusing;

c) provide via the City's water and sewer bills, a mailing that encourages customers to reduce, reuse and recycle;

d) volunteer time in the booth at a public event in the Urban Growth Boundary with the County and City Sanitary regarding efforts to recycle, reuse and reduce;

e) have on hand, for the public, at City Hall information on the merits of recycling, reuse and reducing materials that go into the waste stream.

2) City Sanitary's role will be to:

a) manage the three (3) depots, collect residential recyclables on request on route and keep written record of amount collected each time and each location for annual report to the City, County and State of each request;

b) collects the following from commercial customers:
- Cardboard,
- Newspaper,
- Magazines,
- Office paper,
- Glass,
- Tin;

and keep written record of amounts and types collected for annual report to the City, County and State, of each request;

c) provide the following information at the recycling depots and shacks:
   - Reasons why people should recycle; list of materials that can be recycled; and instruction for the proper preparation of recyclable materials,
   - Reasons why people should reduce waste, reuse materials and compost,
   - How to reduce waste, reuse materials and compost;

d) provide to all of their commercial and residential accounts/customers an annual mailing on the reasons and the "how to's" to reduce, reuse, and recycle:
   - This mailing shall occur in October of each year;
   - Two separate brochures shall be distributed to residential; and commercial customers;

e) participate in a volunteer effort to man the booth at the Tillamook County Fair along with the County on the merits of recycling, reuse and reduce as well as composting; and

f) be responsible for implementing the opportunity to recycle and will be responsible for the education, promotion and notification activities via their customer mailing list. The City of Tillamook will be responsible for recycling education and promotion to the general public as per sub question C.

3) Tillamook County's role will be to:

a) participate in one or more community or media events per year which promote recycling, waste prevention or composting;

b) design and staff a booth at the county fair each August;

c) provide information on alternatives to household hazardous waste at its annual household hazardous waste collection event; and

d) provide information, at various other County events including but not limited to the annual Home and Garden Show at the Tillamook County Fair Grounds, on the positive aspects of recycling, reducing and reusing products to divert items from going into the garbage can.

4) The Combined role of City of Tillamook, City Sanitary and Tillamook County is to provide the following:

a) At the depot sites and shacks –
1) reasons why people should recycle; a list of materials that can be recycled; instructions for the proper preparation of recyclable materials;
2) reasons why people should reduce waste, reuse materials and compost;
3) how to reduce waste, reuse materials and compost; and
4) provide recycling information, once a year, via a mailer through City Sanitary Service to present and new commercial and residential customers;

G. Recyclable materials which will be recovered using the alternative recycling program are as follows:
- Cardboard
- Newspaper
- Glass
- Magazines/ catalogs
- Office paper
- Tin
- Ferrous and nonferrous scrap
- Aluminum
- Refrigerators/Freezers
- Washer/Dryers
- Tires
- Motor oil

- Batteries

H. City Sanitary shall additionally provide the following information in its annual Recycling report to the City, County and State DEQ:

1) The City of Tillamook's annual waste shed recovery rate compared to State rate requirements, using the alternative program, for both sources - State DEQ and Tillamook County generated numbers.

2) Estimates of recyclables collected, as described in F(2)(a & b) above.

3) Improvements/Investments with respect to recycling efforts in the City of Tillamook;
City Sanitary Service has in the recent past done the following in terms of its investment plans with respect to recycling equipment and structures:
Fenced their yard at their office (cost $30, 000) black topped their site (cost $35,000) in preparation for using their site as one of the three depot sites. A cardboard collection truck was purchased for $95,000. Numerous drop boxes and roll off containers at $30,000.

4) Assist in the development and promotion of a city curbside recycling service for its residential and commercial customers through a public process and, promotion of the three (3) depot stations, which are in convenient locations for Tillamook residents within ¾ mile distance of most residential areas.

5) Report the City Population served annually as a percent of the total City of Tillamook population. The highest projected population increase to the planning period 2020 is 1.5% a year.

6) Identify the methods of service currently being used, to include depots, on-route, and on call recycling service. All of these services are conveniently accessible to all Tillamook residents and commercial businesses.

I. As part of this application and understanding changing circumstances, the City of Tillamook, through utilization of/participation by the Citizens Advisory Committee, Planning Commission and City Council, is committed to conducting a one (1)-year review of the effectiveness of the current/proposed alternative recycling program.

Approved by City Planning Commission October 2003
Approved by City Council November 2003

Appendix XX - Tillamook Airport

PLACEHOLDER

[To be Inserted at a Later Date]

City of Tillamook
Transportation System Plan

Prepared For:

City of Tillamook

and

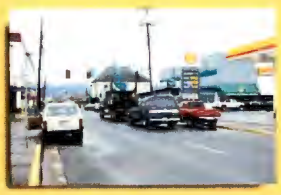
Oregon Department of Transportation

Oregon State Highway Division











Prepared by

CH2MHILL

and

ANGELO EATON & Associates

October 2003

City of Tillamook Transportation System Plan

Prepared for

Oregon Department of Transportation

October 2003

Prepared by

CH2MHILL



Printed on Recycled and Recyclable Paper

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Preface

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Acronyms and Abbreviations

AAGR	average annual growth rate
ADA	Americans with Disabilities Act
ADT	average daily traffic
ATR	automated traffic recorder
DAR	dial-a-ride
DLCD	Department of Land Conservation and Development
DMV	Oregon Department of Motor Vehicles
HCM	Highway Capacity Manual
HOV	high-occupancy vehicle
IM	interstate maintenance
IOF	Immediate Opportunity Fund
ITS	Intelligent Transportation System
LCDC	Land Conservation and Development Commission
LOS	level of service
MEV	million entering vehicles
MP	milepost
MPO	metropolitan planning organization
mph	miles per hour
MUTCD	Manual on Uniform Traffic Control Devices
NHS	National Highway System
NWRC	Northwest Ride Center
OAR	Oregon Administrative Rule
OBPP	Oregon Bicycle and Pedestrian Plan
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
ORS	Oregon Revised Statute
OTIA	Oregon Transportation Investment Act

OTC	Oregon Transportation Commission
OTP	Oregon Transportation Plan
PAC	Project Advisory Committee
PMT	Project Management Team
RV	recreational vehicle
SETD	Sunset Empire Transportation District
SPIS	Safety Prioritization Index System
STA	Special Transportation Area
STIP	Statewide Transportation Improvement Program
TCTD	Tillamook County Transportation District
TDM	Transportation Demand Management
TPAU	Transportation Planning and Analysis Unit
TPR	Transportation Planning Rule
TSM	Transportation System Management
TSP	Transportation System Plan
UBA	urban business area
USB	urban growth boundary
v/c	volume-to-capacity

Executive Summary

The City of Tillamook Transportation System Plan (TSP) is a guide for the city to develop appropriate transportation facilities in the city. The TSP incorporates the community's vision while remaining consistent with state, regional and local plans and standards.

The City of Tillamook TSP was developed through a process that first identified the transportation needs, then developed and analyzed potential projects that address those needs. Lastly, the TSP developed a financing plan for the projects that best address Tillamook's needs for the next 20 years. The following steps were involved in this process:

- Review state, regional and local transportation plans and policies
- Establish a project advisory committee and provide public open houses to disseminate and gather information from the community at key project milestones.
- Gather existing transportation information and evaluate the current transportation system.
- Evaluate and document the needs of the transportation system as a 20-year horizon. Include only the projected growth for the city without any roadway improvements.
- Develop and evaluate various projects that address the 20-year needs, described above.
- Develop a prioritized, consultant-recommended project list that meets the city's needs and objectives and that is most feasible considering the current city funding.
- Estimate the revenue available for transportation projects based on the city's current funding level and provide additional potential revenue sources for the city.
- Compile the results of this work into the TSP document for review and adoption by the Tillamook City Council.

The TSP is divided into seven sections. Section 1 is the introduction, Section 2 describes the existing conditions, Section 3 documents Tillamook's transportation system needs, and Section 4 evaluates the projects that address the identified needs. Section 5 is the actual transportation plan and is considered a stand-alone document that contains the goals and objectives and projects included in the city's TSP. Section 6 provides information regarding the city's funding and other potential revenue streams. Section 7 recommends ordinance changes to implement the TSP and documents its consistency with the state Transportation Planning Rule. There are also several appendixes referenced in the document.

Additional technical detail prepared as part of the TSP is included in a Background Document published separately. The document, which includes further detail on methods and other technical information, includes the following technical memorandums:

- Plan and Policy Review
- Transportation System Inventory Memorandum
- Existing Operational Analysis and Deficiencies Memorandum

- Forecasting Methodology and No-Build Alternative Deficiencies Analysis Memorandum
- System Needs and Potential Projects Memorandum

A copy of the Background Document can be found at city or Oregon Department of Transportation offices.

SECTION 1

Introduction

The City of Tillamook, in conjunction with the Oregon Department of Transportation (ODOT), initiated a study of the city's transportation system in 2002. The 2003 Tillamook Transportation System Plan (TSP) addresses ways to improve the transportation system to support anticipated growth in the city and associated traffic volumes in a way that will emphasize the local street network and protect the function of U.S. 101, Oregon 6 and Netarts Highway (131) as state highways. The TSP establishes a system of transportation facilities and services adequate to meet the city's transportation needs to the planning horizon year of 2022. The TSP plans for a transportation system that includes all modes of travel, serves the entire urban growth boundary (UGB), and is well coordinated with the state, regional and county transportation network.

The Tillamook TSP identifies planned transportation facilities and services needed to support planned land uses as identified in the Tillamook County Comprehensive Plan in a manner consistent with the state Transportation Planning Rule (TPR) (Oregon Administrative Rule [OAR] 660-012) and the Oregon Transportation Plan (OTP). Preparation and adoption of a TSP for the county provides the following benefits:

- Ensures adequate planned transportation facilities to support planned land uses during the next 20 years
- Provides certainty and predictability for the siting of new streets, roads, highway improvements and other planned transportation improvements
- Provides predictability for land development
- Helps reduce the cost and maximize the efficiency of public spending on transportation facilities and services by coordinating land use and transportation decisions

This TSP will guide the management and development of appropriate transportation facilities in Tillamook, incorporating the community's vision, while remaining consistent with state, regional and other local plans. This TSP document provides the necessary elements for the TSP to be adopted as the transportation element of the city's comprehensive plan.

The Tillamook TSP addresses ways to improve the transportation system to support anticipated growth throughout the city. The TSP considered future traffic volumes and circulation patterns in a way that emphasizes the city and county street network and protects the function of state highways serving Tillamook: U.S. 101, Oregon 6 and Netarts Highway (131). This TSP pays particular attention to the tourist and recreational aspects of the area and the transportation conditions created by the unique traffic characteristics. The TSP establishes a system of transportation facilities and services adequate to meet Tillamook's transportation needs to the planning horizon year of 2022. The TSP includes plans for a transportation system that incorporates all modes of travel (that is, rail, pedestrian, bicycle, auto, marine and public transportation), serves the urban area, and is coordinated with the state, regional and county transportation network.

Specific elements of the Tillamook TSP include:

- A street network with connections and extensions to provide for local circulation and access along state highways and county facilities
- Street standards that comply with the TPR
- Appropriate improvements along the primary city, county and state highway corridors that serve Tillamook to support planned land uses and measures to protect the long-term functionality of U.S. 101, Oregon 6 and Netarts Highway (131)
- Pedestrian and vehicle circulation improvements to reduce the need for short car trips on state highways and improve pedestrian safety throughout the planning area
- Amendments to the city's zoning, subdivision and other land use-related ordinances; the comprehensive plan; and any relevant financing plans, such as a capital improvement plan or other similar documents

The contents of the Tillamook TSP are guided by Oregon Revised Statute (ORS) 197.712 and the Department of Land Conservation and Development (DLCD) administrative rule known as the TPR. These laws and rules require that jurisdictions preparing a TSP develop the following:

- A road plan for a network of arterial and collector streets
- A public transit plan
- A bicycle and pedestrian plan
- An air, rail, water and pipeline plan
- A transportation financing plan
- Policies and ordinances for implementing the transportation system plan

The TPR requires that alternative travel modes be given equal consideration with the automobile, and that reasonable effort be applied to the development and enhancement of non-auto modes in providing the future transportation system. In addition, the TPR requires that local jurisdictions adopt land use and subdivision ordinance amendments to implement the provisions of the TSP. Finally, local communities must coordinate their respective plans with the applicable county, regional and state transportation plans. This coordination occurred throughout the preparation of the Tillamook TSP.

Plans and Policies

ODOT, Tillamook County and the City of Tillamook each have jurisdiction over roadways within the city limits. These jurisdictions have plans and policies that directly affect transportation planning and decisionmaking in the city. One of the first steps in the TSP process was to review the following documents to serve as the basis for updating policies to reflect current conditions and to achieve consistency with other local, regional and state plans. The plan and policy review is provided in the Background Document. The following plans and policies were reviewed:

- City of Tillamook
  - City of Tillamook Comprehensive Plan (1981, amended 1982)
  - City of Tillamook Zoning Code
  - Oregon Downtown Development Association (2002)
- Tillamook County
  - Tillamook County Comprehensive Plan (*Draft*)
- State/ODOT
  - Transportation Planning Rule (OAR 660-12)
  - Oregon Transportation Plan (1992)
  - Oregon Bicycle and Pedestrian Plan (1995)
  - Draft 2001 Oregon Rail Plan
  - Oregon Transportation Safety Action Plan (1995)
  - Oregon Public Transportation Plan (1997)
  - Oregon Highway Plan (1999)
  - 2002-2005 Statewide Transportation Improvement Program
  - Executive Order No. EO-00-07, Development of a State Strategy Promoting Sustainability in Internal State Government Operations (2000)
  - Executive Order No. EO-00-23, Use of State Resources to Encourage the Development of Quality Communities (2000)
  - Access Management Rules (OAR 734-051)
  - Freight Moves the Oregon Economy (1999)
  - Proposed Oregon Coast Highway Corridor Master Plan (1995)
  - Pacific Coast Scenic Byway Corridor Management Plan for U.S. 101 in Oregon (1997)
- Federal
  - Transportation Equity Act for the 21st Century (TEA-21) and implementing regulations (23 CFR 450 and 49 CFR 613)

Public Involvement

The TSP planning process provided the citizens of Tillamook with the opportunity to identify priorities and provide input on future transportation projects in the city. The public involvement component of the Tillamook TSP consisted of three Project Advisory Committee (PAC) meetings and two public open house meetings.

The PAC included planners and representatives of Tillamook County, City of Tillamook, ODOT and DLCD, as well as community residents. The PAC was responsible for reviewing technical aspects of the TSP, evaluating the TSP from a policy perspective, and providing general input on transportation problems and solutions. This included reviewing the TSP goals and objectives, as well as the transportation evaluation criteria.

The PAC convened three times during the process of developing the draft TSP, including: project kickoff and review of the existing conditions analysis, presentation of the future conditions and potential projects, and presentation of the draft TSP.

Two community open houses were held to encourage broader public review and comment on the TSP, beyond those members of the public on the PAC. The purpose of the first open house, held in April 2003, was to gather community input for the development and evaluation of the proposed alternatives and the proposed projects. The purpose of the second open house, held in June 2003, was to gather public input on the draft TSP document.

Goals and Objectives

The formulation of goals and objectives represents an important component of the transportation system planning process. The TSP goals and objectives are intended to reflect the vision and character of the City of Tillamook as the community develops its transportation system.

The Tillamook TSP goals and objectives serve two main purposes: (1) to guide the development of the Tillamook transportation system during the next 20 years, and (2) to demonstrate how the TSP relates to other county, regional, and state plans and policies. The goal statements are general statements of purpose to describe how the county and the TSP intend to address the broad elements of the transportation system. The objectives are specific steps that illustrate how the goal is to be carried out.

The goals and objectives were formed as part of the Tillamook TSP planning process. They reflect the input of residents, businesses and agencies on the PAC that was obtained during the course of preparing the TSP. They also reflect current local, regional and state goals and policies, and are intended to support these policies.

The TSP goals and objectives, along with a summary of how they are implemented by the TSP, are included in Section 5 of this document.

SECTION 2

Existing Transportation Conditions

This section summarizes the state of existing transportation conditions in Tillamook, Oregon. For more detailed information, see the Background Document. The inventory of existing transportation conditions in Tillamook will serve as a baseline for the 20-year planning horizon. The following elements of the existing transportation system are discussed in this section:

- Population and Land Use
- Roadway Inventory
- Traffic Operations Analysis
- Safety Analysis
- Public Transportation Inventory
- Pedestrian and System Inventory
- Bicycle System Inventory
- Air System Inventory
- Freight System Inventory
- Rail System Inventory
- Water System Inventory
- Other Systems

Population and Land Use

Tillamook is located west of the Portland metropolitan area along the Pacific Coast. The city's 2001 population was 4,340, as reported by the Portland State University Population Research Center. The major industries in Tillamook are dairy farming, timber, tourism and fishing. Because Tillamook is heavily influenced by industrial products (such as dairy and timber), the city is recognized as a trucking community. U.S. 101 connects Tillamook with the nearby communities of Garibaldi and Bay City to the north and Lincoln City to the south; Oregon 6 connects Tillamook to U.S. 26 and Portland to the east. Tillamook serves a variety of transportation needs through a system that includes roads, public transportation, rail, air, water, and pedestrian and bicycle facilities, and pipelines. The study area for this project includes all areas within the city limits, including the city's UGB. Figure 2-1 illustrates the study area.

Commercial development in Tillamook is concentrated in the downtown core along Main and Pacific Avenues (the U.S. 101 couplet), where numerous retail shops are located. North of downtown, several national chains, such as Fred Meyer, Safeway and hotels, are located along U.S. 101. Industrial development is primarily located north of town (Tillamook Cheese Factory), east of U.S. 101 (Tillamook Lumber Company) and south of town (Port of Tillamook Bay). Residential development is concentrated to the west and east of the downtown area, south of 3rd Street. Several newer housing developments are located toward the western and eastern end of the city within the UGB. This includes single family

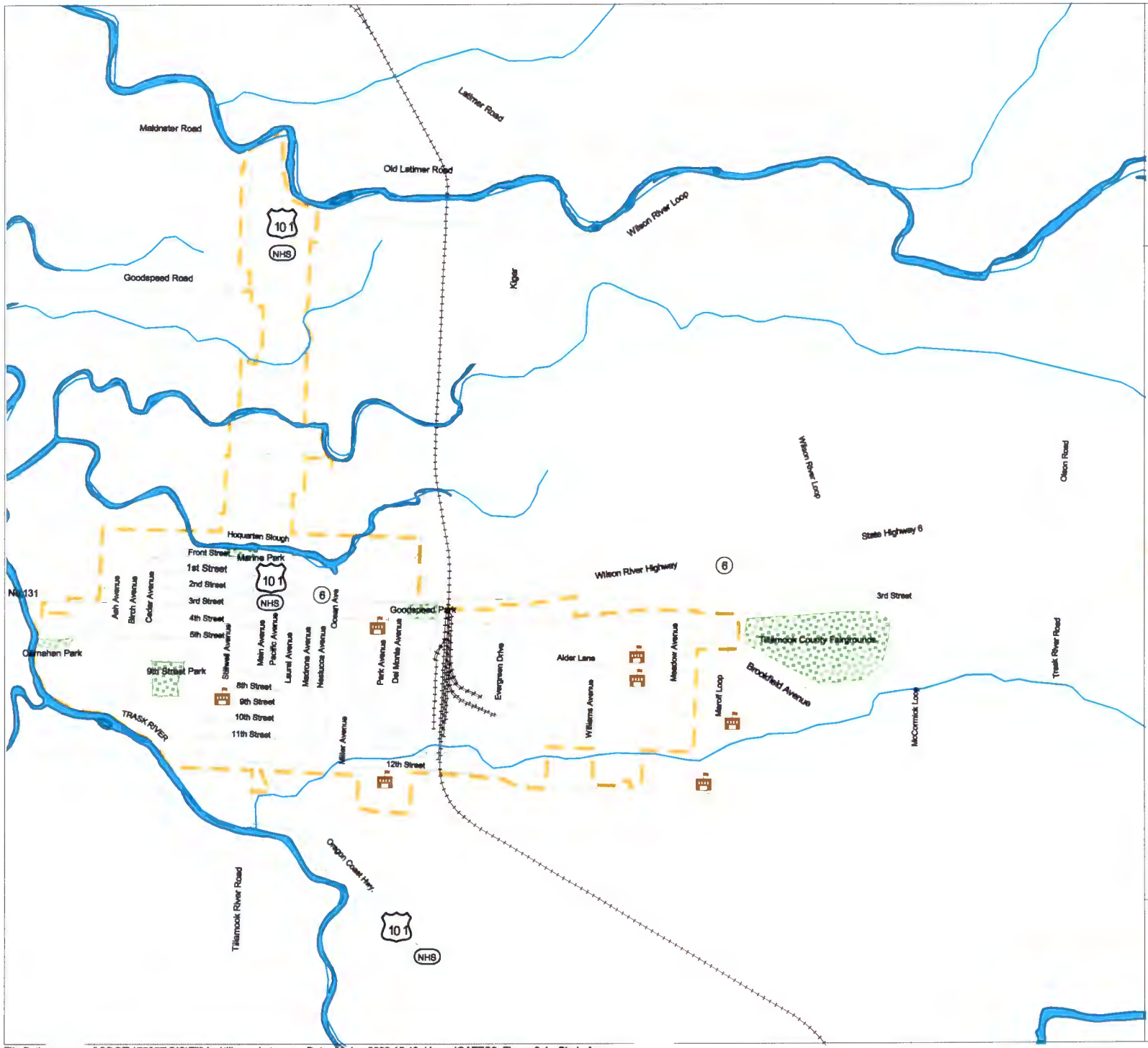


Figure 2-1
Transportation System Plan
Tillamook, OR

File Path: roj\ODOT\175257\GIS\Till\Apr\tillamook_tsp.apr, Date: 26 Jun 2003 15:48, User: JGATES2, Figure 2-1 - Study Area

developments located along Brookfield Avenue, Colonial Way, Colonial Court, Circle Drive, Beachwood Avenue and multi-family developments located on 12th Street and Evergreen Drive and Brookfield Avenue.

Tillamook has four public schools currently operating: Tillamook High School located along 12th Street, east of downtown; Liberty Elementary School located on 9th Street, east of Stillwell Avenue; and Tillamook Junior High and East Elementary School, located on Alder Lane. Tillamook Christian School and the Tillamook Adventist School, two private schools, are just outside Tillamook on Marolf Loop and 12th Street. Wilson Elementary School was closed recently because of funding constraints, but is currently being used by the Tillamook Bay Community College and alternative education. The community college, located on 1st Street, provides higher education to approximately 3,500 individuals.

Tillamook has a number of open spaces. Carnahan Park is located in the western portion of Tillamook on the Trask River. This park includes a boat launch, picnic area and playground. Marine Park, located along Front Street on the Hoquarten Slough, also provides a boat launch. 9th Street Park is located west of U.S. 101 between 8th and 9th Streets and between Cedar Avenue and Manor Place. This park contains a basketball court and a general field area. Goodspeed Park, a small park located on the corner of 3rd Street and Del Monte Avenue, provides a tennis court, picnic area and skate park. Tillamook County Fairgrounds is located outside the city, but within the UGB. The fairgrounds entrances are on 3rd Street, Marolf Loop and Brookfield Avenue. The fairgrounds includes a wide open space for outdoor fair activities and parking, and numerous buildings. North of downtown, there is open space between the various sloughs. See Figure 2-1 for a graphic of the various parks in the city. Tillamook also contains many water features, including the Trask and Wilson Rivers, and Hoquarten, Stillwell, Dougherty and Hall Sloughs.

Currently there are two planned open spaces in Tillamook. They are at the Tillamook Inn site, which is located just north of the Farmer's Co-op on U.S. 101, and the property that previously was used by Coast Tire, south of Safeway along U.S. 101. The Inn site was purchased by FEMA and turned over to the city, while the Coast Tire building is planned for purchase.

Planned Land Use and Zoning

Land in Tillamook is divided into a relatively small number of use planning and use zones, as shown in the comprehensive plan and zoning map in Appendix A. Tillamook's zoning categories and locations are as follows:

- Commercial: Tillamook's commercial use zones include neighborhood commercial, central commercial, town center, and highway commercial. Central commercial applies to U.S. 101 and the cross streets between Hoquarten Slough and 12th Street. Within the central commercial area is the town center designation that contains the area bound by 5th Street north along Pacific Avenue to 3rd Street, along Laurel Avenue, Oregon 6, Front Street, then south along Ivy Street and connects back to 5th Street via Stillwell Avenue. Highway commercial applies to the areas adjacent to U.S. 101 north of Hoquarten Slough and also at the south end of the city. Neighborhood commercial, a mix of low density commercial and residential, is applied elsewhere.

- Residential: There are three residential zones: single family, single family and duplex, and multi-use (which also allows for small-scale commercial). These are located throughout the main east-west part of the city.
- Industrial: Tillamook has light industrial and general industrial areas. The lumber mill is the primary general industrial site. Light industrial sites are scattered elsewhere, including along 3rd Street east of U.S. 101, Marolf Loop and along Front Street west of U.S. 101.
- Public and Semi-Public: Tillamook's largest public use site is the Tillamook County Fairgrounds, located at the eastern edge of the city. This site is also designated as a future park. Other facilities that are within this category include the County Courthouse, City Hall, Museum and Tillamook County Transportation District. The many schools in the city also carry the public/semi-public designation.
- Open Space: Areas along Hoquarten Slough, Trask River and other waterways are designated as open space.

Roadway Inventory

In Tillamook, the following roadway characteristics were inventoried:

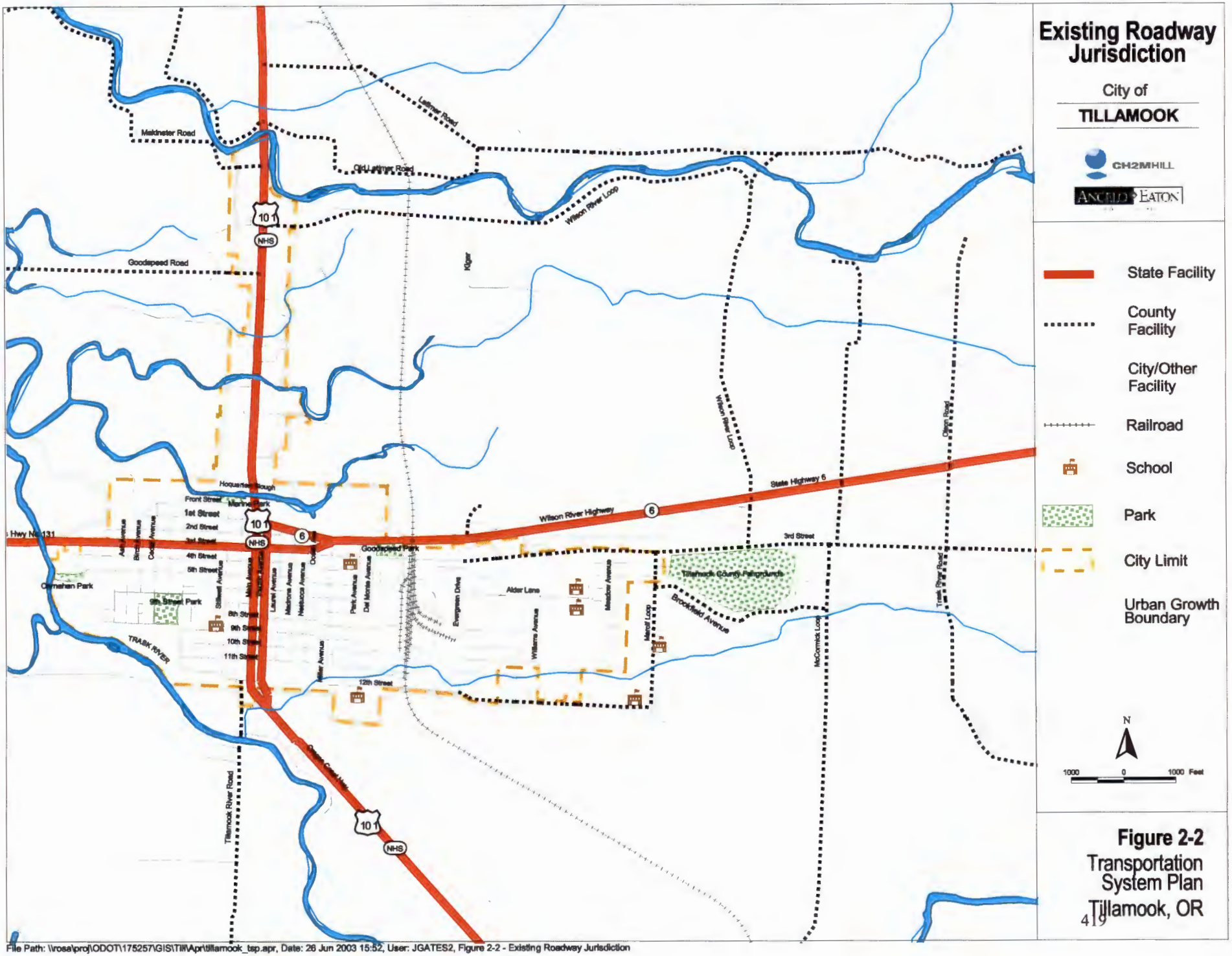
- Maintenance and jurisdiction
- Functional classification
- Pavement type (asphalt, concrete, gravel)
- Pavement condition (good, fair, poor)
- Number of travel lanes
- Roadway widths
- Speed limits
- Intersection control
- Access management
- Bridges
- Parking
- Lifeline routes
- Beach access points

Maintenance and Jurisdiction

In and near the Tillamook city limits, roads are owned and maintained by three jurisdictions: ODOT, Tillamook County, and the City of Tillamook (see Figure 2-2).

ODOT maintains and has jurisdiction over the following roads:

- U.S. 101
- Oregon 6
- Netarts Highway (131)



File Path: \\rosa\proj\ODOT\175257\GIS\Till\Apr\tillamook_tsp.apr, Date: 26 Jun 2003 15:52, User: JGATES2, Figure 2-2 - Existing Roadway Jurisdiction

Tillamook County maintains and has jurisdiction over the following roads:

- 3rd Street, east of Evergreen Drive
- Olsen Road
- Tillamook River Road
- Wilson River Loop
- Brookfield Avenue
- Makinster Road
- Goodspeed Road
- 12th Street, Evergreen Drive to Marolf Loop
- Marolf Loop
- McCormick Loop
- Latimer Road
- Schild Road
- Trask River Road

Most other roads in the city are owned and maintained by the City of Tillamook. Brookfield Avenue recently was improved to county road standards by an access easement. There are also several smaller private road segments in the city.

Existing Functional Classification

ODOT has identified the functional classification of roadways in Tillamook. The proper classification of each roadway is important to help determine the appropriate traffic control, design standards, pedestrian and bicycle facilities, and access to adjacent properties for a roadway segment. Figure 2-3 (shows the following functional classifications for roads in Tillamook.

- **Arterial Roadways**. The primary function of an arterial roadway is to provide mobility. Therefore, arterials typically carry higher traffic volumes and allow higher travel speeds while providing limited access to adjacent properties. In Tillamook, U.S. 101 is the only designated rural principal arterial and Oregon 6 is the only designated rural minor arterial. In addition, U.S. 101 is classified by ODOT as a scenic byway in the adopted 1999 Oregon Highway Plan (OHP)
- **Collector Roadways**. The function of a collector roadway is to collect traffic from local streets and provide connections to arterial roadways. Generally, collectors operate with moderate speeds and provide more access compared with arterials. In Tillamook, 3rd Street, Miller Avenue, Marolf Loop, McCormick Loop, Tillamook River Road, 12th Street and Trask/Olsen Road are designated by ODOT as rural major collectors. Netarts Highway (131) and a small portion of 12th Street between the U.S. 101 couplet are designated as urban collectors.
- **Local Roadways**. The primary function of a local roadway is to provide access to local traffic and route users to collector roadways. Generally, local roadways operate with low speeds, provide limited mobility, and carry low traffic volumes in comparison to other roadway classifications. In Tillamook, all roadways not mentioned above are designated as local roads by ODOT.

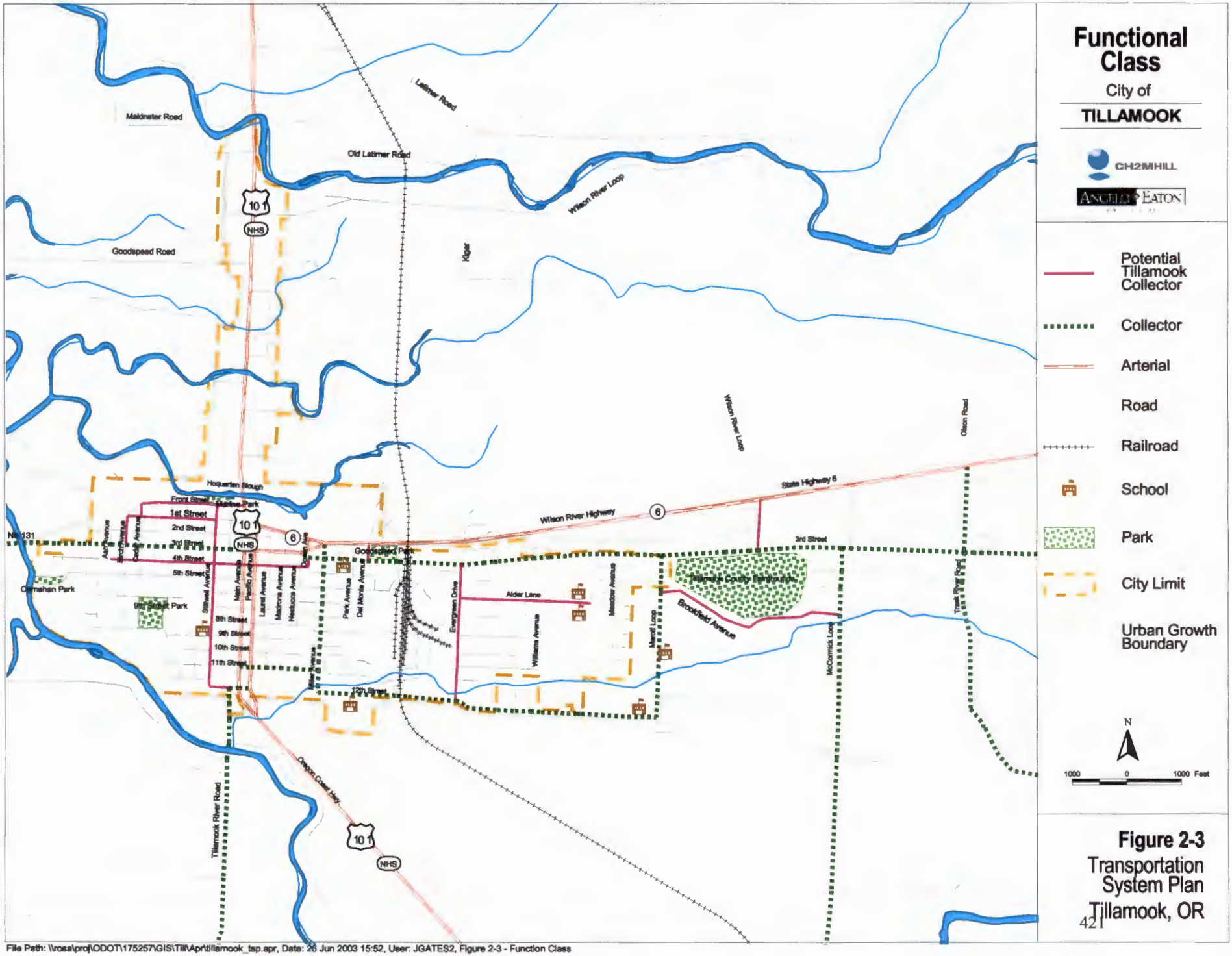


Figure 2-3
Transportation System Plan
Tillamook, OR

File Path: \\rosa\proj\ODOT\175257\GIS\Till\Apr\tillamook_tsp.apr, Date: 26 Jun 2003 15:52, User: JGATES2, Figure 2-3 - Function Class

Several roadway segments classified as local roadways by ODOT were identified as potential collectors by the City of Tillamook staff. The following potential collectors also are shown in Figure 2-3:

- Front Street
- 4th Street (Ash Avenue to Miller Avenue)
- Alder Lane
- Brookfield Avenue
- Stillwell Avenue
- Del Monte Avenue (Oregon 6 to 3rd Street)
- Evergreen Drive (12th Street to 3rd Street)
- 1st Street (Main Avenue to Birch Avenue)
- Cedar Avenue (Front Street to 1st Street)
- Birch Avenue (3rd Street to 1st Street)
- 11th Street (Stillwell Avenue to Miller Avenue)
- 12th Street (Stillwell Avenue to U.S. 101)
- Ocean Place (3rd Street to 4th Street)

Pavement Type and Condition

In Tillamook, most of the roadway segments have asphalt surfacing. Evergreen Drive is an oil-base road that is considered a low-grade asphalt pavement and one section of 11th Street (between Elm Avenue and Stillwell Avenue) has concrete surfacing.

A visual inspection of pavement conditions was conducted for roads under the jurisdiction of the City of Tillamook to determine which roads were in good, fair and poor condition. Roads in good condition provided smooth driving conditions and generally were free of potholes, cracking and maintenance issues. Roads in fair condition had sections of patching and short sections that require maintenance. Roads in poor condition provided a rough driving surface, with most of their length requiring maintenance because of potholes and cracking. Generally, the pavement condition of local roads in Tillamook is fair to good with a few poor segments on a few roads. The condition of local roads near recent development that includes curbs and sidewalks is considered good.

As described in the 2001 Pavement Condition Report by ODOT and the OHP, the state has a goal of maintaining a statewide pavement condition rating at 78 percent fair or better. 2001 pavement conditions for roads under the jurisdiction of ODOT were obtained from the ODOT Web site (http://www.odot.state.or.us/otms/pavement/PavementReports.htm). The pavement condition of U.S. 101 is good within the Tillamook city limits. On Oregon 6, the pavement condition is generally fair, with a section in good condition between U.S. 101 and the grade separated railroad crossing. The pavement condition of Netarts Highway (131) from the west city limits (Trask River Bridge) to U.S. 101 is classified as poor.

As part of the Oregon Transportation Commission (OTC)-approved 2002-2005 Statewide Transportation Improvement Program (STIP), an overlay of the Netarts Highway (131) is planned from milepost (MP) 0.00 to MP 9.08 (U.S. 101). In addition, widening and shoulder paving will be conducted within the Netarts Highway (131) right-of-way. An overlay also is planned for Oregon 6 starting from the city limits, MP 0.50 (at the railroad overcrossing) to MP 18.00 (to the east).

Travel Lanes

Most roads in Tillamook allow two-way traffic with one lane in each direction. None of the roads analyzed is a one-lane road. U.S. 101 and Oregon 6 are the only roads in Tillamook that have more than two lanes.

- **U.S. 101** is two lanes from the north end of the Tillamook city limits to Makinster Road, where it becomes a three-lane section. U.S. 101 continues as three lanes to the Wilson River Loop intersection. U.S. 101 then widens to four through lanes and a two-way, left-turn lane. This lane configuration continues until just north of the Hoquarten Slough bridge, where the road narrows to three lanes. The three-lane configuration continues for only a short distance until the intersection with Oregon 6. At this point, U.S. 101 becomes a two-way couplet with two lanes in each direction (southbound is Main Avenue and northbound is Pacific Avenue). U.S. 101 merges together south of 12th Street, near the southern city limits. At this point U.S. 101 becomes a two-lane roadway.
- **Oregon 6** is a couplet with two lanes for each direction between U.S. 101 and Miller Avenue. Between Miller Avenue and where Evergreen Drive would intersect with Oregon 6, the Oregon 6 couplet joins together and becomes a four-lane cross section. At this point, Oregon 6 then becomes two lanes until the Olsen Road intersection, where it expands to four lanes for a few hundred feet on both sides of the intersection. Oregon 6 then narrows to a two-lane cross section.

Short turn pockets are provided at many intersections, which provide additional roadway width near the intersections.

Roadway Width

A visual inspection of the local roadway widths was conducted during field work. The city roadway standards call for widths between 36 feet (for residential streets) and 44 feet (for arterial streets). These widths include 8 feet for parking on each side. Travel lanes are required to be between 10 and 14 feet wide. Based on these widths, the travel lanes for all the potential local collectors in Tillamook are standard. (This width assessment does not account for shoulders and sidewalks.)

For state roadways, lane width data are available on the ODOT Web site. From the Web site, the travel lanes on all three state highways (U.S. 101, Oregon 6 and Netarts Highway [131]) are at least 10 feet wide. Lanes that are 10 feet wide include at least 8 feet of parking width. Segments that do not have parking are at least 11 feet wide.

Speed Limits

Posted speeds in Tillamook range from 20 to 45 mph. All roads in the city classified as potential local collectors are posted at 25 mph. U.S. 101, Oregon 6 and Netarts Highway (131) (3rd Street) have segments with speed limits exceeding 25 mph. The speed limit on Oregon 6 between Main Avenue and Miller Avenue is posted at 25 mph. Between Miller Avenue and the railroad crossing over Oregon 6, the speed limit increases to 35 mph. At the railroad crossing the speed limit on Oregon 6 is 45 mph for a short distance before increasing to 55 mph.

The posted speed along U.S. 101 from the northern city limits to Goodspeed Road is 45 mph. Between Goodspeed Road and the downtown area, the speed limit on U.S. 101 reduces to 35 mph. In downtown, U.S. 101 (Main and Pacific Avenues) is posted at 20 mph. Just south of the city limits, the speed limit on U.S. 101 increases to 55 mph.

Intersection Control

In Tillamook, traffic signals are located along U.S. 101 at the following locations:

- U.S. 101 and Wilson River Loop
- Main Avenue and Oregon 6 (1st Street)
- Pacific Avenue and Oregon 6 (1st Street)
- Main Avenue and 3rd Street
- Pacific Avenue and 3rd Street
- Main Avenue and 4th Street
- Pacific Avenue and 4th Street

All other intersections in Tillamook are stop-controlled. There are two four-way, stop-controlled intersections in the project limits:

- 3rd Street and Trask/Olsen Road
- Stillwell Avenue and 4th Street

There is a two-way stop at the "T" intersection of 12th Street and Evergreen Drive. All other intersections within the project limits are either two-way, stop-controlled (four approach intersections) or one-way, stop-controlled (three approach intersections).

Access Management

According to the OHP, access management means "balancing access to developed land while ensuring movement of traffic in a safe and efficient manner." The OHP states that the purposes of access management strategies include ensuring safe and efficient roadways consistent with their determined function; ensuring the statewide movement of goods and service; enhancing community livability; supporting planned development patterns; and recognizing the needs of motor vehicles, transit, pedestrians and bicyclists.

The TPR requires that local governments adopt land use or subdivision ordinance regulations to protect transportation facilities for their identified functions, such as access control (OAR Section 660-12-0045(2)). The TSP process will address the state requirement for Tillamook access control standards.

Several collectors in Tillamook have multiple vehicle access points for access to local roads or private streets or driveways. Examples of roadways with frequent vehicle access points include U.S. 101 (north of Oregon 6) and the Netarts Highway (131) (3rd Street). Multiple access points can lead to increased opportunities for vehicle-vehicle conflicts as well as conflicts with vehicles and bicyclists or pedestrians. The TSP will examine where access control issues may affect the integrity of the transportation system in Tillamook.

During the field inventory, general observations were made about access management:

- U.S. 101 has a raised median from the Wilson River Bridge to just south of the Wilson River Loop intersection that minimizes conflict points along the roadway. At specific locations in this corridor (Makinster Road intersection and the Fred Meyer and Shilo businesses) a limited number of turn movements are allowed. Recently, at the Front Street intersection with U.S. 101, a raised median was constructed to limit access with Front Street to a right-in, right-out movement. All other roads in Tillamook do not have access management treatments.
- Between the raised median portion of U.S. 101 and the Hoquarten Slough Bridge, a two-way, left-turn lane is provided for access to the numerous private business driveways along U.S. 101.
- On U.S. 101 between Hoquarten Slough and 4th Street, a limited number of access points (driveways) are provided along Main and Pacific Avenues. Access to and from U.S. 101 in this area consists mainly of cross-street intersections.
- South of 4th Street, Main Avenue has an infrequent amount of driveways, while driveways are more frequent along Pacific Avenue.
- Access points on collectors exist at intersections with local streets and private driveways. There are frequent access points in the downtown commercial area (Pacific and Main couplet) and immediately to the east and west. Near the eastern UGB, the access points become less frequent.
- Local streets provide frequent access points to private driveways.
- There are no turn restrictions or medians along U.S. 101.
- Access to businesses along U.S. 101 is limited to on-street parking or occasionally a business parking lot provided adjacent to the business.
- Local streets provide frequent access points to private driveways.

The TSP will examine where access control issues may affect the integrity of the transportation system in Tillamook.

Bridges

In Tillamook there are six bridges along the state highway system. There are no bridges on local roadways that are being assessed in the TSP.

U.S. 101

- Wilson River Slough, #01498, MP 64.23
- Hall Slough, #17370, MP 64.99
- Dougherty Slough, #17371, MP 65.12
- Hoquarten Slough, #01500, MP 65.55

Oregon 6

- Port of Tillamook Bay railroad overcrossing, #04682, MP 0.53

Netarts Highway (131)

- Trask River, #05640A, MP 8.33

Of the six bridges in Tillamook, only one is in poor condition as a result of a sufficiency rating of less than 45. The Trask River Bridge, along Netarts Highway (131) entering the city to the west, has a sufficiency rating of 37.2.

Parking

In the downtown area of Tillamook, on-street parallel parking is allowed along Main and Pacific Avenues. Parking is restricted to a 2-hour maximum. Near the City Hall and Pioneer Museum on 2nd Street and Laurel Avenue, angled parking is provided.

Public parking lots are provided at the following locations:

- Carnahan Park
- YMCA Recreation Center
- Southeast corner of 2nd Street and Ivy Avenue (metered parking)
- Southwest corner of 2nd Street and Ivy Avenue (reserved parking available)
- West side on Ivy Avenue between 3rd and 4th Streets (unoccupied building with lot)
- Tillamook County Fairgrounds (for events only)
- School parking lots—used for general parking during field events.

Many businesses also provide off-street parking for customers on their property.

Tillamook generally has sufficient on-street parking. The residential areas have a surplus of parking, because most streets allow on-street parking and most residences include off-street parking as well. Most of the pedestrian-generating areas include off-street parking to accommodate additional vehicles.

The city staff suggested that during the tourist season parking is deficient in the downtown area along U.S. 101. On-street parking during this period is usually occupied. Therefore, vehicles are forced to park off-street, but there are limited locations. The nearest off-street parking lots are located a few blocks west of U.S. 101.

Lifeline Routes

In the vicinity of Tillamook, U.S. 101, Netarts Highway (131), Oregon 6, Latimer Road and Wilson River Loop are designated as lifeline routes. U.S. 101 (south of Oregon 6), Netarts Highway (131), Latimer Road, Wilson River Loop and Oregon 6 (between U.S. 101 and Wilson River Loop) are designated as Priority 1 lifeline routes, which means they are essential for emergency responses in the first 72 hours after an incident. U.S. 101 (north of Oregon 6) and Oregon 6 (east of Wilson River Loop) are designated as a Priority 2 lifeline routes, which means they are desirable for emergency responses in the first 72 hours after an incident or are routes essential for economic recovery.

Beach Access Points

Public beach access points in Oregon have been inventoried and are summarized on the Inforain Web site (www.inforain.org). According to the Web site, there are no public beach accesses in Tillamook.

Existing Traffic Operations Analysis

The operational analysis of existing conditions (2002) was conducted for 13 intersections in Tillamook located on state, county and city facilities. The study intersections were selected for analysis based on input from city and ODOT staffs and the availability of traffic count data. The analysis was conducted using turn movement counts conducted in 2001 and 2002, ODOT Future Volume Tables, and automated traffic recorder (ATR) data. This subsection provides a summary of the operational analysis of existing conditions (2002). See the Background Document for further information on the methodology used to conduct the operational analysis of existing conditions.

The TSP guidelines adopted by ODOT require that volume-to-capacity (v/c) ratios for intersections be calculated using 30th-highest-hour traffic volumes. In urban areas, 30th-highest-hour traffic volumes typically occur during a weekday peak hour. In recreational areas such as the Oregon coast, 30th-highest-hour traffic volumes typically occur during the peak tourist season. Therefore, 30th-highest-hour traffic volumes in Tillamook occur during summer months (July and August) during the peak tourist season.

Using the Future Volume Tables available on the ODOT Web site, historical growth rates on state facilities in Tillamook have ranged from 0.7 to 2.5 percent.

2002 30th-Highest-Hour Traffic Volumes

The turn movement counts for intersections in Tillamook generally were conducted outside of the peak tourist season. An analysis of the Rockaway ATR site, which is the closest ATR site to Tillamook along U.S. 101 (10 miles north of Tillamook), indicated that the counts were not representative of 30th-highest-hour conditions along U.S. 101. Seasonal factors from the Rockaway ATR site, which are available on the ODOT Web site (www.odot.state.or.us/tddtpau/DataRes.html), were used to factor counts to 30th-highest-hour conditions. Figure 2-4 presents the existing intersection lane channelization and year 2002 30th-highest-hour traffic volumes used in the operational analysis of existing conditions.

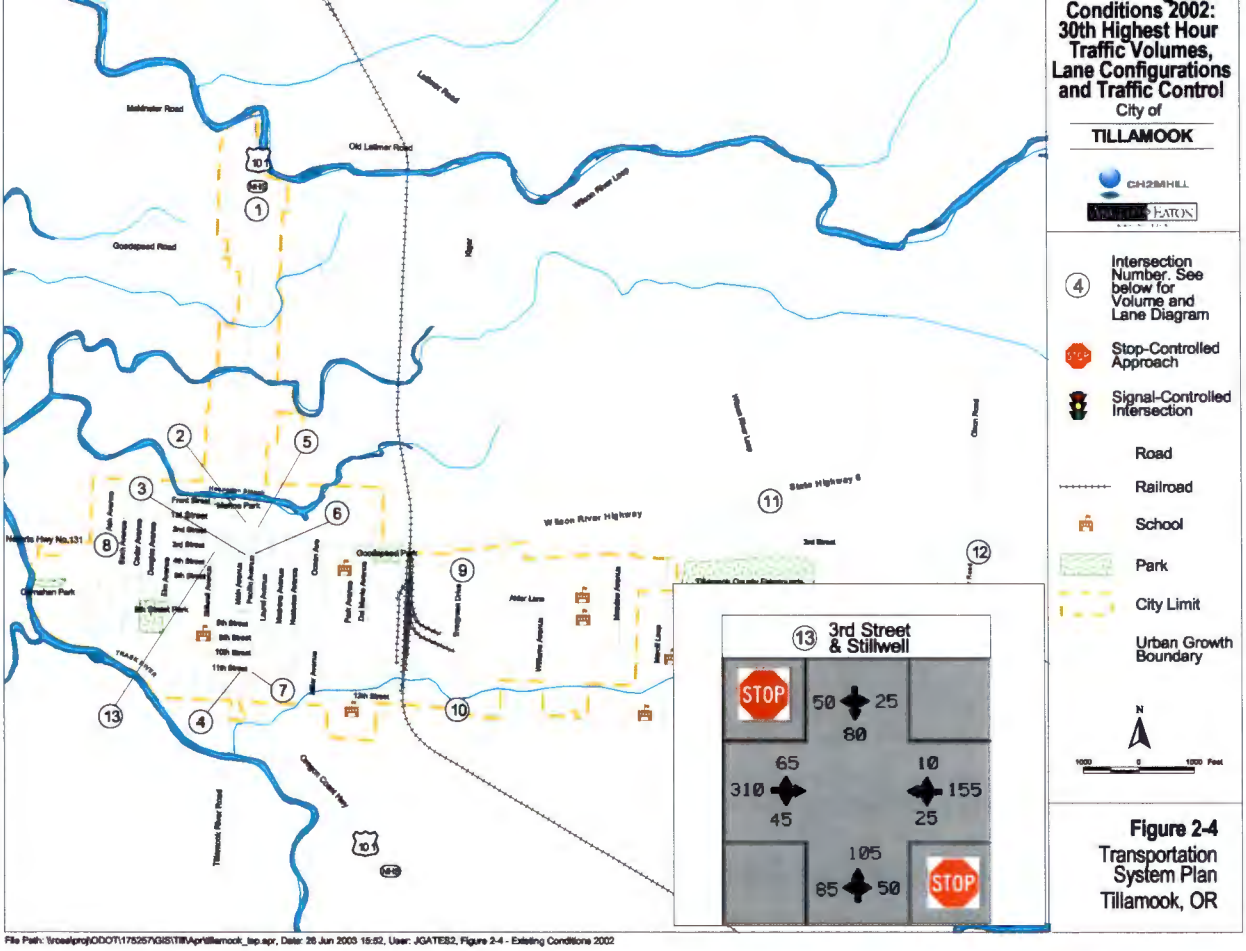
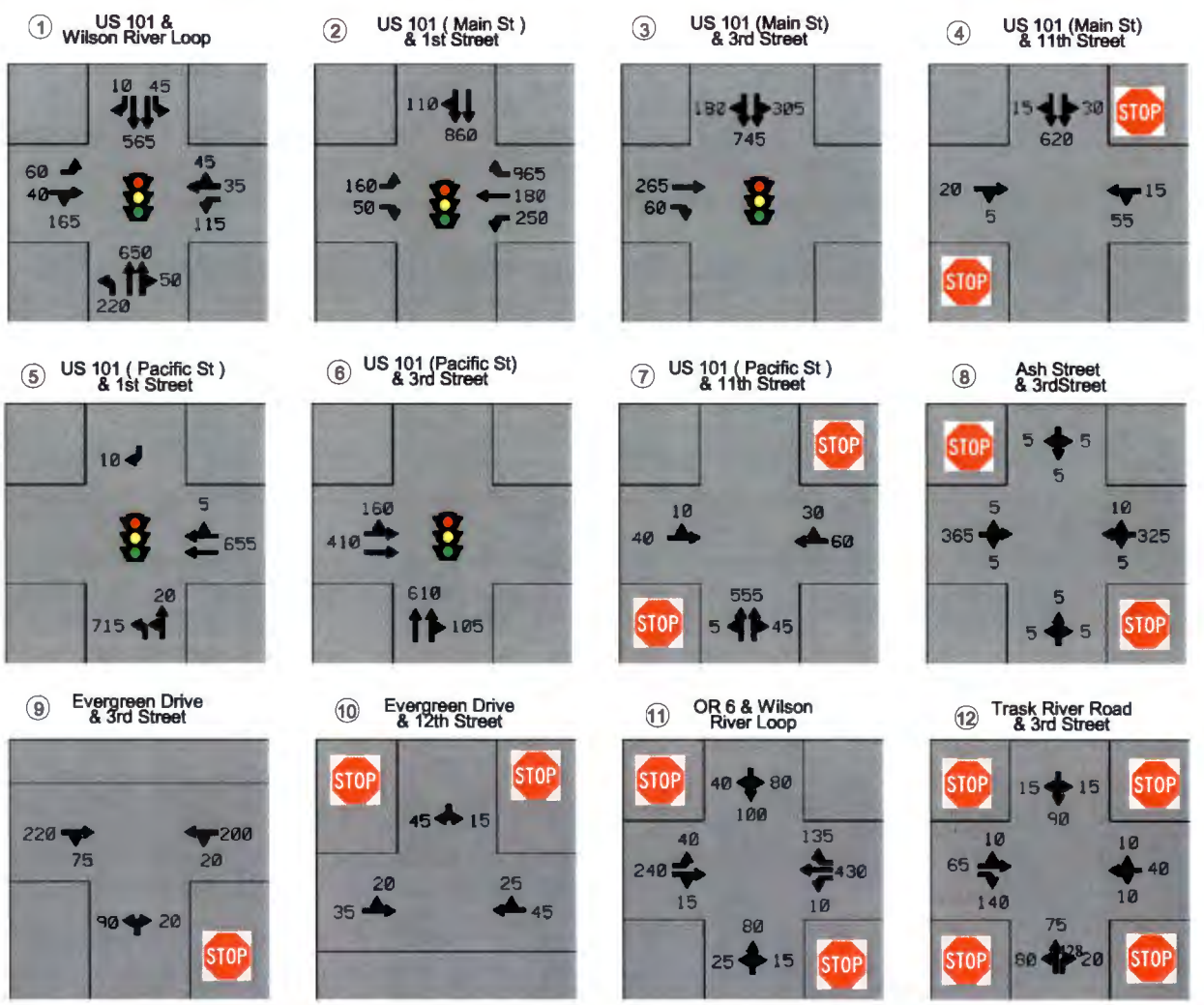


Figure 2-4
Transportation System Plan
Tillamook, OR

File Path: \\rosslproj\ODOT\175257\GIS\TIllAprtillamook_tsp.apr, Date: 26 Jun 2003 15:52, User: JGATES2, Figure 2-4 - Existing Conditions 2002



The analysis of 2001 data from the Rockaway ATR site demonstrates that traffic volumes increase by approximately 46 percent during weekends in August over average traffic volumes. Figure 2-5 demonstrates the variability in ADT volumes per month along U.S. 101 as measured by the Rockaway ATR in 2001.

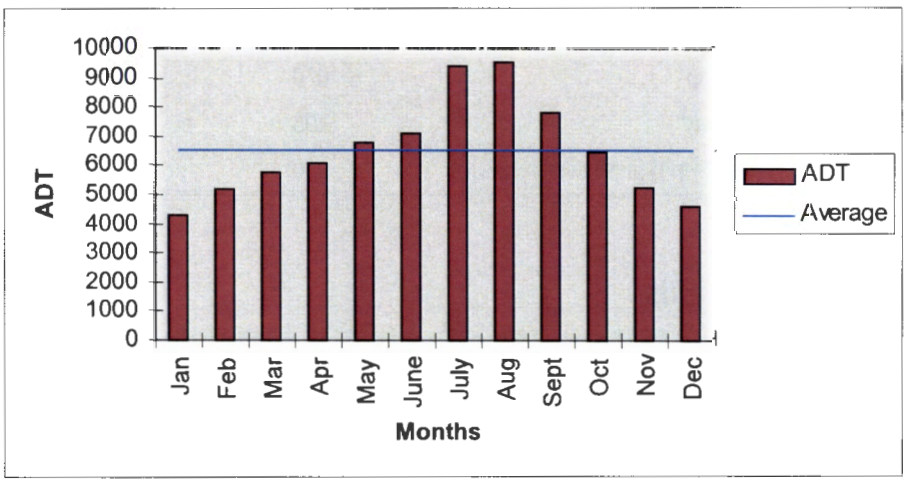


FIGURE 2-5
2002 Rockaway Automated Traffic Recorder—Average Daily Traffic Volumes

Table 2-1 presents year 2002 intersection 30th-highest-hour traffic volumes by approach at each of the study intersections. As shown in Table 2-1, U.S. 101 has the highest traffic volumes in Tillamook. During the 30th highest hour, southbound U.S. 101 (Main Avenue) has up to three times the traffic volume compared with northbound U.S. 101 (Pacific Avenue). Of the minor approaches along U.S. 101, Wilson River Loop and 1st and 3rd Streets (Oregon 6 couplet) have relatively high volumes. Most other minor streets have approach volumes less than 300 vehicles per hour.

TABLE 2-1
Entering Intersection Volumes (30th Highest Hour)

Number	Intersection	Major Approaches (vehicles per hour)	Minor Approaches (vehicles per hour)
1	U.S. 101 at Wilson River Loop	1,540	460
2	U.S. 101 Southbound (Main Avenue) at 1st Street	2,365	210
3	U.S. 101 Southbound (Main Avenue) at 3rd Street	1,230	325
4	U.S. 101 Southbound (Main Avenue) at 11th Street[1]	665	95
5	U.S. 101 Northbound (Pacific Avenue) at 1st Street	735	670
6	U.S. 101 Northbound (Pacific Avenue) at 3rd Street	715	570
7	U.S. 101 Northbound (Pacific Avenue) at 11th Street[1]	605	140
8	3rd Street (Netarts Highway [131]) at Ash Avenue[1]	715	30
9	3rd Street at Evergreen Drive[1]	515	110

TABLE 2-1
Entering Intersection Volumes (30th Highest Hour)

Number	Intersection	Major Approaches (vehicles per hour)	Minor Approaches (vehicles per hour)
10	12th Street at Evergreen Drive[1]	125	60
11	Oregon 6 at Wilson River Loop[1]	870	340
12	3rd Street at Trask River Road[1]	295	275
13	3rd Street (Netarts Highway [131]) at Stillwell Avenue[1]	610	395

[1] Unsignalized intersection.

State Highway Mobility Standards

Ten of the 13 intersections included in the operational analysis of existing conditions in Tillamook are along a state highway. The 1999 OHP designates U.S. 101 as a statewide National Highway System (NHS) non-freight route. In Tillamook, the speed limit on U.S. 101 varies between 45 and 20 mph. Because this portion of U.S. 101 is also inside the Tillamook UGB and in a non-metropolitan planning organization (MPO) area, the mobility standard designated by the OHP for U.S. 101 is a v/c ratio of either 0.80 or 0.75, depending on the posted speed. Refer to Table 2-2 for U.S. 101 mobility standards.

According to the OHP, Oregon 6 is a regional highway and Netarts Highway (131) is a district highway. Both are in a non-MPO area with speed limits of less than 45 mph. Therefore, the mobility standard for Oregon 6 is a v/c ratio of less than 0.80 and the Netarts Highway (131) has a v/c ratio of less than 0.85. Because the Oregon 6 and Wilson River Loop intersection is outside Tillamook's UGB and Oregon 6 has speeds exceeding 45 mph, the v/c ratio standard is 0.75. Table 2-2 displays OHP mobility standards for applicable facility types in Tillamook.

TABLE 2-2
Oregon Highway Plan Mobility Standards

Highway Category	Mobility Standard (v/c ratio)
Statewide NHS Non-Freight Routes, Non-MPO Area, Speeds Equal/Greater Than 45 mph (for example, U.S. 101)	0.75
Statewide NHS Non-Freight Routes, Non-MPO Area, Speed Less than 45 mph (for example, U.S. 101)	0.80
Region Highways, Non-MPO Area, Speed Less Than 45 mph (for example, Oregon 6)	0.80
Region Highways, Non-MPO Area, Outside Urban Growth Boundary, Speed Equal/Greater Than 45 mph (for example, Oregon 6)	0.75
District Highways and Local Roads, Non-MPO Area, Speed Less Than 45 mph (for example, Netarts Highway [131])	0.85
Signalized Intersection with Differing State Highway Designations	Use road with stricter v/c standard
Signalized Intersection Between State Highway and Local Road	Use state highway v/c standard
Unsignalized Intersection, Local Road Approaches in UGB with Speeds Less Than 45 mph	0.85
Unsignalized Intersection, Local Road Approaches Outside UGB	0.80
Unsignalized Intersection Between Two Local Roads (within UGB and speeds less than 45 mph)	0.85

Notes: Table 6 and Pages 74-79, 1999 Oregon Highway Plan.
NHS = National Highway System.
MPO = metropolitan planning organization.
UGB = urban growth boundary.
v/c = volume-to-capacity.

In Tillamook, there are several unsignalized intersections along U.S. 101, Oregon 6 and Netarts Highway (131). The OHP designates a maximum v/c ratio of 0.85 for local road approaches in the UGB (non-MPO areas, speed limit less than 45 mph) and a maximum v/c ratio of 0.80 for local road approaches outside the UGB.

For signalized intersections on U.S. 101 with local roads, the OHP designates that the maximum v/c ratio on the local approach is equal to the mobility standard designated for U.S. 101. For signalized intersections on U.S. 101 with other state arterials (such as Oregon 6), the OHP designates that the maximum v/c ratio on the local approach is equal to the strictest mobility standard. In this case, each road has a mobility standard of 0.80.

For local road intersections, the OHP does not specify a mobility standard. In these instances a v/c ratio of 0.85 is used as the mobility standard.

Level of Service Analysis

Level of service (LOS) is a measure of effectiveness for traffic operations at an intersection. Traffic is able to move freely at an intersection operating at LOS A, B or C. Traffic operations become progressively worse as traffic operations move toward LOS D and E. LOS F represents conditions where traffic volumes exceed capacity, resulting in long queues and delays.

LOS is based on control delay time at an intersection (signalized and unsignalized). Table 2-3 summarizes the LOS range based on delay at signalized and unsignalized intersections.

TABLE 2-3
LOS Control Delay Ranges

LOS	Signalized Intersection (seconds/vehicle)	Unsignalized Intersection (seconds/vehicle)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	>80	>50

Source: 2000 Highway Capacity Manual, Transportation Research Board.
LOS = level of service.

Analysis Methodology

For the analysis of existing conditions at the 13 study intersections, Synchro, Version 5 was used. This methodology is based on the Highway Capacity Manual (HCM). An analysis of existing conditions was conducted using the 30th-highest-hour traffic volumes shown in Figure 2-5 to evaluate how the existing transportation performs during the peak tourist season.

Traffic Operations at Intersections (30th-Highest-Hour Conditions)

Tables 2-4 and 2-5 present intersection LOS, OHP mobility standard, v/c ratio and delay experienced at each intersection under existing 30th-highest-hour conditions. LOS is calculated on the basis of intersection delay using the 2000 HCM. For each intersection, Tables 2-4 and 2-5 compare the OHP v/c mobility standard against 30th-highest-hour operating conditions. In Tables 2-4 and 2-5, rows with a black background and white text highlight intersections that currently exceed OHP mobility standards.

Signalized Intersections

Table 2-4 summarizes the results of the operational analysis of existing conditions for the 30th highest hour for the five signalized intersections in Tillamook. As shown in Table 2-4, all of the signalized intersections included in the analysis of existing conditions met the

applicable mobility standard, except the intersection of U.S. 101 (Main Avenue) and 1st Street.

TABLE 2-4
Operational Analysis for Signalized Intersections—30th Highest Hour

Intersection	V/C Ratio	LOS	Delay (seconds/vehicle)	Mobility Standard (v/c ratio)[1]
U.S. 101 (Main Avenue) and Wilson River Loop	0.59	B	13.1	0.75
U.S. 101 (Main Avenue) and 1st Street (Oregon 6)	**1.15**	**F**	**116.6**	**0.80**
U.S. 101 (Pacific Avenue) and 1st Street (Oregon 6)	0.58	B	13.4	0.80
U.S. 101 (Main Avenue) and 3rd Street (Oregon 6)	0.75	A	9.8	0.80
U.S. 101 (Pacific Avenue) and 3rd Street (Oregon 6)	0.53	B	14.7	0.80

[1] If two state highways intersect, the lower mobility standard (v/c ratio) applies. When a local road intersects with a state highway, the state highway mobility standard applies.

LOS = level of service.

v/c = volume-to-capacity.

Unsignalized Intersections

Table 2-5 summarizes the results of the operational analysis of existing conditions for the 30th highest hour at unsignalized intersections (two-way and all-way stop-controlled) in Tillamook. For a two-way, stop-controlled intersection, Table 2-5 reports results for the movement with the worst operating performance on both the major and minor approaches at each intersection. The reported v/c ratio represents the maximum (or worst) for any intersection movement. Currently, all of the unsignalized intersections meet OHP standards, except for the Wilson River Loop minor street southbound approach at Oregon 6 and 3rd Street (Netarts Highway [131]) at Stillwell Avenue.

TABLE 2-5
Operational Analysis for Unsignalized Intersections—30th Highest Hour

	Major Road Approaches				Minor Road Approaches			
Intersection	LOS	V/C Ratio	Delay (seconds/ vehicle)	Mobility Standard (v/c ratio)[1]	LOS	V/C Ratio	Delay (seconds/ vehicle)	Mobility Standard (v/c ratio)[1]
11th Street and Main Avenue (U.S. 101)[2]	A	0.20	0.4	0.80	C	0.17	16.5	0.85
11th Street and Pacific Avenue (U.S. 101)[2]	A	0.20	0.0	0.80	C	0.23	15.7	0.85
3rd Street (Netarts Highway) and Ash Avenue[2]	A	0.00	0.1	0.85	B	0.02	14.6	0.85
3rd Street (Netarts Highway) and Stillwell Avenue[2]	**A**	**0.05**	**1.6**	**0.85**	**F**	**0.94**	**77.9**	**0.85**
3rd Street and Evergreen Drive[2]	A	0.19	0.9	0.85	B	0.25	14.1	0.85

TABLE 2-5
Operational Analysis for Unsignalized Intersections—30th Highest Hour

Intersection	Major Road Approaches				Minor Road Approaches			
	LOS	V/C Ratio	Delay (seconds/ vehicle)	Mobility Standard (v/c ratio)[1]	LOS	V/C Ratio	Delay (seconds/ vehicle)	Mobility Standard (v/c ratio)[1]
3rd Street and Trask/Olsen Road[3]	A	0.26	8.8	0.85	N/A	N/A	N/A	0.85
12th Street and Evergreen Drive[2]	A	0.01	2.4	0.85	A	0.10	9.9	0.85
Oregon 6 and Wilson River Loop Road[2]	**A**	**0.26**	**1.1**	**0.75**	**F**	**0.89**	**71.7**	**0.80**

[1] If two state highways intersection, the lower mobility standard (v/c ratio) applies. When a local road intersects with a state highway, the state highway mobility standard applies.

[2] Two-way, stop-controlled intersection. Results are reported for the movement with the worst operating performance on both the major and minor approaches.

[3] All-way, stop-controlled intersection. Results reported are for the whole intersection.

LOS = level of service.

v/c = volume-to-capacity.

The operational performance of the major road is reported to show delay and LOS experienced by a majority of the traffic moving through an intersection. The minor approaches to a two-way, stop-controlled intersection may operate at a LOS of E or F because the minor movements are required to stop and wait for an acceptable gap in traffic along the major road. For minor approach movements with LOS E or F, safety or geometric improvements may improve operations. Traffic signal warrants also can be investigated to determine if a signal would improve the overall operating conditions of the network.

Operational Analysis Results (30th Highest Hour). As shown in Tables 2-4 and 2-5, 11 of the 13 intersections in the study area meet mobility standards designated in the OHP under existing 30th-highest-hour volumes. The following intersections do not meet mobility standards designated in the OHP:

- **U.S. 101 (Main Avenue) and 1st Street (Oregon 6).** The failing operation of this intersection can be attributed to the westbound right-turn movement on 1st Street, where one travel lane is handling more than 900 vehicles. This movement has a v/c ratio of 1.50, while all other movements at the intersection have v/c ratios less than 0.80. Compared with other intersections in Tillamook, this intersection experiences the highest entering peak hour volumes (see Table 2-1).
- **Oregon 6 and Wilson River Loop Road.** The failing operation of this intersection can be attributed to the southbound approach on Wilson River Loop Road. This approach, along with the northbound leg, is stop-controlled and has one travel lane for all movements (left, through, right). While the intersection's total entering volumes are not high, Oregon 6 (east and westbound approaches) experiences a steady traffic stream.
- The number of left-turning vehicles is the reason the southbound approach has a high v/c ratio. Left-turning vehicles, along with through movements, require the most gap in the opposing traffic stream to complete their maneuver. As it becomes more difficult for

a vehicle to find an acceptable gap, as in this case, the delay increases. The combination of all movements sharing one southbound lane (one left-turning vehicle will delay all other movements) and the steady stream of traffic on Oregon 6 causes a high degree of delay.

- **3rd Street (Netarts Highway [131]) and Stillwell Avenue.** The failing operation of this intersection can be attributed to the northbound approach on Stillwell Avenue. This approach, along with the southbound leg, is stop-controlled and has one travel lane for all movements (left, through, right). While the intersection's total entering volumes are not high, 3rd Street (east and westbound approaches) experiences a steady traffic stream.

  The number of left-turning vehicles is the reason the northbound approach has a high v/c ratio, although it does not exceed the mobility standard. Left-turning vehicles, along with through movements, require the most gap in the opposing traffic stream to complete their maneuver. As it becomes more difficult for a vehicle to find an acceptable gap, as in this case, the delay increases. The combination of all movements sharing one northbound lane (one left-turning vehicle will delay all other movements) and the steady stream of traffic on Netarts Highway (131) causes a high degree of delay.

Safety Analysis

A safety analysis was conducted using data obtained from ODOT for intersections and roadway segments in Tillamook. The safety analysis included intersections in Tillamook, the top 10 percent Safety Prioritization Index System (SPIS) sites, and state road segments. This subsection also includes discussion about the causes of accidents at intersections with geometric deficiencies. The safety analysis was conducted on the basis of reported crashes to ODOT. More detailed information about the analysis is available in the Background Document.

Intersection Crash Analysis

A crash analysis was conducted using data obtained from ODOT for intersections in Tillamook. A list of the top 11 crash sites by the total number of crashes from Jan. 1, 1997, to Dec. 31, 2001, was obtained from ODOT for Tillamook and is summarized in Table 2-6. Crash data also were obtained for the intersection of Oregon 6 and Wilson River Loop, which is located outside the Tillamook city limits.

TABLE 2-6
Crash Analysis Study Intersections (Year 1997 to 2001)

Number	Intersection	Total Number of Crashes	Property Damage Only	Injury	Fatality	Crash Rate[1]
1	U.S. 101 (Main Avenue) and Hadley Road[2]	11	10	1	0	N/A
2	U.S. 101 (Pacific Avenue) and 3rd Street	27	21	6	0	1.10
3	U.S. 101 (Main Avenue) and 1st Street	14	11	3	0	0.30
4	U.S. 101 and Wilson River Loop	23	15	8	0	0.67
5	U.S. 101 (Main Avenue) and 3rd Street	24	18	6	0	0.83
6	U.S. 101 (Main Avenue) and Front Street	20	15	5	0	N/A
7	Netarts Highway (131) (3rd Street) and Stillwell Avenue	16	12	4	0	1.10
8	U.S. 101 (Main Avenue) and 4th Street	17	15	2	0	N/A
9	U.S. 101 (Pacific Avenue) and 4th Street	18	17	1	0	N/A
10	U.S. 101 (Pacific Avenue) and 5th Street	13	8	5	0	N/A
11	U.S. 101 (Main Avenue) and 2nd Street	17	14	3	0	N/A
-	Oregon 6 and Wilson River Loop[3]	28	9	17	2	2.12

Source: Oregon Department of Transportation crash data, years 1997 to 2001.

[1] Crash rate in units of million entering vehicle miles. N/A indicates average daily traffic volumes not available.

[2] At the intersection of U.S. 101 and Hadley Road, there were 31 reported accidents from 1997 to 2001. A majority of these accidents occurred at existing driveways near the intersection. The crash data reported in Table 2-6 do not include the accidents that occurred at the driveways.

[3] Outside city limits.

Crash rates were determined for each intersection where ADT volumes were available and are summarized in Table 2-6. A crash rate of more than 1.0 crash per million entering vehicles (MEV) generally indicates that crash causes should be studied further at an intersection. In the following subsection, the following intersections are further evaluated:

- U.S. 101 and Hadley Road (top-ranked crash site by ODOT as a result of driveway accidents)
- U.S. 101 (Pacific Avenue) with 3rd Street (crash rate higher than 1.0 MEV)
- Netarts Highway (131) with Stillwell Avenue (crash rate higher than 1.0 MEV)
- Oregon 6 with Wilson River Loop (crash rate higher than 1.0 MEV)
- U.S. 101 (Main Avenue) with 3rd Street (two accidents involving pedestrians in the 5-year period)

U.S. 101 and Hadley Road (three-leg intersection, unsignalized)

The top crash site in Tillamook, as reported by ODOT on the top 11 crash site list, was along U.S. 101 near Hadley Road. This location was the top crash site partially because of the

inclusion of driveway accidents near the intersection. As shown in Table 2-6, the driveway crashes greatly influence the ranking of this intersection. When the crashes that occurred at existing driveways are removed from the total, as shown in Table 2-6, this intersection had the lowest number of reported crashes of the intersections included in the 5-year analysis period. The two driveways are located 0.01 mile north of the intersection and 0.02 mile south of the intersection.

At the driveway located northwest of the intersection of U.S. 101 and Hadley Road, there were two crashes during the 5-year period, with one resulting in property damage only and the other resulting in an injury. Both crashes were caused by conflicts between left-turning northbound drivers against southbound through traffic on U.S. 101. At the south driveway, which provides access to a Safeway store, there were 18 reported crashes during the 5-year period, with 9 crashes resulting in injuries and 9 crashes resulting in property damage only. Most of the reported crashes (89 percent) at the southern driveway were a result of drivers failing to yield right-of-way to northbound through-traffic when making a southbound left turn from the driveway onto U.S. 101.

U.S. 101 (Pacific Avenue) and 3rd Street (four-leg intersection, signalized)

At the intersection of U.S. 101 (Pacific Avenue) and 3rd Street, there were 27 reported crashes in the 5-year period. Most of the crashes were the result of a driver disregarding the signal (30 percent), turning from the wrong lane (26 percent) and rear-end crashes (26 percent). As shown in Table 2-6, a majority of the crashes resulted in property damage only at this intersection (78 percent).

Netarts Highway (131) (3rd Street) and Stillwell Avenue (four-way-stop intersection, unsignalized)

At the intersection of Netarts Highway (131) and Stillwell Avenue, there were 16 reported crashes in the 5-year period, with 12 crashes resulting in property damage only and 4 crashes resulting in injuries. Most of the reported crashes at this intersection were a result of drivers failing to yield right-of-way (56 percent), improper parking (13 percent) and drivers running a stop sign (13 percent).

Oregon 6 and Wilson River Loop (two-way-stop intersection, unsignalized)

At the intersection of Oregon 6 and Wilson River Loop, there were 28 reported crashes in the 5-year period, with 2 of the crashes resulting in fatalities, 17 resulting in injuries, and 9 resulting in property damage only. Causes of crashes at this intersection included failing to yield right-of-way (82 percent), failing to stop (11 percent) and rear-end accidents (7 percent). The number of crashes per year at this location appear to be fairly consistent during the 5-year period, with 21 percent in 1997, 18 percent in 1998, 21 percent in 1999, 7 percent in 2000, and 32 percent in 2001. The two fatalities were caused by a driver who failed to stop at the stop sign and by a driver who failed to yield right-of-way to traffic on Oregon 6. At this location, an interchange has been studied by ODOT to improve the safety performance of the intersection.

U.S. 101 (Main Avenue) and 3rd Street (four-leg intersection, signalized)

Although this intersection has a low crash rate it is included because two pedestrians accidents occurred during the 5-year period. Of the 24 reported crashes during the 5-year

period, 2 involved pedestrians. One of the pedestrian accidents was caused by a driver who failed to yield to a pedestrian in a crosswalk and the other was a result of a pedestrian who failed to yield to drivers who had the right-of-way.

At the intersections along U.S. 101 (Main and Pacific Avenues), including the intersection of U.S. 101 (Main Avenue) and 3rd Street, the PAC indicated that trucks and recreational vehicle (RV) traffic have difficulty making turns under existing conditions because of constrained intersection geometry. Of the 24 reported crashes during the 5-year period, 2 involved trucks and 1 involved an RV. The two crashes that involved trucks were rear-end crashes caused by excessive speeds. The crash that involved an RV was caused by improper lane change. None of the crashes that involved trucks or RVs was caused by difficulty in making turns. Of the three reported crashes that involved trucks or RVs, none involved pedestrians.

Safety Priority Index System Sites

The SPIS method is used by ODOT to identity locations with safety problems caused by the crash frequency, crash rate and crash severity at the site. The top 10 percent of SPIS sites are evaluated each year by ODOT to identify improvements that may reduce the number and severity of crashes. SPIS data were provided by ODOT for the period between 1998 and 2001. In Tillamook, three intersections were ranked as top 10 percent SPIS sites in years 1999, 2000 and 2001: U.S. 101 and Front Street; U.S. 101 (Pacific Avenue) and 2nd Avenue; and U.S. 101 (Pacific Avenue) and 3rd Street. The intersection of U.S. 101 (Pacific Avenue) and 3rd Street was discussed in the subsection above.

U.S. 101 at Front Street

At the intersection of U.S. 101 and Front Street, there were 20 reported crashes. Most of the crashes were caused by a combination of rear-end accidents (55 percent), excessive speeding (45 percent) or drivers failing to yield right-of-way to traffic on the mainline (30 percent). In some instances, an accident at this location included two of these factors.

Safety improvements recently have been made to this intersection, including a median delineator that restricts turns from Front Street to only right-in/right-out access. Left turns onto Front Street are no longer permitted. These improvements are expected to decrease the number of rear-end crashes because northbound vehicles will not be able to stop and turn left onto Front Street. With the recent intersection modifications, crashes caused by drivers failing to yield right-of-way at the intersection should diminish. This intersection should continue to be monitored by ODOT and the City of Tillamook to ensure that the recently constructed intersection modifications improve the safety of this intersection.

U.S. 101 (Pacific Avenue) at 2nd Street

At the intersection of U.S. 101 (Pacific Avenue) and 2nd Street, there were 10 reported crashes during the 5-year period. Causes of reported crashes at this intersection include rear-end accidents (30 percent) and drivers who made turns from the wrong lane (20 percent). During the 5-year period, there was one accident involving a pedestrian crossing Pacific Avenue outside of a crosswalk and one accident involving a bicyclist.

Segment Crash Rates

As described in the 2000 State Highway Crash Rate Tables published by the Crash Analysis and Reporting Unit, Netarts Highway (131) is a non-freeway secondary highway and Oregon 6 and U.S. 101 are non-freeway primary highways. Table 2-7 summarizes the year 2000 crash rates and the 5-year average crash rates (1996 to 2000) along each of these roadways with a comparison to the statewide averages for the same conditions.

TABLE 2-7
Crash Rates Along State Highway Segments in Tillamook

Roadway	Year 2000 Crash Rate[1]	Year 2000 Statewide Average Crash Rate[1]	5-year Average Crash Rate[1]	5-year Statewide Average Crash Rate[1]
U.S. 101—Tillamook (Urban)	5.31	2.95	5.06	3.52
Oregon 6—Tillamook (Urban)	6.18	2.95	4.84	3.52
Oregon 6—Tillamook (Rural)	0.87	0.89	2.06	0.87
Netarts Highway (131)—Tillamook (Urban)	7.47	2.67	5.98	3.93

Source: 2000 State Highway Crash Rate Table, Crash Analysis and Reporting Unit, ODOT.
[1] Crash rate in units of million vehicles miles.

As shown in Table 2-7, both the year 2000 and 5-year average crash rates in Tillamook on U.S. 101 and the urban sections of Oregon 6 exceed the statewide averages. The year 2000 crash rate for the rural sections of Oregon 6 is average compared with other rural non-freeway primary highways in Oregon. However, the 5-year average crash rate of the rural sections of Oregon 6 exceeds the statewide 5-year average crash rate on other rural non-freeway primary highways in Oregon. The 2001 crashes were checked determine if there is a trend of increased number of crashes along the rural segment of Oregon 6. In year 2001, the number of crashes reverted to pre-2000 crash conditions. Therefore, the low crash rate in year 2000 is not attributed to any change in roadway condition or operations. Both the year 2000 and 5-year average crash rates in Tillamook on urban sections of Netarts Highway (131) exceed the statewide averages. This could be the result of the numerous conflict intersections along Netarts Highway (131) in the Tillamook city limits.

State Highway Segment Crash Rate Analysis

As described above, all of the state highways within the Tillamook city limits have higher-than-average crash rates. To determine the causes of the high crash rates on state highways, the detailed crash data for Netarts Highway (131), Oregon 6 and U.S. 101 were further examined.

Netarts Highway (131)

Along Netarts Highway (131) within the Tillamook city limits (MP 8.56 to 9.07), a majority of the reported crashes resulted in property damage only. Of the 34 crashes during the 5-year period on the Netarts Highway (131), 19 of the crashes were caused by drivers who failed to yield right-of-way to drivers along the mainline and 5 were caused by rear-end-type crashes. Of the total crashes, 14 were caused by drivers who stopped at a cross-street

and then continued onto or across Netarts Highway (131). Six accidents were caused by drivers who were parallel parking along the highway. Overall, most of the crashes appear to be caused by the numerous conflict points (intersections and driveways) or parallel parking along Netarts Highway (131), which is typical of an urban, low volume collector.

Oregon 6

Along Oregon 6 within the vicinity of Tillamook (MP 0.0 to 2.54), there were 65 crashes during the 5-year period (3 resulted in fatalities, 26 resulted in injuries and 36 resulted in property damage only). Two of the crashes that resulted in fatalities occurred at MP 1.80 (Wilson River Loop Road) and one occurred at MP 2.50 (Olsen Road). At the intersection of Oregon 6 with Wilson River Loop Road, one of the crashes resulting in a fatality was caused by a driver who failed to stop at the stop sign and the other was caused by a driver who failed to yield right-of-way to traffic on Oregon 6. At the intersection of Oregon 6 with Olsen Road, the crash resulting in a fatality was caused by a driver driving on the wrong side of the highway. Of the 65 reported crashes on Oregon 6, 30 were caused by drivers who failed to yield right-of-way and 11 were caused by rear-end accidents.

U.S. 101

Along U.S. 101 within the Tillamook city limits (MP 64.23 to 66.26), there were 240 reported crashes during the 5-year period (63 resulted in injuries and 177 resulted in property damage only). Of the 240 reported crashes, 106 were at an intersection and 208 occurred during daytime hours. Most of the crashes were rear-end accidents (72). There was a high number of crashes caused by drivers failing to yield right-of-way (69), improper lane changes (25) and drivers making a left turn in front of oncoming traffic (17). Of the 240 reported crashes, 75 involved a driver stopped in traffic, 41 involved a driver exiting a driveway or access point, 25 involved parallel parking and 13 involved a driver who continued across or onto U.S. 101 after stopping at a stop sign.

Intersection Geometry and Safety Deficiencies

During a field visit to Tillamook in September 2002 and through comments from PAC members, the following intersections with skewed geometry, potential safety issues or sight distance issues were identified:

- 4th Street at Ocean Place
- Oregon 6 (3rd Street) at Ocean Place
- 12th Street and U.S. 101 (Pacific Avenue)
- U.S. 101 and Oregon 6
- Netarts Highway (131) (3rd Street) at U.S. 101 (Main Avenue)
- Alder Lane at Dogwood Street and Cypress Street (offset without intersection control)

In addition to these six intersections, RV traffic making turn movements in the downtown area has difficulty because of constrained intersection geometry. At the PAC meeting, committee members stated RV turns are especially a problem at U.S. 101 (Main Avenue) and 3rd Street. Potential improvements at intersections with skewed approaches or offsets are addressed in Section 4.

Intersections with skewed geometry or steep approaches can have poor sight distance and awkward turning angles, which can lead to safety problems. These deficiencies are based on a visual inspection relating to typical design standards, such as intersection sight distance. Potential improvements (such as restriping/channelization, turn movement restrictions, intersection rebuild/configuration) are addressed in Section 4.

Public Transportation Inventory

The Tillamook County Transportation District (TCTD) provides the following public transportation services in Tillamook:

- Fixed-route service in Tillamook and various cities in Tillamook County. There are four transit routes between Tillamook and other cities (Oceanside/Netarts, Manzanita, Pacific City and Portland). The routes also stop at other points between the destination cities. There is a city-wide transit loop that is entirely within the Tillamook city limits. The mean age of the seven fleet vehicles used for the fixed route service is 2.62 years. A new vehicle is currently being purchased.
- Countywide dial-a-ride (DAR) service. The mean age of the three vehicles used for the paratransit/dial-a-ride service is 2.72 years.
- Greyhound Lines and Amtrak service is not provided in the Tillamook area.
- Tillamook Taxi provides a private taxi service in the city.

Other public transportation services available in Tillamook include medical appointment transportation through the Northwest Ride Center and school bus service.

Fixed-Route Service—TCTD

The following TCTD routes serve Tillamook, as shown in Figure 2-6. The only transit shelter is located at the 2nd Street and Laurel Avenue transit stop. This stop is considered the transit transfer station for TCTD. All other stops in Tillamook are designated with a post and sign.

- **Tillamook-Oceanside/Netarts Route** operates Monday through Saturday. This route has one stop in Tillamook at 2nd Street and Laurel Avenue. The bus leaves Tillamook at 9:15 a.m. and 2:15 p.m. and arrives in Tillamook at 10 a.m. and 3 p.m.
- **Tillamook-Manzanita Route** operates Monday through Saturday between 6 a.m. and 7:25 p.m. The bus stops in Tillamook at the main transit stop (2nd Street and Laurel Avenue). In Tillamook, buses on this route depart and arrive three times in the morning and afternoon with 2-hour headways. On Saturday, buses on this route arrive and depart twice in the morning and afternoon with 4-hour headways. This route has the highest ridership and serves a high number of commuters.



Existing Transit Lines and Stops

City of

TILLAMOOK

CH2MHILL

ANGLE EATON

- Tillamook-Portland
- Tillamook-Manzanita
- Tillamook-Town Loop
- Tillamook-Pacific City
- Tillamook-Netarts
- Port Loop
- Transit Shelter
- Bus Stop
- Road
- Railroad
- School
- Park
- City Limit
- Urban Growth Boundary

Figure 2-6
Transportation System Plan
Tillamook, OR

File Path: ...roj\ODOT\175257\GIS\Till\Apr\tillamook_tsp.apr, Date: 26 Jun 2003 15:53, User: JGATES2, Figure 2-6 - Transit

- **Tillamook-Pacific City Route** operates Monday through Friday between 6:10 a.m. and 7:55 a.m., and 12:55 p.m. and 7:15 p.m. This route has one stop in Tillamook (2nd Street and Laurel Avenue). The buses on this route arrive and depart three times a day.
- **Tillamook-Portland Route** operates Monday through Saturday between 8 a.m. and 5:30 p.m. In Tillamook, the bus stops at the main transit stop (2nd Street and Laurel Avenue) four times a day (twice in the morning to begin the eastbound trip and twice in the afternoon to complete the westbound trip). The route includes stops in Portland at Union Station (Amtrak) and at the Greyhound Station near Highway 26. On Monday through Friday, the bus also stops at various locations between Tillamook and Portland (Beaverton, Hillsboro and Forest Grove); on Saturday this route is a direct service between Tillamook and Portland. This route has the second highest ridership, but generates the greatest revenue of all the TCTD routes.
- **Tillamook Town Loop Route** operates Monday through Saturday. This service provides 12 stops in Tillamook, including the main transit stop at 2nd Street and Laurel Avenue. This route operates on approximately 1-hour headways starting at 7 a.m. and ending at 5 p.m. On Saturday service starts 1 hour later. This route has the third highest ridership.
- Lincoln City service is provided by the TCTD's DAR service.
- A port loop is also provided by TCTD, but it is outside the city limits.

In-county service is $1 per zone for one way. There are three zones defined in Tillamook County. Tillamook is in Zone 1. In the City of Tillamook, the fare is $1 for the day (unlimited use). The Tillamook to Portland route is $10 one-way and $15 round trip. Monthly passes are available for unlimited in-county transit service. Regular price is $35 per month. A reduced rate of $25.00 per month is available for seniors, students and disabled persons.

The TCTD headquarters is located on 3rd Street, east of Linden Avenue. TCTD currently has one park-and-ride, located in the south side of the Fred Meyer parking lot along U.S. 101 north of the downtown. This park-and-ride lot is currently unmarked, with minimal use.

Each transit bus is Americans with Disabilities Act (ADA) accessible and is equipped with a bike rack. Also, each bus displays route information for easy identification.

A new transit facility is being constructed in two phases with the expected completion set for late 2004. The facility will include a new headquarters, maintenance facility and a park-and-ride lot. This project is part of the OTC-approved 2002-2005 STIP.

Dial-A-Ride—TCTD

DAR service in Tillamook County currently is provided by TCTD. Three vehicles operate on weekdays between 8 a.m. and 4:30 p.m., except on holidays. Depending on demand and driver availability, service hours can be extended. DAR service is available to all users, with priority service to seniors and disabled passengers. All DAR vans are wheelchair accessible and personal care attendants are available when needed. Riders are asked to call 2 hours in advance to schedule a ride. The call center is located at the TCTD headquarters in Tillamook on 3rd Street. Currently, the cost is $1 to ride DAR per one-way trip per zone.

Northwest Ride Center

The Northwest Ride Center (NWRC) provides free transportation to medical appointments in Clatsop, Columbia and Tillamook Counties for those passengers eligible under the Oregon Health Plan. The call center, which is stationed at the transit headquarters in the City of Warrenton, is open Monday through Friday from 8 a.m. to 5 p.m.. Transportation services are scheduled through the call center and are provided 24 hours a day, 365 days per year, by reservation. Riders are asked to call at least 2 hours in advance to schedule a ride. However, NWRC will schedule rides with less notice when possible.

School Bus

School bus service in Tillamook is provided by the Tillamook School District. Fourteen buses operate fixed-routes each school day. Bus routing in Tillamook is extensive and encompasses most of the city's major roads (including state-designated facilities and local collectors).

Greyhound, Amtrak, and Tri-Met Connections

Greyhound bus stops are located in Lincoln City (45 miles south of Tillamook) and Portland (73 miles east of Tillamook). Currently, there is no fixed-route transit service between Tillamook and Lincoln City. The Tillamook-Portland transit fixed-route service connects with the Greyhound station in downtown Portland. The Tillamook-Portland transit fixed-route service also connects with Amtrak and Tri-Met in Portland. The Amtrak and Tri-Met services in Portland are the nearest passenger rail services. The Port of Tillamook Bay has a rail line in Tillamook, but it is not equipped for passenger rail service.

Transit Opportunities

The TCTD staff outlined opportunities to improve public transportation services offered by TCTD, including the following items:

- Provide annual incremental route expansion.
- Provide park-and-ride services at the TCTD's building headquarters. This is a planned facility included in the Phase 2 construction of the TCTD's new headquarters building. It is expected that the park-and-ride will provide 25 stalls.
- Provide connections to other transit service providers such as Sunset Empire.
- Expand service to Oceanside on the Netarts Highway (131) and weekend service to Pacific City.
- Encourage growth in ridership between Tillamook and the Port of Tillamook Bay.
- Provide transit vehicle pull-outs at stops. (This is considered one of TCTD's immediate priorities.)
- Enlarge transit shelters. This is a current proposal to the Tillamook City Council. It includes expansion of the transit center on 2nd Street and Laurel Avenue and adds shelters at stops without them.

- Provide additional services at the 2nd Street and Laurel Avenue transit center stop. Includes providing restrooms, customer service station and bike racks.

Pedestrian System Inventory

Pedestrian facilities are an important component of the transportation system. As the *1995 Oregon Bicycle and Pedestrian Plan* (OBPP) explains, virtually everyone is a pedestrian at some point during the day. For example, pedestrians include children walking to and from school, people using wheelchairs or other forms of mobility assistance, people at bus stops, and people walking to and from their vehicles. Walking meets transportation needs for a significant segment of the population that does not have access to vehicles. Aside from providing a necessary mode of transportation, a community's pedestrian system also offers recreational opportunities for both local and out-of-town users.

The Tillamook community has identified a compact residential development as an important component of the city's character and high quality of life. Tillamook's 2020 Vision Statement identifies a comprehensive non-motorized system as key to creating an attractive and inviting walking atmosphere in the community. The vision also includes a mix of commercial uses downtown to reinforce the pedestrian-friendly aspect of the city center.

According to the OBPP, pedestrian facilities are walkways, traffic signals, crosswalks and other amenities, such as illumination or benches. Tillamook has several types of walkways, which are defined in the OBPP as "transportation facilities built for use by pedestrians and persons in wheelchairs," including the following:

- **Sidewalks:** Sidewalks are located along roadways, are separated from the roadway with a curb and/or planting strip, and have a hard, smooth surface, such as concrete. Examples of sidewalks in Tillamook include the sidewalks through downtown along Main and Pacific Avenues.

- **Multi-Use paths**: Multi-use paths can be used by a variety of people, including pedestrians, cyclists, skaters and runners. Multi-use paths may be paved or unpaved, and are often wider than the average sidewalk (for example, 10 feet). Tillamook has no multi-use paths.

- **Roadway shoulders**: Roadway shoulders often serve as pedestrian routes in many Oregon communities. On roadways that experience low volumes of traffic, roadway shoulders are often adequate for pedestrian travel. These roadways should have shoulders wide enough so that both pedestrians and bicyclists can use them. Many local roadways in Tillamook are examples of roadway shoulder pedestrian facilities, including 3rd Street, east of Evergreen Drive, 12th Street from Evergreen Drive to Marolf Loop, Alder Lane and Marolf Loop.

The Tillamook pedestrian system generally can be characterized as comprehensive in certain areas of the city (such as the downtown area surrounding U.S. 101; Main and Pacific Avenues) and lacking in other areas (such as the eastern portion of Tillamook). There are gaps in connectivity between neighborhoods with regard to pedestrian facilities. The existence of a high number of private accesses and conflict opportunities in certain locations

create a barrier to continuous, connected pedestrian facilities in certain portions of Tillamook.

Sidewalk Locations

The sidewalks in Tillamook are generally concentrated in the downtown commercial core (along Main and Pacific Avenues and the immediate side streets) and the newer residential areas near the eastern city limits. Some streets, particularly where newer development exists, have sidewalks on both sides of the street, while others have sidewalks on just one side. On roads where there are significant traffic and pedestrian areas, such as Liberty Elementary School and Tillamook High School, sidewalks are present, but only for short distances. Figure 2-7 describes the sidewalk locations in Tillamook.

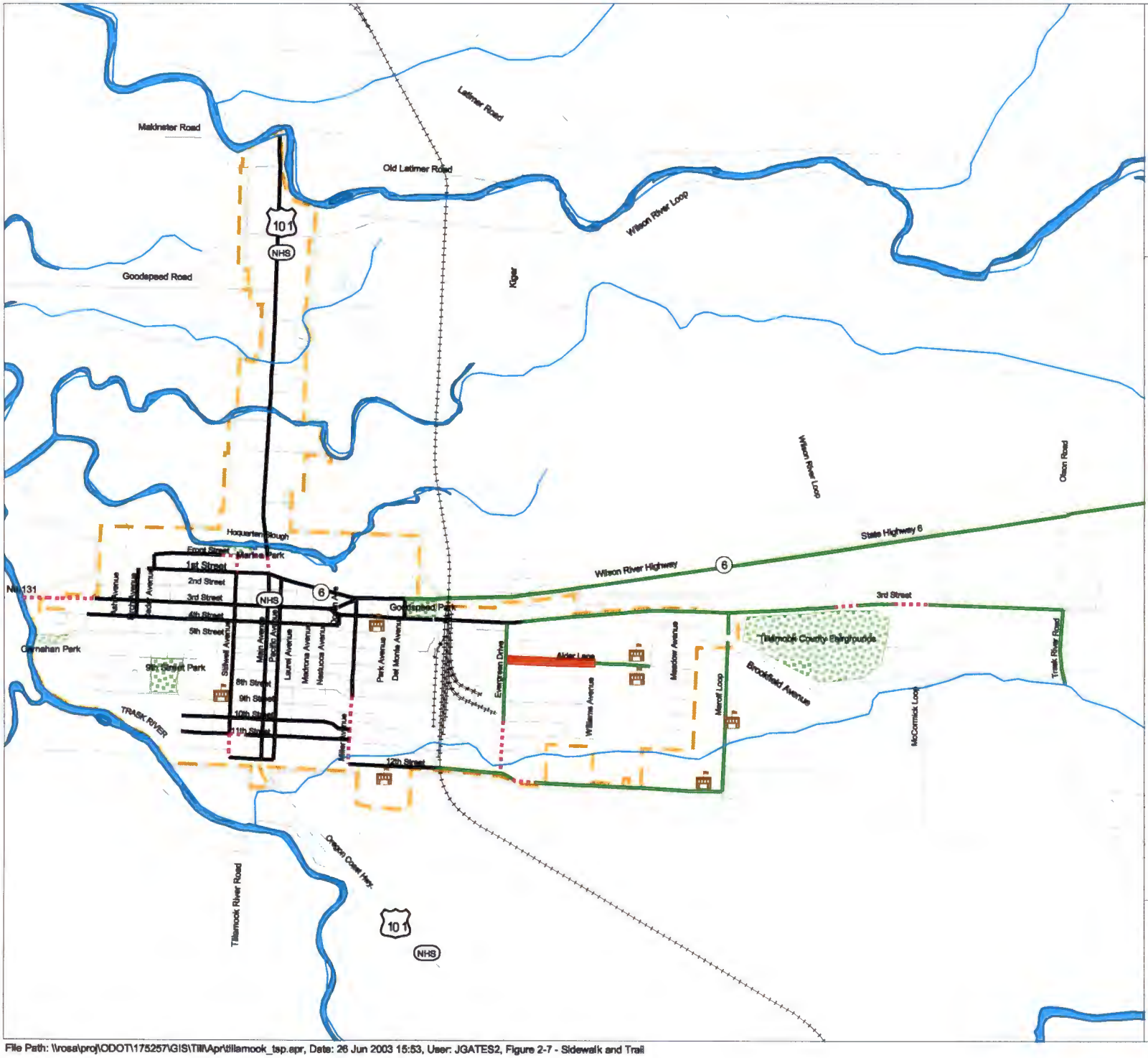
Most local streets have sidewalks, but the sidewalk system lacks connectivity in some areas, and, therefore, pedestrians have to share the roadway with bicycle and vehicle traffic. In some instances (such as 3rd Street, east of Evergreen Drive) pedestrians are provided with a shoulder (paved and/or gravel). Sidewalks are on only one side along the following roadways:

- U.S. 101 between Hoquarten Slough and Oregon 6 intersection, west side
- Evergreen Drive, north of 12th Street, east side for a few hundred feet
- 3rd Street, west of Ash Avenue, south side
- Stillwell Avenue, west side between Front Street and 1st Street, and between 11th Street and 12th Street
- Miller Avenue, west side, south of 8th Street
- 11th Street, between Stillwell and Ivy Avenues, south side
- 12th Street, east of Evergreen Drive on the north side for a few hundred feet
- 3rd Street, between Wilson River Loop and McCormick Loop, sporadic sidewalks north side where new development has occurred

All other locations where sidewalks are noted are along both sides of the road.

Sidewalk Condition

Sidewalks in Tillamook are generally in fair condition in many areas of the city. Most of the sidewalks along U.S. 101 are 4 to 6 feet wide and well-connected with relatively smooth surfaces. Most areas of the city outside the downtown blocks have intermittent sidewalks. Sidewalks generally exist in front of newer development, but do not connect with other sidewalks.



Existing Sidewalks and Trails

City of

TILLAMOOK

CH2MHILL

ANGELO EATON

- Sidewalk - Both Sides
- Sidewalk - One Side Only
- Unpaved Shoulder
- Striped Walkway
- Road
- Railroad
- School
- Park
- City Limit
- Urban Growth Boundary

N

1000 0 1000 Feet

Figure 2-7
Transportation System Plan
Tillamook, OR

File Path: \\rosa\proj\ODOT\175257\GIS\TillMapr\tillamook_tsp.apr, Date: 26 Jun 2003 15:53, User: JGATES2, Figure 2-7 - Sidewalk and Trail

Americans with Disabilities Act (ADA) Facilities

Most of the ADA ramps in Tillamook are located on sidewalks in the downtown core, along U.S. 101, and in front of newer development. Some of the ramps in the downtown core are not to ADA standard (for example, too steep or cracked). Generally, ramps near the commercial center or the newer residential areas are compliant with ADA specifications. However, some of the older ramps in the downtown core are not to ADA standard (for example, some are too steep or cracked). The downtown area also features pedestrian bulb-outs at the intersection corners (U.S. 101 and 2nd Street).

Crosswalks

Numerous crosswalks are located in Tillamook. Most of the crosswalks are located along U.S. 101 and the cross streets in the downtown area. Crosswalks also are located near the pedestrian generators, such as the schools, YMCA recreation facility and hospital. Some of the crosswalks are faded and difficult to see (for example, along 3rd Street near Goodspeed Park and Wilson School). All the crosswalks along U.S. 101 and near Liberty Elementary School and Tillamook High School are clearly striped and in good condition. Most of the intersections with crosswalks are striped on all approaches although a few intersections are only striped along certain approaches.

Pedestrian Generators

It is important for a city's pedestrian system to connect residential areas with commercial centers, schools, community focal points and transit facilities, which are collectively referred to as pedestrian generators. The following descriptions characterize the pedestrian system near significant pedestrian generators in Tillamook:

- **Liberty Elementary School**. Good pedestrian facilities surround Liberty Elementary School, especially on Stillwell Avenue. There are sidewalks on both sides of Stillwell Avenue from 10th Street to Front Street, and along the north side of 9th Street from Stillwell Avenue to Manor Place. Crosswalks are located along 9th Street at Grove Avenue and along Stillwell Avenue at 9th, 8th and 7th Street. Severely faded crosswalks are located at 11th and 5th Streets. The crosswalks at 7th and 8th Streets do not have ramp connections with the sidewalks. There is also signage for school crossings near the school.

- **Tillamook Junior High School and East Elementary School**. Pedestrian facilities around these two schools are generally poor. There are no sidewalks along Alder Lane. There is only one striped crosswalk between the two schools. There is a faded striped walkway (for pedestrians or bicyclist) along the south side of Alder Lane. This walkway is visible only at the west end of Alder Lane, then it disappears near the middle of the street.

- **Tillamook High School**. Pedestrian facilities immediately surrounding Tillamook High School are good, but adequate pedestrian connections to the east are missing. Evergreen Drive and 12th Street east of Evergreen Drive have no pedestrians facilities except for two short sidewalk sections (eastside of Evergreen Drive and the north side of 12th Street) at the Evergreen Drive and 12th Street intersection. Miller Avenue has sidewalks

only on the west side of the street from 12th Street to 8th Street, then on both sides north of 8th Street.

- **Tillamook Christian and Adventist School**. There are no pedestrian facilities on 12th Street or Marolf Loop around these two schools. Shoulder width is minimal with a ditch alongside the roads.

- **Wilson Elementary School**. Although this school is currently closed for use as an elementary school, it is being used by the community college and alternative education. Sidewalks and crosswalks are present near the school. Along 3rd Street, sidewalks are constructed on both sides of the road. Crosswalks are located along 3rd Street at Park Avenue, Miller Avenue and Del Monte Avenue. At each of these intersections either the west or east approach is not marked as a crosswalk. With the school located near residential streets, a common complaint is people parking in the residential areas. In addition, people are parking their vehicles along Oregon 6 and crossing the state highway to go to the school. A site-specific solution to these parking issues may need to be developed.

- **Downtown Tillamook (Main and Pacific Avenues from 1st Street to 6th Street).** Downtown Tillamook is fairly well served in terms of pedestrian facilities. Both Main Avenue and Pacific Avenue are served by sidewalks on both sides of the street, and have striped crosswalks at numerous intersections. This area is also mostly compliant with ADA standards and provides some pedestrian amenities, such as benches and pedestrian bulb-outs at the Main Avenue and 2nd Street intersection. On-street parking is allowed, which can cause pedestrian sight-distance issues at the intersections. Even though U.S. 101 is designated and signed as the Oregon Coast Bike Route, there are no bicycle facilities in the downtown core along U.S. 101.

- **Commercial Strip north of Downtown on U.S. 101.** The commercial strip along U.S. 101 from Hoquarten Slough to the northern city limits (Fred Meyer, Safeway, Shilo Inn, etc.) has a comprehensive pedestrian system along U.S. 101, but the system does not connect to facilities to the east or west. Because U.S. 101 is mostly a five-lane cross section for this portion of the road, crosswalks are located only at the signalized Wilson River Loop intersection. The high number of private mid-block accesses through this area is potentially hazardous for bicyclists. This area is also mostly compliant with ADA standards because the commercial development is fairly recent.

- **Tillamook County Fairgrounds.** The pedestrian facilities surrounding the Tillamook County Fairgrounds are inadequate and provide minimal connections. Sidewalks along 3rd Street are sporadic near the fairgrounds and no crosswalks are provided across 3rd Street in this area. Gravel shoulder is provided, but it is used for on-street parking, therefore, forcing pedestrians to walk near the road. No pedestrian or bicycle facilities (sidewalks, shoulders or crosswalks) are located along Brookfield Avenue.

- **9th Street Park.** No pedestrian or bicycle facilities serve the area surrounding 9th Street Park. A small gravel area is directly in front of the park, but it is used for parking.

- **Carnahan Park.** Even though sidewalk is provided along both sides of 5th Street, ramps are not always provided especially near Carnahan Park. Because the park is at the west

end of 5th Street, even though a crosswalk is not provided at the entrance, it is not needed.

- **Marine Park (on Front Street).** Sidewalks and ramps recently were constructed along Front Street as part of the roadway improvements. The sidewalks connect well with U.S. 101. Crosswalks are not located near Marine Park.
- **Goodspeed City Park (corner of 3rd Street and Del Monte Avenue).** Pedestrian facilities serve Goodspeed City Park on 3rd Street and Del Monte Avenue. Del Monte Avenue and 3rd Street are designated truck routes, which can cause pedestrian discomfort, but with the integrated sidewalk system surrounding this park, pedestrians are removed from interacting with vehicles. There are crosswalks providing access to the park.
- **Transit Stops/Multimodal Connections.** There are 14 transit stops in Tillamook that are served by the TCTD. Only the main transit stop at 2nd Street and Laurel Avenue includes a landing pad and shelter. Transit facilities and amenities are not provided at any other transit stops. Many of the transit stops are provided in locations where sidewalks are provided, although transit stops east of the city are located in areas where pedestrian facilities are lacking. There are no bicycle facilities at any of these stops, although the transit vehicles have bicycle racks.

Trails

There are no defined trails in Tillamook. Currently, a trail along the Hoquarten Slough is under development. Further details are provided elsewhere in this document.

Bicycle System Inventory

Introduction

Bicycle travel offers commuters, children and others a significant option for transportation. Cycling is also a transportation choice for people who do not own vehicles and is an important recreational option in Oregon, especially in scenic portions of the state, such as the Oregon Coast.

According to the OBPP, there are several different types of bicycle facilities. Bikeways are design treatments, such as signage or striped shoulders, located on roadways to accommodate bicycles. Multi-use paths are facilities separated from a roadway for use by cyclists, pedestrians, skaters, runners or others. Multi-use paths are discussed in the review of existing conditions for the Tillamook pedestrian system. The different types of bikeways are as follows:

- **Shared Roadway**: Shared roadways include roadways on which cyclists, motorists and pedestrians share the same travel lane. Shared roadways are common on neighborhood streets and rural roads. All local roads in Tillamook are considered shared roadways. None of these roadways includes accommodations for bicycles, except Alder Lane, which has a faded striped bicycle/walking lane on the south side. According to the OBPP, two design treatments can enhance travel on a shared roadway:

  - **Wide Outside Lane** (where shoulder bikeways or bike lanes are warranted, but limited because of physical constraints—wide enough so that a vehicle can comfortably pass a bicycle)
  - **Bicycle Boulevard** (a modification of the operation of a local street to function as a through street for bicycles while maintaining local access for vehicles, often via traffic control devices)

- **Shoulder Bikeway**: Paved roadways are striped shoulders wide enough for bicycle travel. According to the OBPP, most rural bicycle travel on state highways occurs on shoulder bikeways. Sometimes shoulder bikeways are signed as a signal to motorists to expect bicycle travel along the roadway. An example of this type of wide shoulder bikeway is Oregon 6 from the city limits between the Wilson River Loop Road and Olsen Road intersections.
- **Bike Lane:** Bike lanes are portions of the roadway designated specifically for bicycle travel via a 6-foot-wide striped lane, and are particularly appropriate on arterials and major collectors. Bike lanes are often signed. An example of a roadway with a bike lane in Tillamook is U.S. 101 north of the downtown area.

Bikeway Locations

The Tillamook pedestrian system generally can be characterized as comprehensive in certain areas of the city and lacking in other areas. There are some gaps in connectivity between neighborhoods with regard to pedestrian facilities. In general, the high number of private accesses and conflict opportunities proves a barrier to continuous, connected pedestrian facilities in certain portions of Tillamook.

The bicycle system in Tillamook is minimal with designations occurring only on the state facilities mentioned above (U.S. 101 and Oregon 6). Only U.S. 101 has bicycle signage. The bicycle system does not provide any connectivity in Tillamook. Only U.S. 101 has a signed bicycle lane north of downtown (to the northern city limits). Even though this area along U.S. 101 is designated with a bike lanes, the signing is minimal. In the downtown core area (Main and Pacific Avenues), the bike lane is replaced by on-street parking. South of downtown near the southern city limit, there is a designated bicycle shoulder. Oregon 6 is designated as a bicycle shoulder without any signage. No separate bicycle facilities are provided on the local streets; bicyclists are required to share the roadway with vehicle traffic and pedestrians. Alder Lane provides a narrow faded striped bicycle/walking lane on the south side of the road from Evergreen Drive to Tillamook Junior High School and East Elementary School.

With the limited amount of bicycle facilities in Tillamook, the system can be characterized as recreational as is most of the bicycling along the Oregon Coast. From discussions with the city staff, a minimal amount of bicyclists are commuters. TCTD vehicles are equipped with bicycle racks to make facilitating between travel modes easier.

Bikeway Condition

Generally, existing bicycle facilities are characterized by good pavement condition. The U.S. 101 bicycle route in Tillamook has a high number of vehicle access points, both at

intersections and mid-block, which can cause barriers and hazards for cyclists. Only U.S. 101 in Tillamook is designated via signage. The Oregon 6 shoulder is in good condition and has limited access points.

Air System Inventory

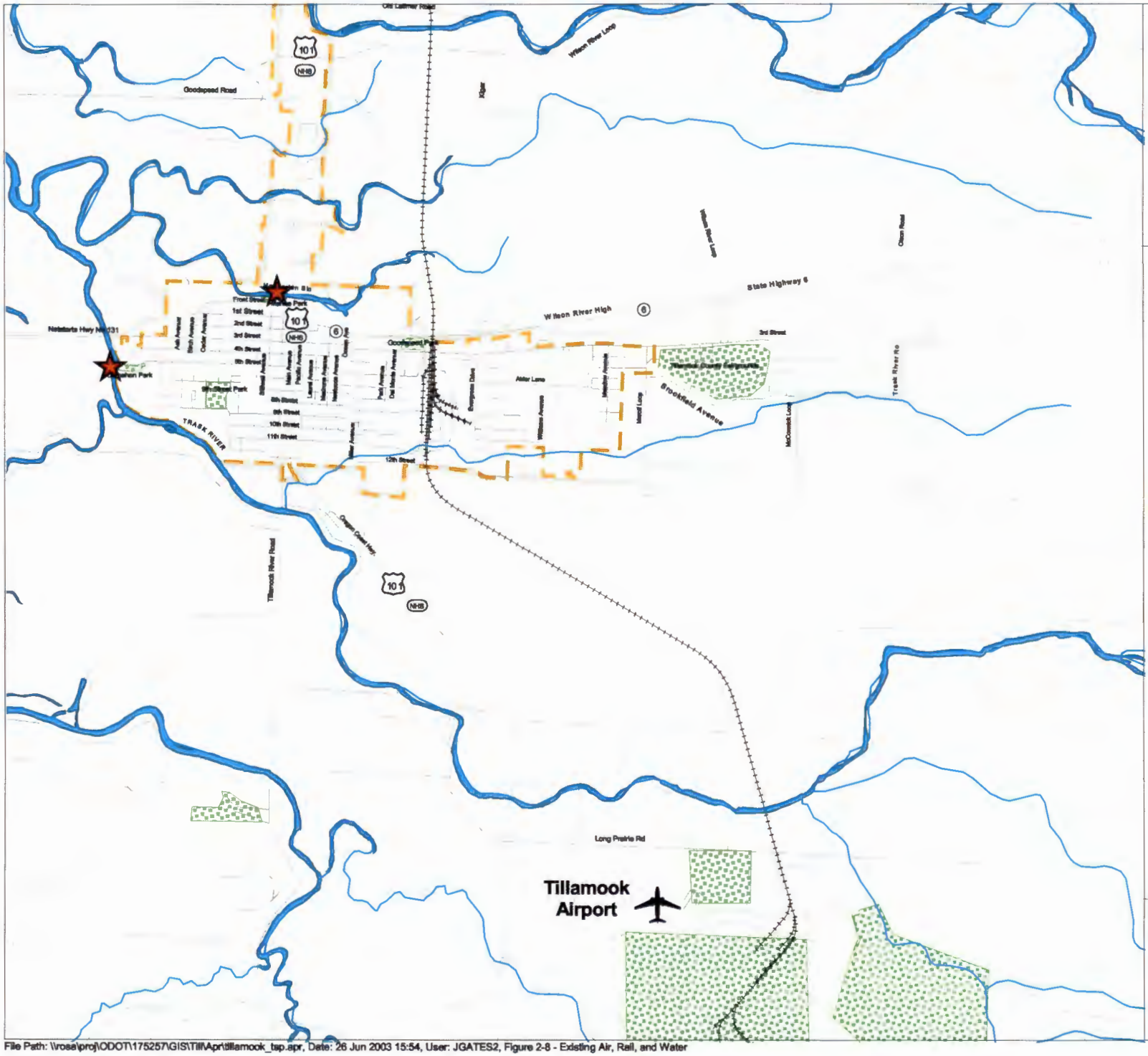
The Tillamook Airport, owned and operated by the Port of Tillamook Bay, is located south of Tillamook, outside the city limits adjacent to U.S. 101 as shown in Figure 2-8. The airport provides services ranging from light passenger planes and modern military fighters to experimental aircraft and airships, as well as daily freight. Currently, Tillamook Airport provides no commercial air passenger service, but the airport is suitable for most private or commercial aircraft. The Portland International Airport, which is located approximately 75 miles east of Tillamook, is the closest commercial air passenger service provider. The location of the airport is shown in Figure 2-10.

Freight System Inventory

Tillamook has designated various roads in the city as truck routes. The truck routes provide a connection between state facilities (U.S. 101, Oregon 6 and Netarts Highway [131]) and major freight destinations in the city (TP trucking, Tillamook Lumber Company and the industrial businesses on Front Street). U.S. 101, Oregon 6 and Netarts Highway (131) are not classified as freight routes in the OHP, but trucks use these state and regional facilities to access Tillamook. Sidewalks are provided along each of these roads, but bicycles share the road with vehicles. Signs are posted along these streets stating the truck designation.

The following are the city's designated freight routes (see Figure 2-9):

- Wilson River Loop
- 3rd Street
- Front Street
- Cedar Avenue (short segment)
- Birch Avenue (short segment)
- 1st Street
- Stillwell Avenue
- Latimer Road
- Trask River Road (south of Oregon 6)
- 10th Street
- 12th Street
- Del Monte Avenue (short segment)
- U.S. 101 (Main and Pacific Avenues) and Oregon 6 (although these are state highways, the city designates these roads as city freight routes)



Existing Air, Rail, and Water Facilities

City of

TILLAMOOK

CH2MHILL

ANGELO EATON

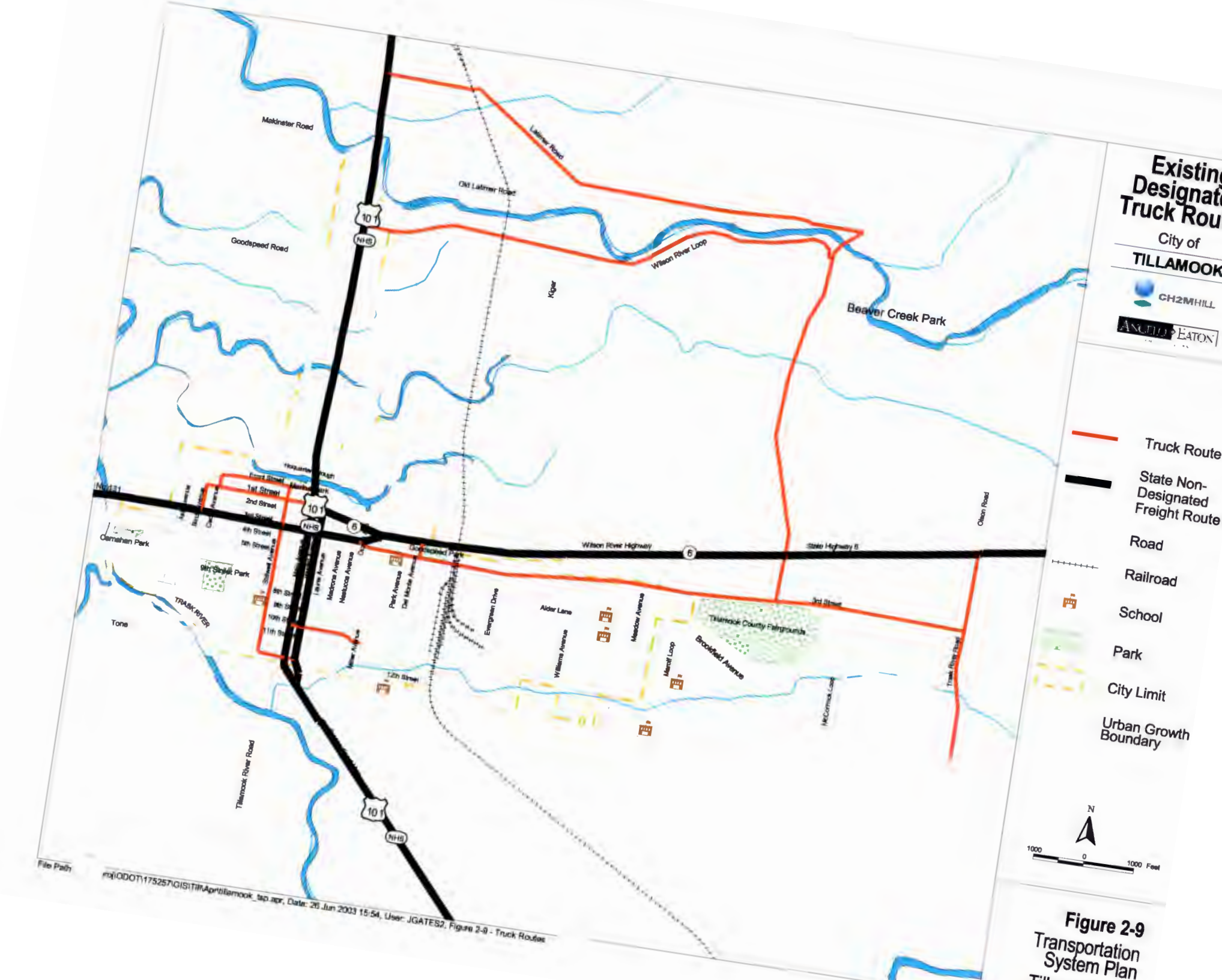
- Road
- Railroad
- Park
- City Limit
- Urban Growth Boundary
- Boat Ramp
- Airport

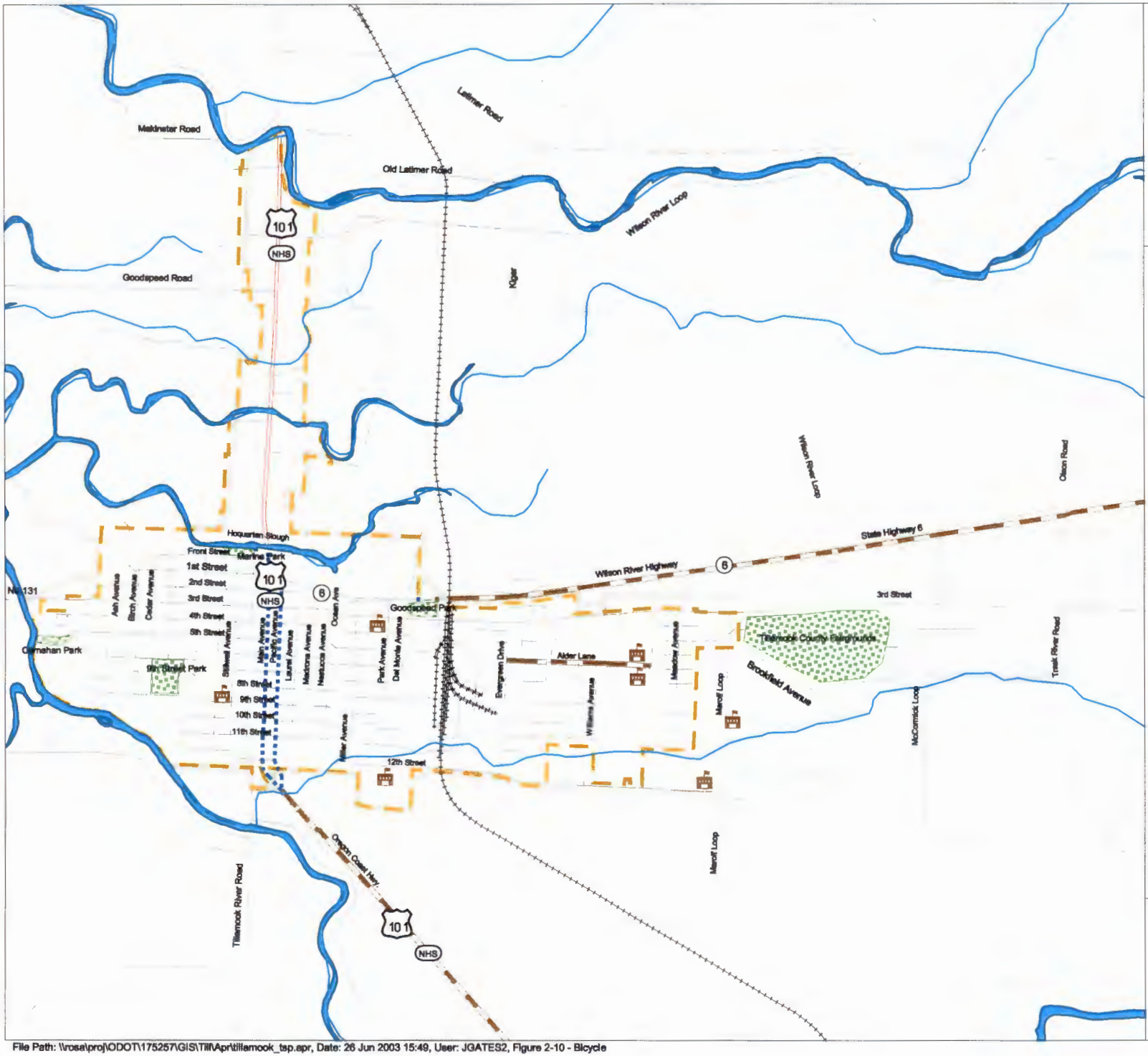
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Figure 2-8
Transportation System Plan
Tillamook, OR

File Path: \\rosa\proj\ODOT\175257\GIS\Till\Apr\tillamook_tsp.apr, Date: 26 Jun 2003 15:54, User: JGATES2, Figure 2-8 - Existing Air, Rail, and Water


Existing
Designate
Truck Rou
City of
TILLAMOOK
CH2MHILL
ANGELO EATON
Truck Route
State Non-Designated Freight Route
Road
Railroad
School
Park
City Limit
Urban Growth Boundary
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Figure 2-9
Transportation System Plan
Meldrum Road
Latimer Road
Old Latimer Road
Goodspeed Road
Wilson River Loop
Kiger
Beaver Creek Park
Wilson River Highway
State Highway 6
Oretech Road
Hoquarton Slough
Main Avenue
1st Street
2nd Street
4th Street
5th Street
9th Street
10th Street
11th Street
12th Street
Laurel Avenue
Madrona Avenue
Nestucca Avenue
Park Avenue
Del Monte Avenue
Maplecrest Park
Evergreen Drive
Alder Lane
Williams Avenue
Meadow Avenue
Marolf Loop
Brookfield Avenue
Tillamook County Fairgrounds
3rd Street
McCormick Lane
Trask River Road
Tillamook River Road
Tone
TRASK RIVER
Pioneer Park
Old Spanish Park
101
NHS
6
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Date: 26 Jun 2003 15:54, User: JGATES2, Figure 2-9 - Truck Routes



Designated Bicycle Lanes

City of

TILLAMOOK

CH2MHILL

ANGLE EATON

- Signed Bicycle Lane
- Shared Roadway
- Shoulder Bikeway
- Road
- Railroad
- School
- Park
- City Limit
- Urban Growth Boundary

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Figure 2-10
Transportation System Plan
Tillamook, OR

File Path: \\rosa\proj\ODOT\175257\GIS\Till\Apr\tillamook_tsp.apr, Date: 26 Jun 2003 15:49, User: JGATES2, Figure 2-10 - Bicycle

The current truck routes lead to conflicts between trucks and pedestrians (that is, downtown Tillamook and Stillwell Avenue). It is preferred to separate trucks from other modes as much as possible. An alternative truck route that moves trucks onto non-residential roads without large traffic volumes may be preferred. It is noted that even with a truck route, trucks still may need to use other roads to achieve their destination. The intent of a truck route is to provide the most efficient route that minimizes the modal conflicts while providing adequate connections between the state and local systems.

Because of the trucking significance in Tillamook, truck percentages were calculated for the three state facilities in Tillamook. Along U.S. 101, 7 percent of the traffic is considered trucks. The percentage of truck traffic along Oregon 6 is 19 percent. This increased percentage is expected because Oregon 6 is one of the few east-west highways to the Portland metropolitan area from the coast. Netarts Highway (131) has the lowest percentage of truck traffic (6 percent) of the three highways. The alternative truck route study conducted by OTAK in 2001 indicated that the Tillamook Lumber Mill operates 130 to 150 trucks per day.

Rail System Inventory

There is one Class II rail facility in Tillamook, as shown in Figure 2-8. It is owned and operated by the Port of Tillamook Bay and is used on a daily basis by the Tillamook Lumber Company, located in the center of the city, and the Port of Tillamook Bay tenants, located immediately south of the city limits. The southern terminus of the rail line is at the Port of Tillamook Bay. In Tillamook, the rail line proceeds in the north-south direction between Miller Avenue and Evergreen Drive. There are two at-grade crossings—one at 3rd Street and the other at 12th Street. At the 3rd Street crossing, flashing lights and an automatic gate warn vehicles of oncoming trains. The 12th Street crossing is a spur line crossing with only static railroad signs placed on both sides of the track. At Oregon 6, the rail line is grade-separated above the roadway, then continues north, east of Tillamook.

In Tillamook, there is one freight train per day. The train performs two switching moves (between the main line and spur line) on the Tillamook Lumber Company property. Train speed on the track is limited to 25 mph, with the train speed usually at a maximum of 20 mph.

The Amtrak and Tri-Met services in Portland are the nearest passenger rail services. The Port of Tillamook Bay has a rail line in Tillamook, but it is not equipped for passenger rail service.

Water System Inventory

There are no boat moorage facilities in Tillamook. There are two boat ramps, one for the Trask River (at Carnahan Park) and one for the Hoquarten Slough (at Marine Park) as shown in Figure 2-10. A boat launch fee box is located at Carnahan Park, requesting a $2 fee.

Other Systems

The city sewage plant is located on the Trask River at the west end of 5th Street. One cellular communications tower is located in the city along U.S. 101 near the northern city limits and the Tillamook Cheese Factory. High-speed Internet equipment is being constructed along Oregon 6 and will be available to city residents in the near future.

SECTION 3

Future Transportation Conditions (2022) and Transportation System Needs

This section summarizes the methodology used to determine future travel demand and the results of the operational analysis of future, forecasted (2022), no-build, 30th-highest-hour conditions in Tillamook. The no-build analysis of future, forecasted conditions in year 2022 assumes existing roadway geometry and traffic control. This section also summarizes the needs of the transportation system as determined through the analysis of existing and future conditions. See the Background Document for more information on the methodology used in the analysis of future, forecasted, no-build conditions.

Population Growth

Anticipated population growth and increases in traffic (including tourist traffic) are important considerations for determining the future needs of the Tillamook transportation system. Within the next 20 years, population growth is expected in Tillamook and other incorporated communities in Tillamook County. The forcasted county population for 2020 is 41,788, corresponding to an 0.80 percent annual average between 2000 and 2020. In Tillamook, a 1.7 percent average annual growth rate is expected between 2000 and 2020, substantially greater than the county as a whole. Table 3-1 shows the historic and projected population for Tillamook, the incorporated areas, the unincorporated areas of the county and the county as a whole.

TABLE 3-1
Population Data for Tillamook and Tillamook County

	Actual[1]		Percent of County Population		New Forecasts		
Jurisdiction	1990	2000	1990	2000	2020 Urban Area Totals[2]	Percent of County Population	Average Annual Growth Rate 2000-2020
Tillamook[3]	4,006	4,352	18.57 percent	17.94 percent	5,757[4]	13.74 percent	1.41 percent
County Total	21,570	24,262	-	-	30,604	-	1.17 percent

[1] Center for Population Research and Census, Portland State University; U.S. Census.

[2] City totals projected based on previous percentages of county population and percent growth.

[3] County projection from the Office of Economic Analysis, Department of Administrative Services, State of Oregon.

[4] The City of Tillamook estimates a range from 4,190 to 5,811.

Future Development

According to the city staff, residential development is anticipated in the following locations:

- East of the downtown, outside the city limits, but within the UGB. Specifically Champion Park Phase II on Brookfield Avenue.
- Along 12th Street between Evergreen Drive and Marolf Loop and also within the area bound by 3rd Street, Evergreen Drive, Alder Lane and Linden Avenue. This area is zoned for apartment-level density. However, at this time, there are no specific development proposals.
- Along 3rd Street between Linden Avenue and Marolf Loop. The city is planning to bring this area inside the UGB for residential development with some commercial development. There have been discussions of creating a loop roadway system between Linden and Marolf to provide residential accesses.
- Development of a 54-unit senior independent living facility and separate parking lot southeast and southwest of the intersection of 10th Street and Main Avenue

Commercial development is planned in the following locations:

- Currently, TCTD is moving to the previous Human Service Building on 3rd Street, near Linden Avenue. This project is currently under construction.
- Along U.S. 101 on both sides of the road (north of downtown)
- Expansion of Blue Heron cheese facility along U.S. 101 north of downtown
- Expansion of Tillamook County Health Department at U.S. 101 (Main Avenue) and 8th Street intersection
- A potential storage unit on 3rd Street across from the fairgrounds
- Expansion of the Ford Dealership between 5th and 6th Streets and Main and Pacific Avenues
- Expansion of the Tillamook Credit Union, south of 5th Street between Pacific and Laurel Avenues
- Expansion/redevelopment of the 911 call center on 3rd and Madrona
- Potential commercial development (for example, grocery store/supermarket) south of 3rd and 4th Streets between Stillwell Avenue and Ivy Avenue

Potential industrial development has been discussed in the following locations:

- Within the current Tillamook Lumber Company mill property to provide a wood chip mill.
- Warner meat warehouse on 5th Street

There is also potential for future residential or commercial development along 3rd Street, east of the downtown area.

Future Travel Demand

Several methodologies for determining future travel demand in Tillamook were considered, including use of the Oregon Statewide Model and historical growth rates. Through discussions with ODOT's Transportation Planning and Analysis Unit (TPAU), historical growth rates calculated using the Future Volume Tables available on the ODOT Web site (http://www.odot.state.or.us/tddtpau/SysAnalysis.html) were used to determine future travel demand. This methodology is consistent with a Level 1 Trending Forecast as discussed in the ODOT TSP Guidelines. The forecasted average annual growth rate (AAGR) used in the analysis of future, forecasted, no-build conditions at study intersections in Tillamook is shown in Table 3-2. Forecasted, year 2022, 30th-highest-hour, no-build volumes are presented in Figure 3-1.

TABLE 3-2
State Highway Annual Growth Rates

Highway	Annual Growth Rate
U.S. 101, north of Oregon 6	1.9 percent
U.S. 101, south of Oregon 6	0.7 percent
Oregon 6	1.6 percent
Netarts Highway (131)	2.5 percent

Source: ODOT Transportation Volume Tables.
http://www.odot.state.or.us/tddtpau/DataRes.html#Future%20Traffic%20Volumes

The growth rate variance on U.S. 101 reflects regional and state travel patterns. U.S. 101 between Tillamook and Lincoln City (the major coastal city on U.S. 101 to the south) is expected to have minimal growth relative to other state facilities because other roads are more attractive to drivers (especially tourism from the Portland metropolitan area).

The analysis of future, forecasted, no-build conditions assumes that the growth rates that have been observed in the past 20 years will continue through the 20-year planning horizon. If conditions change unexpectedly between existing conditions (2002) and the 20-year planning horizon (2022), the future, forecasted, traffic volumes will need to be revised.

Future, Forecasted, No-Build Conditions (2022)

For the analysis of future, forecasted, no-build conditions (2022) at the 13 study intersections, Synchro, Version 5 was used. This methodology is based on the HCM. For unsignalized intersections, results from the Synchro HCM Unsignalized Report are reported in this subsection.

An analysis of future, forecasted, no-build conditions was conducted using the 30th-highest-hour traffic volumes shown in Figure 3-1 to evaluate how the existing transportation will perform during the peak tourist season compared with OHP mobility standards.

A review with the city staff concluded that no defined improvements are expected to be constructed on the roadway network in the near future. Therefore, the no-build condition assumes the current traffic control and lane channelization at the intersections.

Traffic Operations at Intersections (30th-Highest-Hour Conditions)

This analysis predicts 8 of the 13 study intersections to operate within the established OHP standards under future, forecasted, no-build, 30th-highest-hour conditions. In Section 4, alternatives will be developed and analyzed to improve the operating conditions at the five study intersections that are not expected to meet OHP mobility standards.

Signalized Intersections

Table 3-3 summarizes the results of the operational analysis of future conditions for no-build, 30th-highest-hour volumes at the five signalized intersections in Tillamook. With the existing geometric configuration of each intersection and the forecasted, future traffic volumes, three signalized intersections will exceed OHP v/c mobility standards: U.S. 101 (Main Avenue) at Wilson River Loop, 1st Street and 3rd Street. In Table 3-3, white italic text on a black background indicates intersections that fail to meet OHP mobility standards.

TABLE 3-3
2022 No-Build Operational Analysis for Signalized Intersections—30th Highest Hour

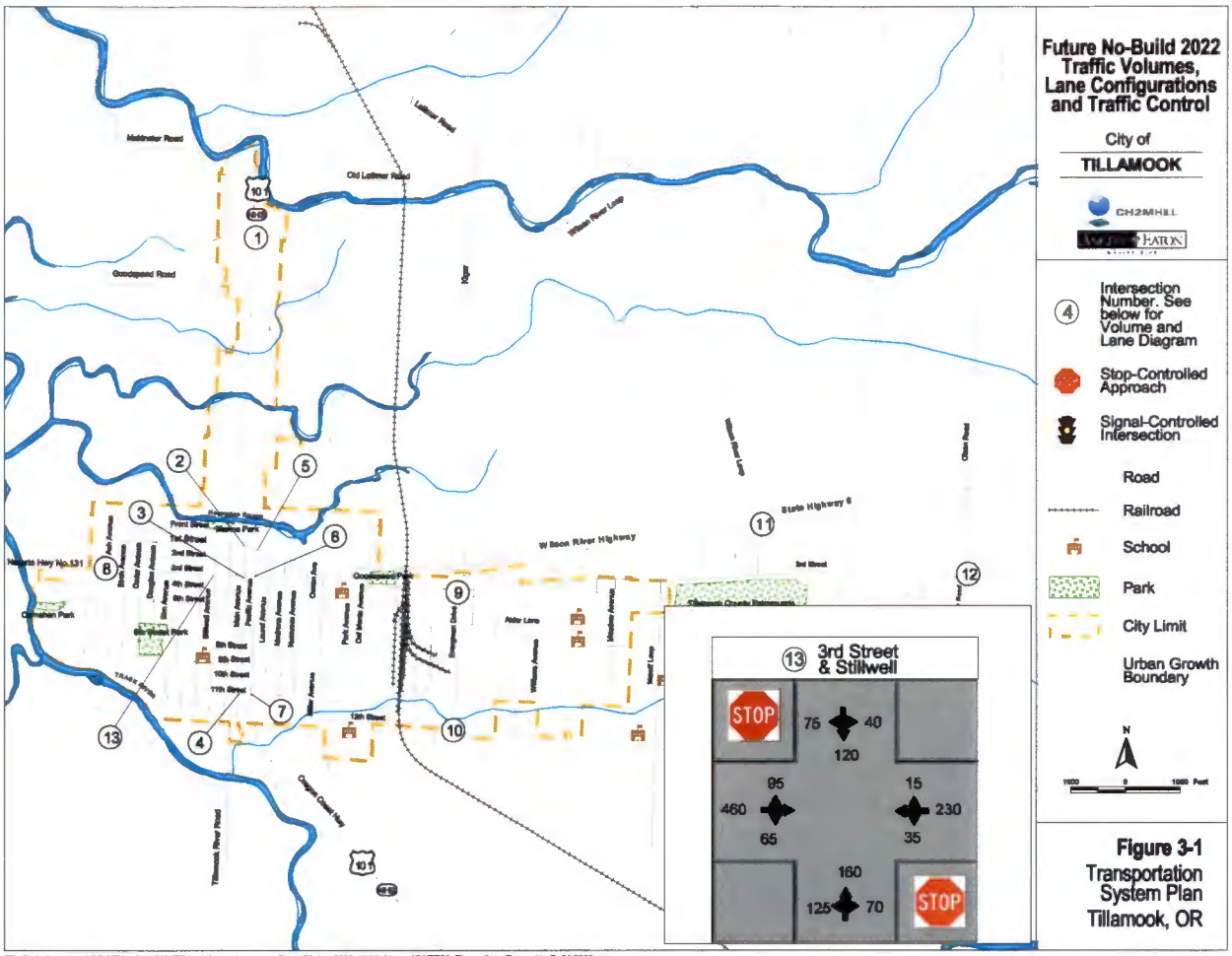
Intersection	V/C Ratio	LOS	Delay (seconds/ vehicle)	Mobility Standard (v/c ratio)[1]
U.S. 101 (Main Avenue) and Wilson River Loop	*0.80*	*C*	*21.9*	*0.75*
U.S. 101 (Main Avenue) and 1st Street (Oregon 6)	*1.52*	*F*	*196.3*	*0.80*
U.S. 101 (Pacific Avenue) and 1st Street (Oregon 6)	0.77	B	18.6	0.80
U.S. 101 (Main Avenue) and 3rd Street (Oregon 6)	*1.00*	*C*	*33.8*	*0.80*
U.S. 101 (Pacific Avenue) and 3rd Street (Oregon 6)	0.70	B	14.1	0.80

[1] If two state highways intersect, the lower mobility standard (v/c ratio) applies. When a local road intersects with a state highway, the state highway mobility standard applies.

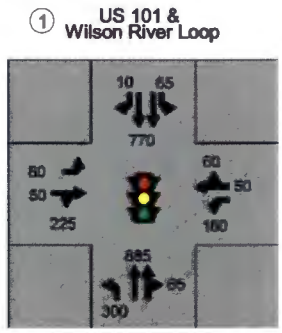
Note: Italicized text indicates intersections that fail to meet 1999 OHP mobility standards.

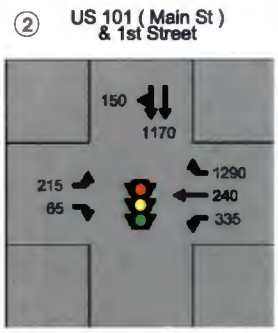
v/c = volume-to-capacity.

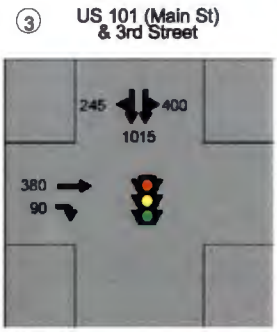
- The U.S. 101 at Wilson River Loop intersection will fail to meet mobility standards under future, forecasted, no-build conditions because two movements (westbound and northbound left-turn) are expected to have v/c ratios that exceed 0.75.

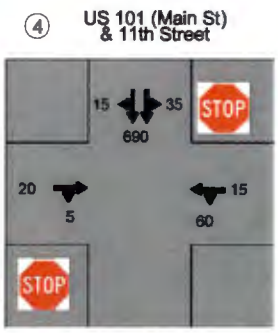


File Path: \\roseiproj\ODOT\117627\GIS\Till\Apr\tillamook_tsp.apr, Date: 26 Jun 2003 10:56, User: JGATES2, Figure 3-1 - Future No-Build 2022

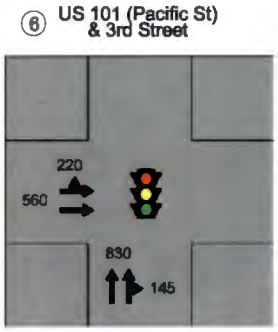


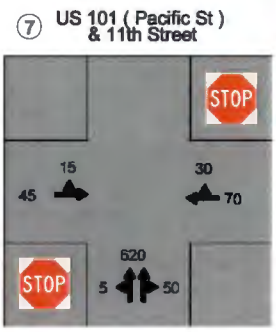


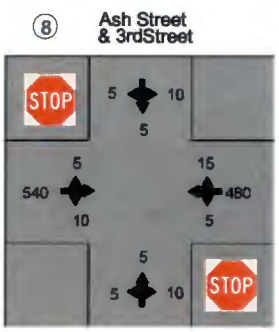






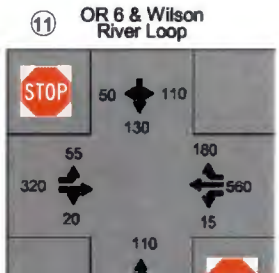














- The U.S. 101 at 1st Street intersection will fail to meet mobility standards under future, forecasted, no-build conditions. The westbound right turn is expected to be over capacity, with a v/c ratio of 1.92. Because of the high percentage of westbound right-turn vehicles at this intersection, operations on the southbound movement degrade because of less green time.
- The U.S. 101 at 3rd Street intersection is predicted to fail mobility standards because of the high volumes of southbound turning movements (400 left turns and 245 right turns) and the shared lane channelization. The shared lane reduces the potential through capacity because left- and right-turn movements restrict a through vehicle's ability to pass through the intersection. These factors contribute to the poor operating conditions on the southbound approach under future, forecasted, no-build conditions and push the overall intersection v/c ratio to exceed the mobility standard.

Unsignalized Intersections

Table 3-4 summarizes the results of the no-build operational analysis of future conditions for the 30th highest hour at the unsignalized (two-way, stop-controlled, and all-way, stop-controlled) intersections in Tillamook. With the existing geometric configuration of each intersection and future, forecasted, traffic volumes, two intersections (Netarts Highway [131] and Stillwell Avenue, and Oregon 6 and Wilson River Loop) are expected to exceed OHP v/c mobility standards.

TABLE 3-4
2022 No-Build Operational Analysis for Unsignalized Intersections—30th Highest Hour

Intersection	Major Road Approaches				Minor Road Approaches			
	LOS	V/C Ratio	Delay (seconds/ vehicle)	Mobility Standard (v/c ratio)[1]	LOS	V/C Ratio	Delay (seconds/ vehicle)	Mobility Standard (v/c ratio)[1]
11th Street and Main Avenue (U.S. 101)[2]	A	0.22	0.8	0.80	C	0.21	18.1	0.85
11th Street and Pacific Avenue (U.S. 101)[2]	A	0.22	0.0	0.80	C	0.28	17.4	0.85
3rd Street (Netarts Highway) and Ash Avenue[2]	A	0.00	0.1	0.85	C	0.06	22.1	0.85
3rd Street (Netarts Highway) and Stillwell Avenue[2]	*A*	*0.08*	*2.0*	*0.85*	*F*	*4.29*	*>1000*	*0.85*
3rd Street and Evergreen Drive[2]	A	0.21	0.9	0.85	C	0.30	15.6	0.85
3rd Street and Trask/Olsen Road[3]	A	0.37	10.0	0.85	N/A	N/A	N/A	0.85
12th Street and Evergreen Drive[2]	B	0.11	10.1	0.85	A	0.07	8.9	0.85
Oregon 6 and Wilson River Loop Road[2]	*A*	*0.35*	*1.2*	*0.75*	*F*	*2.17*	*598.4*	*0.80*

[1] If two state highways intersection, the lower mobility standard (v/c ratio) applies. When a local road intersects with a state highway, the state highway mobility standard applies.

[2] Two-way, stop-controlled intersection. Results are reported for the movement with the worst operating performance on both the major and minor approaches.

[3] All-way, stop-controlled intersection. Results reported for the intersection.

Note: Italicized text indicates intersections that fail to meet 1999 OHP mobility standards.

v/c = volume-to-capacity.

The minor approaches at the two two-way, stop-controlled unsignalized intersections that are not expected to meet OHP mobility standards would operate at LOS F in year 2022. At both of the intersections that will not meet OHP mobility standards under future, forecasted, no-build conditions (3rd Street and Stillwell Avenue, and Oregon 6 and Wilson River Loop), the minor approaches will not meet standards. This occurs because the minor movements are required to stop and wait for an acceptable gap in traffic along the major road, causing high delay times for the minor movements. In Section 4, alternatives are developed and analyzed to improve the operating conditions at each of these intersections. These alternatives can range from additional minor street turn lanes to a traffic signal installation.

Preliminary, No-Build, Year 2022, Traffic Signal Warrant Analysis

A preliminary traffic signal warrant analysis was conducted for all of the unsignalized intersections included in the future, no-build, 2022 analysis to determine if a traffic signal needs to be installed. The preliminary traffic signal warrant analysis is based on Warrant 1 (Eight-Hour Vehicular Volume), Case A and Case B, from the Manual on Uniform Traffic

Control Devices (MUTCD). The analysis was based on forecasted, 30th-highest-hour, 2022, ADT volumes, as directed by the TPAU. To predict 2022 ADT volumes, the same percent of existing 30th highest hour to daily volumes was used.

Case A of Warrant 1 (Minimum Vehicular Volume) is designed to warrant the installation of traffic signals at intersections where there are high volumes of intersecting traffic on the minor street. Case B of Warrant 1 (Interruption of Continuous Traffic) is designed to warrant the installation of a traffic signal at intersections where high volumes on the major street restrict movements to and from the minor street. A location must meet one of these two conditions to advance to a more detailed examination of the installation of a traffic signal. Even if a location meets one of the two cases, it does not guarantee a signal installation. The MUTCD Millennium Edition provides more discussion on specifics of the warrant analysis.

As described in the TPAU procedure manual, the preliminary traffic signal warrant analysis can be performed under the 70 percent column "if the 85 percentile speed of major street traffic exceeds 40 mph in either an urban or rural area, or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000"[1]. Using the forecasted population growth rate for Tillamook County on the Portland State University Population Research Center Web site, Tillamook is expected to have a population of less than 10,000 in year 2022. Therefore, the 70 percent column for the preliminary signal warrant analysis was used as the threshold. The MUTCD Millennium Edition provides more discussion on specifics of the warrant analysis.

As shown in Table 3-5, the intersections of 3rd Street (Netarts Highway [131]) at Stillwell Avenue, and Oregon 6 and Wilson River Loop will meet the preliminary signal warrants in year 2022 under forecasted, no-build conditions. Both Case A and Case B warrant volumes were exceeded by the approach volumes at each intersection, thereby meeting the signal warrant.

TABLE 3-5
Results of Preliminary Traffic Signal Warrant Analysis (2022)—No-Build Conditions

Intersection	Meets Preliminary Warrant Analysis (70%)?
11th Street and Main Avenue (U.S. 101)	No
11th Street and Pacific Avenue (U.S. 101)	No
3rd Street (Netarts Highway) and Ash Avenue	No
3rd Street (Netarts Highway) and Stillwell Avenue	Yes
3rd Street and Evergreen Drive	No
3rd Street and Trask/Olsen Road	No
12th Street and Evergreen Drive	No
Oregon 6 and Wilson River Loop Road	Yes

[1] Based on the Manual of Uniform Traffic Control Devices, MUTCD.

As described in the TSP guidelines, an analysis was done to document when the 3rd Street (Netarts Highway [131]) and Stillwell Avenue, and Oregon 6 and Wilson River Loop Road intersections fail. The interim (from existing to 2022 planning horizon) traffic volumes were forecasted using the same growth rate methodology described in the previous section. From this analysis it was found that the intersections currently (2002) warrant a traffic signal.

It should be noted that a traffic signal may not be installed at all the locations meeting the preliminary signal warrant, per the preliminary traffic signal warrant analysis worksheets. In Section 4, alternatives are developed to provide adequate mobility while minimizing the installation of additional traffic signals along state facilities.

Conclusions

Under existing, 30th-highest-hour operating conditions (2002), 3 of the 13 intersections in the study area do not meet OHP mobility standards in Tillamook.

Assuming continuation of historical growth trends during the next 20 years, operating conditions at 5 of the 13 intersections will not meet OHP mobility standards under forecasted, 30th-highest-hour, no-build conditions in year 2022. Of the eight unsignalized intersections in Tillamook, two most likely will meet traffic signal warrants in year 2022 under no-build conditions.

Projects to improve operating conditions in year 2022 in Tillamook are evaluated in Section 4. Projects are developed on the basis of goals and objectives, including preservation of the state highway system by minimizing the need for future signalization.

Transportation System Needs

This subsection describes the short- and long-term (20-year planning horizon) transportation system needs in Tillamook. Roadway, pedestrian and bicycle, transit, rail, air and water needs were identified on the basis of the analyses of existing and future, forecasted, no-build conditions, and projects that have been recommended in relevant planning documents and policies. The needs included in this subsection have not been prioritized. In Section 4, projects are developed to address the needs described in this section.

Roadway System Needs

Introduction

Through the analysis of existing and future, forecasted, no-build, 30th-highest-hour conditions; capacity, safety and other roadway deficiencies were identified for state, county and local facilities in Tillamook. This subsection summarizes those deficiencies along with deficiencies identified in other relevant planning documents. Potential projects to address those needs are listed in Appendix B.

Operational Deficiencies—30th-Highest-Hour Conditions

In the existing and future, forecasted, no-build, 30th-highest-hour operational analysis, 13 study intersections were evaluated in Tillamook. The OHP mobility standards were used in the analysis.

Under the existing 30th-highest-hour conditions, there are operational deficiencies at 3 of the 13 study intersections relative to OHP mobility standards:

- U.S. 101 and 1st Street (Oregon 6) (signalized)
- Netarts Highway (131) (3rd Street) and Stillwell Avenue
- Oregon 6 and Wilson River Loop

Under future, forecasted, no-build, 30th-highest-hour conditions, traffic conditions become progressively worse and there are operational deficiencies at two more study intersections relative to OHP mobility standards:

- U.S. 101 and Wilson River Loop (signalized)
- U.S. 101 (Main Avenue) and 3rd Street (signalized)

Improvements at unsignalized intersections are not proposed unless the intersection fails to meet preliminary signal warrants. At that time, channelization improvements will be evaluated. If additional turn lanes do not improve the conditions to acceptable levels then a traffic signal may be recommended to achieve an acceptable intersection v/c ratio.

Preliminary Traffic Signal Warrant Analysis

The preliminary traffic signal warrant analysis was based on forecasted, year 2022, 30th-highest-ADT volumes, as directed by the TPAU, and does not take into account seasonal increases in traffic on state highways resulting from tourism.

Under future, forecasted, no-build conditions, the following locations meet the preliminary traffic signal warrant:

- Netarts Highway (131) (3rd Street) and Stillwell Avenue
- Oregon 6 and Wilson River Loop

ODOT has prepared a preliminary interchange configuration for the Oregon 6 and Wilson River Loop intersection. This improvement is recommended as the long-term solution. The new interchange would provide incentive for trucks to use Wilson River Loop as a northern bypass around Tillamook. If the interchange is not feasible, installing a traffic signal is suggested to provide a short-term remedy to the capacity and safety issues at this intersection. Installation of a traffic signal would be subject to ODOT approval.

An iterative traffic volume forecasting process was conducted to identify when these intersections are warranted for a traffic signal. From this analysis, both of these intersections are warranted for a traffic signal in the near future (less than 5 years).

Safety Needs

Through the analysis of existing conditions, comments from the PMT, PAC and recommendations in relevant planning documents, several safety-related issues were identified. Appendix B contains this list of the potential safety projects (not prioritized).

Improvements to the following intersections with geometric, sight distance or safety issues are recommended:

- U.S. 101 at Hadley Road (high accident rate)
- U.S. 101 (Pacific Avenue) at 3rd Street (top 10 percent SPIS site)
- Netarts Highway (131) at Stillwell Avenue (high accident rate)
- Oregon 6 at Wilson River Loop (high accident rate)
- U.S. 101 and Front Street (top 10 percent SPIS site)
- U.S. 101 (Pacific Avenue) at 2nd Street (top 10 percent SPIS site)
- U.S. 101 and Oregon 6 (skewed geometry, potential safety issues with confusing operations)
- Ocean Place at 4th and 3rd Streets (skewed intersections)
- Alder Lane at Dogwood and Cypress Streets (offset intersection near school)
- 12th Street and U.S. 101 (Pacific Avenue)—recommended by the PAC

Other Safety Deficiencies

In addition to the intersections listed above, RVs making turn movements in the downtown area have difficulty because of the constrained intersection geometry (minimal turning radii). This is especially a problem at U.S. 101 (Main Avenue) and 3rd Street. The downtown intersections are constrained from any major widening because of the surrounding properties and impacts it would cause.

During the PAC meetings, several attendees commented that unless trucks are removed from the downtown area, the livability and economic vitality of the city will continue to degrade. An alternative that removes trucks from U.S. 101 could alleviate some of the intersection issues. Another possible solution is to remove parking at the intersection and reconstruct the intersection corners to fit a large, turning vehicle. This would have parking and possible right-of-way impacts. (See further discussion in the freight needs and freight projects sections.)

The 12th Street railroad crossing is another safety concern for the city because it does not include any safety measures other than static signing, even though it is next to a pedestrian generator (Tillamook High School).

Bridge Needs

The project list in Appendix B includes bridges with sufficiency ratings less than or equal to 50, and bridge projects listed in corridor plans and STIP project lists. Bridges with a

sufficiency rating less than 50 are considered structurally deficient or functionally obsolete, and are recommended for replacement. In Tillamook, bridges with a rating less than 50 include:

- U.S. 101 at Wilson River, #1499.

This bridge is included in STIP Project #11667. This project will widen U.S. 101 to five lanes from Suppress Road to Wilson River Road, rebuild the bridge, and add a signal at the Latimer Road intersection.

Overlay Needs

Overlay locations were recommended on the basis of the analysis of existing conditions. Only roadways that were included in the study area (see existing conditions and inventory memoranda) are analyzed.

- Netarts Highway (131) (MP 0.00 to MP 9.08) (in 2003-2007 STIP Project #12308)
- Oregon 6 (various segments between MP 0.50 to MP 18.00) (in 2002-2005 STIP Project #10748)
- 11th Street (Stillwell Avenue to Miller Avenue)
- Alder Lane (Evergreen Drive to Williams Avenue)
- 12th Street (Evergreen Drive to Marolf Loop)

Roads qualitatively assessed a "fair" pavement condition are less of a priority, but will most likely need to be overlaid in the future. These roads include:

- 3rd Street (Nestucca Avenue to city UGB)
- 10th Street (Elm Avenue to Miller Avenue)
- 11th Street (Stillwell Avenue to Main Avenue)
- 12 Street (between Main and Pacific Avenues, and between Miller Avenue to Evergreen Drive)
- Marolf Loop (south end of the road)
- Evergreen Drive (Walnut Lane to 3rd Street)

Capacity Needs on Local and State Roadway Segments

Non-intersection major road widening to provide additional vehicle capacity is not recommended in Tillamook. Roadway widening is recommended to provide sidewalk/bike lanes on the following roads because many roads do not have sidewalk and pedestrian facilities. Most of these locations are near or connect to pedestrian generators. These projects also are described in the pedestrian and bicycle subsection.

- 3rd Street, Evergreen Drive to Trask River bridge (bike lane)
- 3rd Street (Netarts Highway [131]), Trask River bridge to Ash Avenue (sidewalk)
- 3rd Street, east of Evergreen Drive to McCormick Loop (bike lane/sidewalk)

- Evergreen Drive (sidewalk)
- 11th Street, U.S. 101 to Stillwell Avenue (bike lane)
- 12th Street, east of railroad to Marolf Loop (sidewalk)
- Stillwell Avenue, Front Street to 11th Street (bike lane)
- Front Street (sidewalk with bike lane between Stillwell Avenue and U.S. 101)
- Alder Lane (bike lane/sidewalk)
- Brookfield Avenue (shoulder)
- Wilson River Loop, Oregon 6 to 3rd Street – (shoulder)
- McCormick Loop (shoulder)
- Marolf Loop (shoulder)

Operations Needs

Current information regarding parking, flooding and truck routing is lacking in Tillamook. Given the number of trucks driving through Tillamook, truck signing is a potential need especially if trucks are going to be rerouted off U.S. 101. Potential operations projects include variable message signing along U.S. 101 to improve driver/truck information.

Access Management Needs

U.S. 101, north of Oregon 6 (1st Street), is a segment of roadway with many driveways and conflicting movements that have led to accidents. Safety measures, such as consolidation of driveways and/or the addition of a median barrier, would improve the operations in this corridor. Limiting the turn movements to right-in, right-out is another possibility to provide access management. Treatments could be similar to the U.S. 101 access restrictions north of Goodspeed Road. Providing access management through this corridor also is recommended in the Draft Oregon Coast Highway Corridor Master Plan.

One specific location in this area, U.S. 101 and Hadley Road, has the highest crash rate in the city. Most of the crashes at this location are partially caused by the proximity of the driveway location. At this location, remedies should be examined that will improve the safety of the intersection. Typical access management treatments include consolidation of the driveways near the U.S. 101 and Hadley Road intersection and/or relocation of the driveways farther from the intersection. Another option is to the restrict the movements to right-in, right-out at the driveways by means of a raised median. Removing the driveway accidents from the intersection would remove this intersection from the Top 10 crash sites list in Tillamook.

Mobility/Connectivity Needs

From discussions with city staff and reviewing city documents, there are numerous potential connectivity projects to accommodate possible future development and to complete the city's roadway grid systems. The following are possible street extensions:

- Extend Meadow Avenue to 12th Street
- Extend Trout Avenue between 3rd Street and Oregon 6
- Extend 12th Street to U.S. 101 (Pacific Avenue) and to McCormick Loop
- Extend Beech Street to Marolf Loop

- Designate Spruce Avenue as a public road and remove the barriers at Apple and Beech Streets. Connect Spruce to Cypress to complete roadway grid system
- Extend 1st Street to Netarts Highway (131)
- 9th Street, cul-de-sac one side of the park and add parking on the other side
- Extend Filbert Street to Marolf Loop
- Connect Hawthorne Lane between Meadow Avenue and Williams Avenue
- Extend Williams Avenue to 12th Street
- Other extensions to address freight needs (potential alternate route—see Freight Needs section)

These potential extensions will be examined in more detail in Section 4. Opportunities to gain private-public partnerships to provide some of these connectivity projects should be examined when or if development occurs in these areas.

Currently, U.S. 101 is a lifeline route for many of the coastal cities; however, the roadway segment between Oregon 6 and the northern city limits is below the floodplain. In the Freight Needs subsection, options for a parallel roadway that could be used as an alternative flood route will be examined. If these options are not feasible, then a feasibility study should be considered to analyze raising U.S. 101 above the floodplain with minimal impact to the surrounding properties.[2]

Parking Needs and Projects

PAC members have stated that during the tourist season parking in the downtown area is limited. While this may be a problem during peak times, visual inspection suggests there is otherwise sufficient on-street parking in Tillamook. Parking in the downtown is available along all parallel streets and cross-streets with U.S. 101. Because there are limited opportunities to expand on-street parking, opportunities for off-street parking might be more feasible. Visual inspection during field work indicated that parking along the cross-streets off U.S. 101 was available. Better signing to direct drivers to these locations could help resolve the parking issue in the downtown area.

To sufficiently understand the parking during peak and non-peak seasons, a parking study is recommended. If the recommendations from this study suggest a problem, there are minimal locations to expand the amount of on-street parking. Therefore, opportunities to create additional off-street parking area should be examined. One lot that was recently purchased by the city is along Ivy Avenue between 3rd and 4th Streets. This lot is centrally located and with visible signing could be used efficiently as a central downtown parking lot. If off-street parking is provided, U.S. 101 could be widened to three lanes at 3rd Street (eliminating on-street parking in this location) to improve the operations at some of the intersections[2].

Parking along Laurel Avenue serves several key facilities (museum, transit stop, county courthouse and city hall) and, therefore, parking stalls typically are occupied. The parking study should examine opportunities with private business to use portions of their lots during peak times.

[2] Draft Oregon Coast Highway Corridor Master Plan.

Pedestrian and Bicycle System Needs

Introduction

Recommended pedestrian and bicycle system improvements in Tillamook include projects on state, county and local roadways, as well as off-street pedestrian and bicycle facilities. The recommended projects are based on review of existing pedestrian and bicycle system conditions and existing pedestrian and bicycle system deficiencies and needs, as well as a review of existing state, county and local pedestrian and bicycle plans. Because of cost efficiencies, pedestrian and bicycle improvements—ranging from sidewalks to widened shoulders—should be considered any time a roadway is improved for any reason.

The recommended pedestrian and bicycle system improvements address gaps in connectivity and lack of crosswalks or other safety considerations. Addressing these needs would improve the system for users, including the transportation disadvantaged. Regular maintenance of sidewalks and bicycle lanes/shoulders also should be a priority, to promote bicyclist and pedestrian access and safety. Access management also should be addressed with regard to pedestrian and bicyclist safety (in addition to roadway capacity preservation).

Functional Classification and Bicycle and Pedestrian Systems

The Tillamook TSP contains a functional classification system for Tillamook, as well as recommended street standards for incorporation into city code. According to the recommended street standards, bicycle lanes and sidewalks should be provided on both sides of all new arterial and collector roadways. The following roadways should be retrofitted with bicycle and pedestrian improvements because these roadways undergo roadway maintenance or other projects:

- 3rd Street (Trask River bridge to McCormick Loop)
- Evergreen Drive
- 10th Street
- 11th Street
- Stillwell Avenue
- Marolf Loop
- McCormick Loop
- Miller Avenue
- Brookfield Avenue
- Alder Lane
- Wilson River Loop (Oregon 6 to 3rd Street)
- Front Street
- 1st Street
- 4th Street (U.S. 101 to Ocean Place)

The street standards will help to provide a more connected and safer Tillamook pedestrian and bicycle system as development occurs.

Pedestrian System Improvements on State Facilities

According to the ODOT Bikeway, Sidewalk and Crosswalk Report, sidewalks should be added to the segments of the state roadways listed in Table 3-6. These locations are in Tillamook.

TABLE 3-6
ODOT Recommended State Facility Sidewalk Locations

Roadway	Milepost	Location	Facility Type
U.S. 101	65.64 to 65.55	1st Street to Hoquarten Slough	Install sidewalk on east side of street
Oregon 6	0.22 to 0.28	Ocean Place to Miller Avenue	Install sidewalks on both sides of street
Netarts Highway (131)	8.56 to 8.62	Trask River Bridge to Ash Avenue	Install sidewalks on both sides of street[1]

Source: Oregon Department of Transportation Bike Inventory Program, www.odot.state.or.us/transview/highway reports/bikeway_report.cfm

[1] Excludes the south side of 3rd Street, at the Senior Apartment property. This property has sidewalks.

In addition to these identified locations, the city has identified a need to improve the pedestrian atmosphere in the general downtown area. The city applied for, but did not receive, a Transportation Enhancement Grant in 2003 for a project to replace sidewalks along U.S. 101 (Main Avenue and Pacific Avenue) from Hoquarten Slough to 4th Street. This project would provide new curbs and sidewalks, bulb-outs at three locations, decorative streetlights and underground utilities. These tasks describe Phase 1 of the project. The complete project would extend south of 12th Street. These improvements would meet a need to improve the pedestrian system in the downtown while stimulating the downtown business core. Installation of bulb-outs (curb extensions) on U.S. 101 would need to be coordinated with ODOT and designed to accommodate turning vehicles.

Recommended pedestrian system improvements on county or local facilities in Tillamook are derived from two sources: a review of relevant planning documents and policies, and an analysis of existing conditions and deficiencies based on field visits to Tillamook in fall 2002. With the lack of bicycle facilities in Tillamook, a general recommendation from a previous study was to develop a detailed bicycle/pedestrian circulation plan to improve the safety of bicyclists. As part of the TSP process, a system pedestrian/bicycle plan will be developed. The improvements to achieve a comprehensive, multimodal system are summarized in Table 3-7.

TABLE 3-7
Recommended Local Street Sidewalk Locations

Roadway	Location	Facility Type
3rd Street	Evergreen Drive to Trask River Road	Sidewalks on both sides
12th Street	Railroad crossing to Marolf Loop	Installation of sidewalks on both sides—school access
Evergreen Drive	3rd Street to 12th Street	Installation of sidewalks on both sides—residential/school connectivity
Alder Lane	Evergreen Drive to Dogwood Street	Installation of sidewalks on both sides—school access
4th Street	Nestucca to Miller Avenues	Construct sidewalk on both sides
Front Street	U.S. 101 to Cedar Avenue	Complete sidewalk on both sides
Stillwell Avenue	Front to 1st Street and 11th to 12th Streets	Construct sidewalk on east side of road
Netarts Highway (131) (3rd Street)	Trask River Bridge to Ash Avenue	Sidewalks where missing (short segments on the north and south sides)

In addition to the recommended sidewalk locations, the downtown sidewalk and ramps are in poor condition and are a safety hazard with segments of sidewalk cracked and uprooted. It is recommended to create an annual pedestrian maintenance program to modernize the critical sections or require it during redevelopment.

Pedestrian System Improvements on Local Facilities

Other pedestrian system improvements are recommended on facilities in Tillamook (see Table 3-8). Many local roadways in Tillamook have low traffic volumes and, therefore, pedestrians can safely share the roadway with motorists and bicyclists. However, several local roadways warrant improved pedestrian facilities. The downtown Tillamook area would benefit by the addition of pedestrian amenities, such as benches, drinking fountains, trash receptacles, and informational signage or historical kiosks.[3]

[3] Draft Oregon Coast Highway Corridor Master Plan and Tillamook Oregon Downtown Development Association's Report.

TABLE 3-8
Recommended Pedestrian System Improvements

Roadway	Location	Facility Type
U.S. 101 (Main Avenue) Downtown Intersections	2nd, 3rd, 4th, 9th and 11th Street intersections	Install pedestrian bulb-outs at the intersection corners. Main Avenue and 2nd Street intersection already has one corner with a bulb-out.[1]
U.S. 101 (Pacific Avenue) Downtown Intersections	2nd, 3rd, 4th, 9th and 11th Street intersections	Install Pedestrian bulb-outs at the intersection corners.[1]
U.S. 101	Between Wilson River Loop and Hoquarten Slough	Pedestrian activated signal crossing
Laurel Avenue	1st Street and 3rd Street	Install pedestrian bulb-outs at the intersection Corners
3rd Street	Tillamook Fairgrounds	Install marked crosswalks
Miller Avenue	Where ramps are located	Stripe crosswalks
Stillwell Avenue	Liberty Elementary School	Restripe marked crosswalks
3rd Street	Wilson Elementary School/Goodspeed Park	Restripe marked crosswalks

[1] Included in Tillamook's Transportation Enhancement Project.

Americans with Disabilities Act Compliance

New sidewalks should be constructed to ADA standards, including adequate width (3 feet minimum clear area), grade and cross-slope. Existing sidewalks should be retrofitted with ADA-compliant facilities where necessary and when possible. These changes would improve the system for users, including the transportation disadvantaged.

Tillamook has some ADA-compliant facilities, such as pedestrian ramps, in the downtown area and at the TCTD's main transit hub. Pedestrian ramps should be constructed to federal and state standards, including proper grade, landing area dimensions and pavement quality.

The following locations should be examined with regard to ADA facility improvements:

- **Downtown Tillamook.** Main and Pacific Avenues and their approaches should be serviced with pedestrian ramps for access and connectivity, particularly in the downtown commercial area. Sidewalks along Main and Pacific Avenues and approaching roadways should maintain a 3-foot-wide minimum clear area. Business owners should be encouraged to help maintain this standard by keeping street furniture and signs out of the clear area.
- **Liberty Elementary School.** Sidewalk/Crosswalks should be upgraded with ADA ramps at 7th and 8th Streets.
- **Goodspeed Park and Wilson Elementary School.** Ramps in this area along 3rd Street should be modernized for ADA compliance.

- **Miller Avenue.** Ramps should be constructed to ADA standards, where missing.
- **10th Street.** Ramps should be constructed to ADA standards, where missing. Ramps are currently only at Stillwell Avenue and U.S. 101 intersections.

Tillamook Bicycle System

Bicycle routes in Tillamook fall into two major categories:

- Shoulder Bikeways/Bike Lanes – 6-foot-wide striped shoulders with signage/markings
- Shared Roadways – General minimum of 28-foot roadway width with signage/markings

Other unmarked and unsigned roadways may accommodate bicyclists as shared roadways, but all components of the official Tillamook bicycle system should be signed and/or marked as bicycle routes per 1995 OBPP standards.

The Tillamook bicycle system should include the following roadways with the following classifications:

- 3rd Street (Madrona Avenue to McCormick Loop) – Bike lanes
- Wilson River Highway – Shoulder bikeway (MP 0.0 to MP 0.48, city limits)
- U.S. 101 – Shoulder bikeway, outside of downtown area, MP 66.26 (city limits) to MP 66.10 (10th Street) and from MP 65.59 (Front Street) to MP 64.23 (city limits)
- Stillwell Avenue – Bike lane
- Alder Lane – Bike lane
- Front Street (Stillwell Avenue to U.S. 101) – Bike lane
- 11th Street (Stillwell Avenue to U.S. 101) – Bike lane
- 12th Street (Miller Avenue to Marolf Loop)- Shared roadway
- Evergreen Drive- Shared roadway
- Miller Avenue – Shared roadway
- 10th Street – Shared roadway
- 1st Street – (U.S. 101 to Birch Avenue) – Shared roadway
- Birch Avenue (1st Street to 2nd Street) – Shared roadway
- 2nd Street (Birch Avenue to Ash Avenue) – Shared roadway
- Ash Avenue (2nd Street to 4th Street) – Shared roadway
- 4th Street (Ash Avenue to Madrona Avenue) – Shared roadway
- Madrona Avenue (4th Street to 3rd Street) – Shared roadway
- Ocean Place (3rd Street to Oregon 6) – Shared roadway

- Brookfield Avenue – Shared roadway
- Marolf Loop – Shared Roadway
- McCormick Loop – Shared roadway

There is a need to create a north-south bicycle route through to downtown area and to provide an east-west bicycle route through the city to connect with Netarts Highway (131). Stillwell Avenue is proposed as a bicycle route bypass through the downtown area. Bicycle connections between U.S. 101 and Stillwell Avenue would need to be constructed at Front Street and 11th Street. This could require a grade separated crossing near Front Street. Signing also would be required to direct bicyclists onto Stillwell Avenue.

To create a east-west bicycle route through the city, options will be examined that look at widening 3rd Street to accommodate an additional bike lane, wider sidewalks, or reroute bicycles along lower volume parallel local roads.

Bicycle System Improvements on State and County Facilities

Recommended bicycle system improvements on state and county facilities in Tillamook were derived from:

- A review of relevant existing planning documents and policies (such as the Draft Oregon Coast Highway Corridor Master Plan)
- An analysis of existing conditions and deficiencies based on a field visit to Tillamook in fall 2002

These improvements are summarized in Table 3-9.

TABLE 3-9
Recommended Bicycle System Improvements on State and County Roadways

Roadway	Location	Facility Type
U.S. 101	Hoquarten Slough	Construct a bicycle path from U.S. 101 to Stillwell Avenue. May require bike crossing near Hoquarten Slough bridge for bicyclists. Include signage for bicyclists.
U.S. 101	11th Street	Signage for bicyclists to use Stillwell Avenue as bike route through downtown area.
Oregon 6	Ocean Place to U.S. 101	Restripe road to allow one direction of bike travel.
Netarts Highway (131)	Trask River Bridge to Ash Avenue	Widen roadway to accommodate 6-foot-wide bike lane.

Bicycle System Improvements on Local Facilities

Bicycle system improvements are recommended on certain local facilities in Tillamook. Many local roadways in Tillamook have low traffic volumes, therefore, bicyclists can safely share the roadway with pedestrians and motorists. However, several local roadways are

suggested for improved bicycle facilities. These improvements are summarized in Table 3-10.

TABLE 3-10
Local Bicycle System Improvements

Roadway	Location	Facility Type
3rd Street	Madrona Avenue to McCormick Loop	Install 6-foot-wide bike lanes on both sides
12th Street	Miller Avenue to Marolf Loop	Designate as shared roadway; provide adequate shoulder
Evergreen Drive	3rd Street to 12th Street	Designate as shared roadway; provide adequate shoulder if road is modernized
Alder Lane	Evergreen Drive to Dogwood Street	Provide for 6-foot-wide bike lanes on both sides and extend to elementary and junior high schools
1st Street	U.S. 101 to Birch Avenue	Designate as shared roadway; widen shoulders to provide adequate width where deficient
Birch Avenue	1st Street to 2nd Street	Designate as shared roadway; widen shoulders to provide adequate width where deficient
2nd Street	Birch Avenue to Ash Avenue	Designate as shared roadway; widen shoulders to provide adequate width where deficient
Ash Avenue	2nd Street to 4th Street	Designate as shared roadway; widen shoulders to provide adequate width where deficient
4th Street	Ash Avenue to Madrona Avenue	Designate as shared roadway; widen shoulders to provide adequate width where deficient
Madrona Avenue	4th Street to 3rd Street	Designate as shared roadway; widen shoulders to provide adequate width where deficient
Ocean Place	3rd Street to Oregon 6	Designate as shared roadway; widen shoulders to provide adequate width where deficient
Miller Avenue	3rd Street to 12th Street	Designate as shared roadway; widen shoulders to provide adequate width where deficient
Wilson River Loop	Oregon 6 to 3rd Street	Designate as shared roadway; widen shoulders to provide adequate width where deficient
Marolf Loop	3rd Street to 12th Street	Designate as shared roadway; widen shoulders to provide adequate width where deficient
McCormick Loop	3rd Street to UGB	Designate as shared roadway; widen shoulders to provide adequate width where deficient
Brookfield Avenue	Marolf Loop to McCormick Loop	Designate as shared roadway; widen shoulders to provide adequate width where deficient
Stillwell Avenue	Front Street to 12th Street	Install 6-foot-wide bike lanes on both sides
Front Street	Stillwell Avenue to U.S. 101	Install 6-foot-wide bike lanes on both sides
11th Street	Stillwell Avenue to U.S. 101	Install 6-foot-wide bike lanes on both sides

UGB = urban growth boundary.

Bicycle Parking

Bicycle parking in Tillamook should comply with design standards set forth in the 1995 OBPP. Bicycle parking should be considered at the following activity centers in Tillamook:

- Downtown Tillamook (to serve local businesses, offices and government buildings)
- 2nd Street and Laurel Avenue (TCTD station)
- Sport fields on Alder Lane
- Tillamook County General Hospital
- Carnahan, Goodspeed and 9th Street Parks
- Tillamook County Fairgrounds

Trails

Tillamook does not have any off-street trails. The following off-street pedestrian and bicycle improvements are recommended for Tillamook:

- Construct paved bicycle/pedestrian path in the flat basin, north of the downtown area. This trail could connect with the regional roadway network or the proposed Hoquarten Slough trail.
- Develop a trail along the Hoquarten Slough[4]. This trail would be along the south of the slough and connect with the city parks along the slough. The trail also could connect with the bicycle facilities along U.S. 101.
- Develop a trail plan that will address the lack of off-street trails in Tillamook and establish goals, needs and alternatives to enhance the trail system in Tillamook.

Transit Needs

The Tillamook Transit Transportation District (TCTD) has outlined the following opportunities to improve public transportation services offered by TCTD:

- **Provide annual incremental route expansion.**
- **Provide park-and-ride services at the TCTD's building headquarters.** This is a planned facility included in the Phase 2 construction of the TCTD's new headquarters building. It is expected that the park-and-ride will provide 25 stalls. Two STIP projects (#12484 and #12089) were awarded to TCTD for the new bus facilities.
- **Improve connections with other transit service providers.** Currently, connections between transit service providers, including Sunset Empire, Pacific Transit and Oregon Coachways are not available or not well coordinated.
- **Expand service to Oceanside on Netarts Highway (131).**
- **Expand service (weekends only) to Pacific City.**
- **Provide transit vehicle pull-outs at all stops.** This is one of TCTD's immediate priorities.

[4] Tillamook Town Center Plan and Tillamook ODDA Report.

- **Enlarge transit shelters**. This is a current proposal to the Tillamook City Council. It includes expansion of the transit center on 2nd Street and Laurel Avenue, and adds shelters at stops that have none.
- **Provide additional services at the 2nd Street and Laurel Avenue transit center stop.** Includes providing restrooms, customer service station and bike racks.
- **Advertise and promote TCTD services.**

Other issues that have been identified include the addition of transit amenities at each transit stop in Tillamook. Transit amenities, including covered benches, signage and concrete landing pads, should be considered for stops with high ridership in Tillamook. These amenities would make the system more visible to potential users (including the transportation disadvantaged) and possibly attract new riders. Also, as mentioned previously, all transit stops should be accessible to all potential riders per ADA standards.

Freight Needs

As part of the TSP process, Tillamook County and City of Tillamook staff identified the need and desire to minimize the impacts of local and through freight truck traffic and large recreational vehicles in the City of Tillamook downtown commercial area and in residential neighborhoods in the city. The issue and potential solutions affect both the City of Tillamook and unincorporated areas of Tillamook County. This section, which is being included in both the City of Tillamook TSP and the Tillamook County TSP, describes the efforts to identify and define the problem. Potential solutions are addressed in Sections 4 and 5. As described below, specific solutions are not recommended in the TSP.

Preliminary Study

Because of the complex nature of this problem, a brief study of large vehicle alternative routes was undertaken jointly as part of the county and city TSP processes. The purposes of the study were:

- To clearly document the nature of the problem facing the city and the county relating to conflicts between trucks and other uses
- To identify and evaluate proposed solutions
- To initiate discussion among the City of Tillamook, Tillamook County, ODOT, and other stakeholders regarding a preferred solution or solutions

These initial steps were conducted in May 2003 and resulted in the further identification of the problem and a number of potential solutions. Documentation of this process, including the proposed solutions, is included in Appendix C.

Problem Statement

As described in Appendix C, identified needs related to truck and large vehicle traffic are:

- Improve truck and other large vehicle movements through the City of Tillamook

- Improve access to the Tillamook Lumber Company Mill
- Develop solutions that are cost-effective and that will be used (for example, minimize out-of-direction travel or trip time)
- As part of the above solutions, minimize adverse impacts of truck traffic on the commercial and residential areas of Tillamook to ensure the future economic health and livability of the city.

Freight needs and the potential large vehicle alternate routes are further discussed in Section 5 and in Appendix C.

Rail System Needs

The Port of Tillamook Bay rail line through Tillamook currently is being upgraded to a Class II facility. With this upgrade, trains potentially travel at higher speeds. If trains are moving at higher speeds, safety measures and equipment at the railroad crossings become a higher priority. However, at this time the Port of Tillamook Bay has indicated it intends to continue to operate trains at slow speeds (10 mph) through Tillamook and other developed locations.

Even though this is considered a safety need, the 12th Street railroad crossing is not considered critical because of the slow train speeds at this location, but safety measures should be examined at this location because of the proximity to pedestrian generating areas, such as the Tillamook High School.

Air System Needs

There are no air system needs in Tillamook.

Water System Needs

Tillamook Boat Launch

Parking facilities at the two Tillamook boat launches are adequate for the demand. There is no need for additional boat launch sites in Tillamook.

SECTION 4

Transportation System Plan Projects and Evaluation

Introduction

The OARs direct the TSP to be based on an evaluation process to identify potential impacts of the projects contained in the plan. It is required that the evaluation process be consistent with TSP guidelines and the TPR, but smaller communities such as Tillamook "... are advised to scale their analysis to a reasonable level based on the size of the community and the complexity of the transportation issues."[5] Based on this recommendation, the projects developed for the Tillamook TSP are not packaged into sets of alternatives, but are assessed individually. Creating alternatives for Tillamook would be ineffective with the limited type and number of projects. Projects that fail to meet the city's goals and objectives for the TSP will be rejected and the remaining projects will be packaged as the preferred alternative in the TSP (see Section 5).

The projects listed below were identified through several sources including the assessment of needs and deficiencies described in Section 3, recommendations from existing plan and policy documents, and recommendations from project stakeholders including city and other agency staff, PAC members and the general public. To address the deficiencies and needs of the transportation system in Tillamook, the projects are grouped into seven types (see below) and evaluated. Each project is evaluated on the basis of evaluation criteria (measures of effectiveness) developed using the TSP goals and objectives. In some cases, multiple projects are created that resolve the same need. In these cases, these projects are evaluated relative to each other, with the most effective projects being recommended as part of the preferred alternative.

The seven project types analyzed are:

Freight: Projects include improvements for the movement and mobility of freight to and through Tillamook and minimizing adverse impacts of freight traffic.

Mobility: Projects identify locations where new roadway construction should be planned to provide better access in parts of the city.

Operational-Modernization: Projects include improvements that increase the roadway efficiency by reducing congestion and improving safety. This includes capacity improvements, traffic signals, signs and Intelligent Transportation System (ITS) features.

Parking: Projects focus on how to improve the current parking system by either upgrading current parking areas (off- and on-street) or examining opportunities where off-street lots could be developed.

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[5] 2001 ODOT Transportation System Guidelines, page 34.

Pedestrian/Bicycle/Trail: Projects includes improvements that should be considered to better serve pedestrians and bicyclists, including the addition of striped bike lanes, shoulders, sidewalks, pedestrian crossings and ADA compliance. Projects also include the development of off-street trail projects.

Safety: Projects include improvements to reduce identified locations that have crash rates and/or fatalities. Projects in this section also include locations where there are safety concerns.

Rail: Projects include improvements to the railroad crossings or rail line in Tillamook.

Projects relating to Transportation Demand Management (TDM), transit, water, pipeline and land use strategies are not included in this analysis because of the limited nature of the transportation system needs and opportunities in Tillamook. No need for these types of projects was identified in the TSP process. However, these issues should be reviewed in the future because needs and conditions may change.

Evaluation Process

An evaluation process was conducted to facilitate the selection of a preferred alternative that meets the city's goals and objectives and consistent with TPR requirements. Key steps in the evaluation process are shown in Figure 4-1 and discussed below.

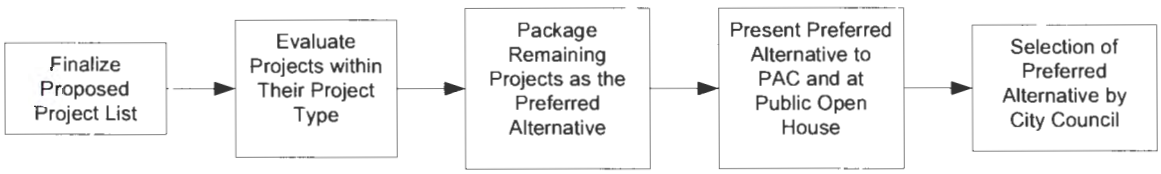


FIGURE 4-1
Evaluation Process

1. Finalize Proposed Project List – The project list was finalized after the March 25, 2003, PAC meeting and the April 7, 2003, public open house.

2. Projects were evaluated individually. In certain circumstances multiple projects were created that address the same need. In these cases, the projects were evaluated relative to each other. For instance, there were numerous mobility extension projects that address the need for improved connectivity in Tillamook, but only the projects that were most feasible and cost-effective from the group were included as part of the preferred alternative.

3. The evaluation was based on a five-level scoring system using "++, +, 0, - and --" as the scores. Any project that received a double negative (--) is considered for exclusion because it is deemed highly infeasible or creates a negative impact on the transportation system. Although a project might be highly unlikely as a result of cost or other constraints, it may be advanced to the preferred alternative because it exhibits significant benefits, PAC members want to include it or other relevant agencies may

want to keep it in. This evaluation is mostly qualitative, except for operational results from the traffic analysis.

4. The preferred alternative will be presented to the PMT and PAC. Based on the evaluation and input from the PMT and PAC, the preferred alternative will be finalized. This alternative will be presented at a public open house for comments. The preferred alternative will include short-term and long-term projects with a proposed staging and funding cycle. A financially constrained version of the preferred alternative also may be presented.

5. The TSP, which will be adopted by the city council and acknowledged by the State of Oregon, will incorporate improvements included in the preferred alternative.

Evaluation Criteria

As described above, the criteria for the project evaluation are based on a "++, +, 0, - and --" scoring system. This scoring system provides enough variance among similar projects to be able to recognize and recommend a preferred project. Projects with numerous negative impacts most likely will be excluded, but in some instances may be part of the preferred alternative if they are considered to provide significant benefit in other scoring areas and/or PAC and other agencies strong support including this project in the preferred alternative. Table 4-1 describes the project-level evaluation criteria.

TABLE 4-1
Project Evaluation

Goal	Rating	Project Criterion
Mobility/Accessibility	+ +	Provides new transportation options or connectivity to serve different types of users (that is, street connections, freight, bikes, pedestrians)
	+	Improves on the current transportation options or connectivity to serve different types of users (that is, street connections, freight, bikes, pedestrians)
	0	Does not significantly change transportation options or connectivity
	-	Limits the transportation options or connectivity of the system
	- -	Significantly reduces or limits key transportation options or connectivity
Coordination	+ +	Included as part of other local, county, regional or state policies or plans
	+	Mentioned by city staff, PAC or other relevant agencies
	0	Not specifically mentioned in other policies or plans, but not out of compliance with such plans
	-	Indirectly not in compliance with other plans and policies
	- -	Specifically identified as being not in compliance with other plans and policies
Non-Motorized Users	+ +	Creates or completes a bicycle and/or pedestrian link to serve commuters, transit users and/or recreational users
	+	Improves on the current bicycle and/or pedestrian facilities to serve commuters, transit users and/or recreational users.
	0	Does not significantly change existing non-motorized facilities
	-	Reduces some of the connectivity, safety, or aesthetics of existing non-motorized facilities

TABLE 4-1
Project Evaluation

Goal	Rating	Project Criterion
	- -	Removes key connectivity, safety, or aesthetics of existing non-motorized facilities
Feasibility	+ +	Can be done without much effort and has no obstacles (high costs, right-of-way, etc.). All stakeholders generally support the project. The project is considered to not have any environmental or terrain barriers.
	+	Has some barriers (such as cost or public acceptance), but they are not considered significant. The project could be constructed, but with some effort.
	0	Would be costly to construct, but is still within the city's right-of-way and has a few obstacles (such as right-of-way and support).
	-	Is costly and would need some right-of-way takes. Other concerns are present such as terrain. This project could be support by other agencies, but would need to be discussed.
	- -	Has high cost, has significant right-of-way impacts, the city needs joint venture from private sector. This project is likely not to be supported by other agencies and significant terrain issues are identified.
Parking	+ +	Creates additional parking facilities
	+	Improves current parking facilities in the downtown and port area (that is, paving/signing), but does not create more than a few additional parking spaces
	0	No improvement to the current parking situation
	-	Removes a minimal amount of parking
	- -	Removes a significant amount of parking (more than 20 spaces)
Environment	+ +	Greatly enhances environmentally significant areas or natural or historic features
	+	Enhances environmentally significant areas or natural or historic features
	0	No impacts to environmentally significant areas or natural or historic features
	-	Some impacts to environmentally significant areas or natural or historic features
	- -	Significantly impacts environmentally significant areas or natural or historic features
Capacity	+ +	Provides additional capacity to the system and improves the operating conditions a deficient locations
	+	Provides additional capacity to the system
	0	Does not significantly improve the capacity of the system
	-	Worsens roadway/facility capacity
	- -	Intersections/segments would worsen to levels above TSP guidelines
Safety	+ +	Improves safety for users at an identified safety location
	+	Improves the safety for users at locations not considered deficient
	0	Does not significantly change roadway/facility safety
	-	Decreases safety for users
	- -	The project may create an additional safety problem for users (such as more conflict points)
Cost	+ +	The project cost is in the lowest fifth (lowest) ($)
	+	The project cost is in the middle-bottom fifth ($$)

TABLE 4-1
Project Evaluation

Goal	Rating	Project Criterion
	0	The project cost is in the middle ($$$)
	-	The project cost is in the middle-top fifth ($$$$)
	- -	The project cost is in the top fifth (highest) ($$$$$)
Lifeline Routes	+ +	Creates a key connection or improves access to the lifeline route
	+	Improves the quality or identification of lifeline routes
	0	Does not significantly change the quality or identification of lifeline routes
	-	Adversely affects the effectiveness or connectivity of lifeline routes
	- -	Removes key connectivity of lifeline routes

Scoring System: + + = Significantly Positive + = Positive, 0 = No impact, - = Negative, - - = Significantly Negative.
PAC = Project Advisory Committee.
TSP = transportation system plan.

Evaluation Analysis and Results

For each of the seven project types included in the analysis, this section presents a description of the projects within each type, the evaluation results (based on the measures of effectiveness) for each project. The major proposed projects in Tillamook are shown in Figure 4-2.

Access Management

Along U.S. 101, north of Hoquarten Slough to Goodspeed Road, the numerous driveway conflicts and median turn lane have caused numerous accidents because there are many conflict points along this stretch of roadway. Access management treatments for this roadway segment are evaluated in Table 4-2.

TABLE 4-2
Access Management Project Evaluation Summary

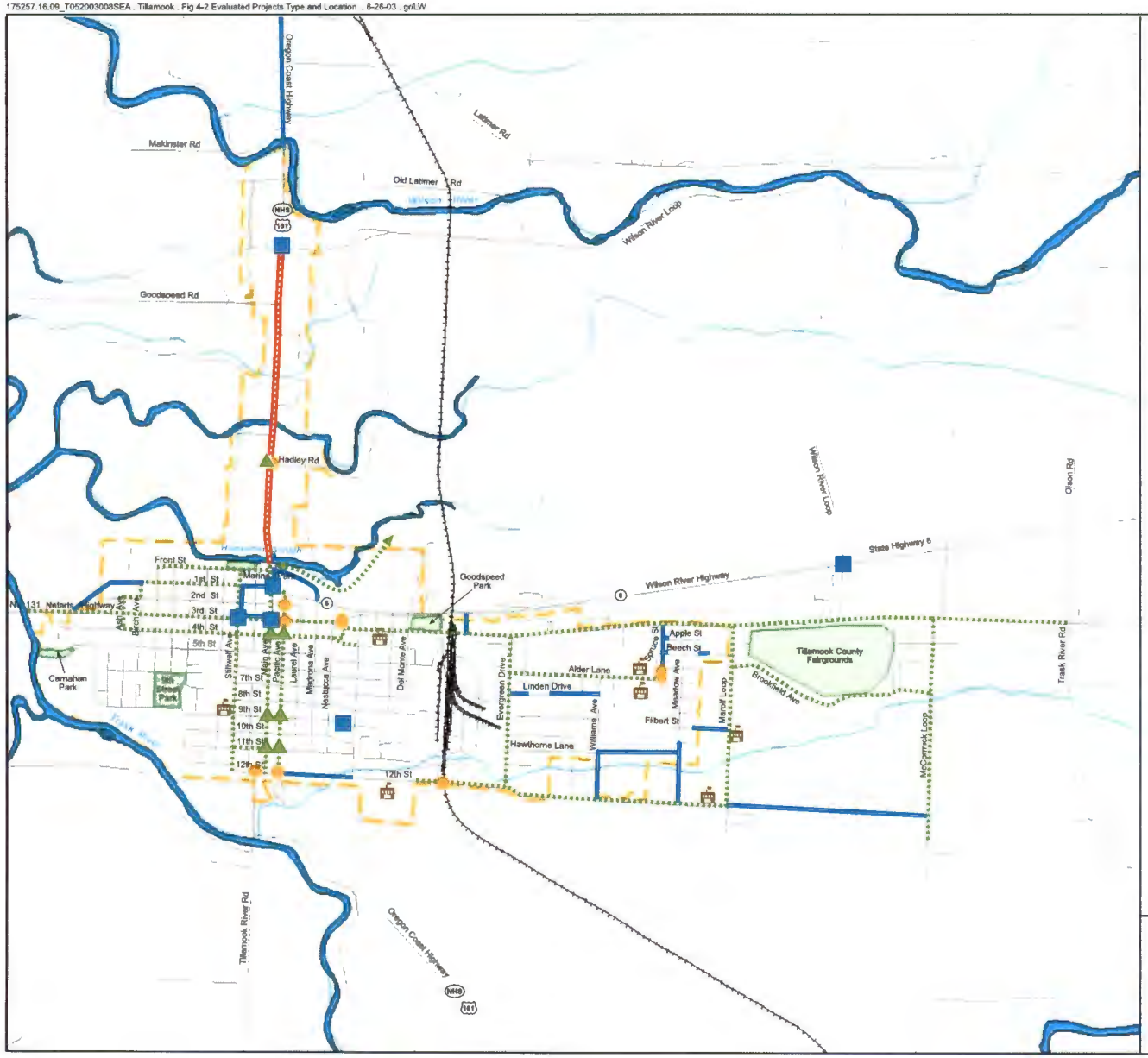
Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
Provide access management treatments such as medians/consolidation of driveways/right-in, right-out treatments along U.S. 101, north of Oregon 6 to Wilson River Loop intersection. Implement as redevelopment occurs.	0	++	0	-	0	0	-	++	--	0	TSP Project

Although, the cost to consolidate driveways and construct a median barrier could be significant, the benefits are numerous as the corridor would become a much safer roadway with only a few protected left-turn locations. In addition, driver expectations would improve and driver confusion could be reduced. After preliminary discussions with ODOT, the department seems to be supportive of this idea because it already has been implemented along U.S. 101, north of Goodspeed Road.

Freight

Several options were developed to address the adverse impacts of freight traffic in the city's commercial and residential areas and the possibility of an alternative route for trucks traveling between U.S. 101 and Oregon 6 that minimizes these impacts and/or avoids the downtown core area. Appendix C includes the large vehicle alternate routes study, which includes a detailed evaluation of potential routes and recommendations for next steps.

175257.16.09_T052003008SEA . Tillamook . Fig 4-2 Evaluated Projects Type and Location . 6-26-03 . gr/LW



City of TILLAMOOK

CH2MHILL

LEGEND

Project Types

- Mobility/Connectivity/ Roadway
- Ped/Bike/Trail
- Safety
- Access Management
- Road
- Railroad
- School
- Park
- City Limit
- Urban Growth Boundary

Symbol = Intersection Improvement

Note: Some projects not depicted if not for a specified location or are minor improvements.

Freight projects are included in Appendix D. They were evaluated separately in a joint effort with Tillamook County to assess large vehicle alternative routes.

NORTH

500 0 500 Feet

Figure 4-2
Evaluated Projects Type and Location
Transportation System Plan
Tillamook, OR

Mobility/Connectivity

New development is occurring in the eastern part of the city. This area does not have a grid-style roadway network that gives users mobility. Many of the mobility/connectivity projects listed below provide connections that would be required if additional development occurred in this area. Refer to Table 4-3 for the list of mobility/connectivity projects.

TABLE 4-3
Mobility/Connectivity Project Evaluation Summary

Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
Extend Meadow Avenue to 12th Street	++	++	++	--	0	-	+	0	-	0	TSP Project
Extend Trout Avenue between 3rd and Oregon 6	++	+	0	--	0	-	+	0	-	0	Reject
Extend 12th Street from Miller Avenue to Pacific Avenue (U.S. 101 Northbound)	++	++	++	--	0	-	+	+	--	0	Reject
Extend Beech Street to Marolf Loop	++	+	0	-	0	0	+	0	-	0	TSP Project
Designate Spruce Avenue as a public road and remove the barriers at Apple and Beech Streets. Connect Spruce to Cypress to complete roadway grid system.	++	+	0	-	0	0	+	0	-	0	TSP Project
Extend 1st Street to Netarts Highway (131)	++	++	++	--	0	--	+	0	-	0	Reject
Create a scenic northbound only bypass of the U.S. 101 and Oregon 6 intersection along Hoquarten Slough with access to U.S. 101 just south of Hoquarten Slough and access from Oregon 6 just east of Madrona Avenue.	+	0	+	--	0	-	++	0	--	0	Reject
9th Street, cul-de-sac one side of the park and add parking on the other side	0	+	0	-	0	0	0	0	0	0	TSP Project
Extend Filbert Street to Marolf Loop	++	++	0	-	0	0	+	0	-	0	TSP Project
Extend Hawthorne Lane between Meadow and Williams Avenues	++	0	0	-	0	-	+	0	--	0	TSP Project
Extend Williams Avenue south to 12th Street	++	++	++	-	0	-	+	0	-	0	TSP Project
Extend 12th Street to McCormick Loop (if development occurs in area)	++	++	++	-	0	-	+	0	--	0	TSP Project

Rejected Projects

From this evaluation, cost, feasibility and environmental impact were the key criteria. Projects that significantly affect two of these three criteria are considered flawed and

infeasible and, therefore, are rejected. A project that receives one negative could be rejected if there have not been significant benefits identified or if another option would be more feasible. The following projects were rejected:

- Extend Trout Avenue between 3rd Street and Oregon 6: This area has a severe slope to Oregon 6 that presents feasibility issues. Options being reviewed to address freight issues would respond to the same need for connectivity between 3rd Street and Oregon 6.
- Extend 12th Street from Miller Avenue to Pacific Avenue (U.S. 101 Northbound): Would require removing existing buildings and would have environmental impacts.
- Extend 1st Street to Netarts Highway (131): Would require removing existing buildings and potentially infringe on a wetland area.
- Creating a scenic bypass of the U.S. 101 and Oregon 6 intersection along Hoquarten Slough would have to gain ODOT approval for additional state access and Port of Tillamook Bay agreements, which makes this highly infeasible. This project could also create additional safety issues along U.S. 101 with the numerous access points. In addition, this project potentially has environmental impacts.

Recommended TSP Projects

All of the recommended projects provide additional mobility and connectivity to the eastern part of the city, especially in the residential areas surrounding Evergreen Drive, Marolf Loop and 12th Street. The following projects are recommended:

- Extend Meadow Avenue to 12th Street
- Extend Beech Street to Marolf Loop
- Designate Spruce Avenue as a public road and remove the barriers at Apple and Beech Streets. Connect Spruce to Cypress to complete roadway grid system.
- 9th Street, cul-de-sac one side of the park and add parking on the other side
- Extend Filbert Street to Marolf Loop
- Extend Hawthorne Lane between Meadow and Williams Avenues
- Extend Williams Avenue south to 12th Street
- Extend 12th Street to McCormick Loop (after development occurs in area)

Detailed environmental and design studies of these extensions are required. These connections would improve the overall connectivity of the Tillamook street grid and provide better mobility in the developing residential areas.

Modernization—Operations

There is a need to improve U.S. 101 operations in the downtown area and along the adjacent cross-streets. To alleviate some of the downtown congestion, improvements to specific intersections were examined. These improvements were not significant enough to improve

the operations to acceptable mobility standards; therefore, a one-way couplet system is evaluated to resolve some of the Main Avenue congestion between 1st and 3rd Streets. In addition, there are needed isolated improvements to some of the highway intersections outside the downtown area. There are no identified operational issues on the local street system. Refer to Table 4-4 for the list of modernization-operational improvements. It is noted that any modifications to the signing and traffic control on the state system would have to be approved by the State Traffic Engineer.

TABLE 4-4
Modernization-Operations Project Evaluation Summary

Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
Outside Downtown Area											
Provide an eastbound right-turn lane at U.S. 101 and Wilson River Loop intersection (to U.S. 101 southbound) while providing for safe pedestrian and bicycle movements	+	0	0	+	0	0	++	0	0	0	TSP Project
Provide grade-separated interchange at Oregon 6 and Wilson River Loop intersection.	+	++	+	-	0	-	++	++	--	+	TSP Project
Widen Wilson River Bridge at U.S. 101. Part of current STIP.	+	++	0	-	0	-	+	0	--	+	TSP Project
Downtown Area											
Install traffic signal at Netarts Highway (131) (3rd Street) and Stillwell Avenue. Provide a northbound and southbound left-turn lane.	+	0	0	-	0	0	++	++	-	0	TSP Project
Construct a pedestrian island that provides a channelized westbound right-turn at the U.S. 101 and Oregon 6 intersection, reconstruct northeast corner, provide downstream lane and widen Hoquarten Bridge. Provide signing that yields vehicles to pedestrians crossing this lane.	+	++	0	-	0	-	++	++	--	+	TSP Project
Create a couplet system along 1st Street (westbound) and Netarts Highway (131) (3rd Street) (eastbound) between Stillwell Avenue and U.S. 101 (Main Avenue). Improves operations at U.S. 101 and Oregon 6 and at U.S. 101 (Main Avenue) and 3rd Street. Project includes signing, channelization/restriping and intersection signal equipment and timing modifications.	+	+	0	-	0	0	++	++	0	0	TSP Project

Outside Downtown Area

Recommended TSP Projects. To improve the U.S. 101 at Wilson River Loop intersection to acceptable mobility standards, an exclusive eastbound right-turn lane is required. This project is expected to have minimal impacts.

A grade-separated interchange at the Oregon 6 and Wilson River Loop intersection would dramatically improve safety at this intersection and achieve acceptable mobility standards. In addition, an interchange would provide a significant travel time improvement to freight along Wilson River Loop. This project is included as part of the draft 2004–2007 STIP.

Another project included in the current STIP is to improve the Wilson River bridge along U.S. 101 and widen U.S. 101 north of the city limits.

Downtown Area

Recommended TSP Projects. Constructing a downstream, westbound, right-turn lane at Oregon 6 and U.S. 101 that provides a channelized westbound right-turn movement would improve the operations of the U.S. 101 couplet at the critical terminal location. This would require widening the Hoquarten Slough Bridge, which would be costly, but would provide needed capacity at this U.S. 101 bottleneck. Some right-of-way would need to be acquired at the northeast corner of U.S. 101 and Oregon 6.

In addition to the westbound right-turn improvement, a one-way couplet system along 1st Street and Netarts Highway (131) (3rd Street) between U.S. 101 and Stillwell Avenue would improve the intersection operations at U.S. 101 and Oregon 6 and 3rd Street. This couplet would remove the eastbound traffic at the U.S. 101 and Oregon 6 intersection, and relocate it to the U.S. 101 and 3rd Street intersection. The U.S. 101 and Oregon 6 intersection then would become a two-phase intersection with no conflicting traffic for the westbound right-turn movement from Pacific Avenue. This couplet system also would improve the intersection operations at Main Avenue and 3rd Street to acceptable mobility standards by removing the southbound right-turning volume and relocating it to 1st Street or 2nd Street. These improvements would not interfere with any recommended pedestrian improvements.

Even without the couplet described above, a signal at Netarts Highway (131) (3rd Street) and Stillwell Avenue is required to ensure the intersection operates at acceptable mobility standards. Northbound and southbound left-turn lanes are required, which may require some right-of-way acquisition or removal of parking at the intersection.

Installation of signals and signing on state highways is subject to approval from ODOT.

Parking

Even though on-street parking along U.S. 101 is often fully used and the supply does not appear to adequately support the businesses along U.S. 101, the city has a significant amount of parking surrounding the core business area. General signing improvements and a study to assess the supply and demand during various season are proposed. Refer to Table 4-5 for the list of evaluated parking projects.

TABLE 4-5
Parking Project Evaluation Summary

Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
Conduct parking study to understand parking use at various times during the year	0	+	0	++	0	0	0	0	+	0	TSP Project
Provide signing along U.S. 101 to off-street lots off U.S. 101	0	+	0	++	0	0	0	0	++	0	TSP Project
Construct off-street parking at city-owned lot along Ivy Avenue. Provide signing along U.S. 101 to this lot.	0	+	0	++	++	0	0	0	+	0	Reject*

* Before completion of the TSP, the identified city-owned lot was identified for potential future development. As a result, this project is not considered further.

Recommended TSP Projects

Promoting the current off-street lots and adjacent on-street parking with signing along U.S. 101 is a short-term remedy to help alleviate the parking shortage along U.S. 101. In addition, to adequately assess the parking demand and supply, a parking study is recommended. If the study concludes that additional off-street parking is required, the vacant city lot near Ivy Avenue is a recommended location because it is close to the downtown area and would be able to accommodate a significant number of vehicles (more than 50 vehicles).

Pedestrian/Bicycle/Trail

Many of these projects are created from the need to provide a connected pedestrian system. Sidewalk locations are proposed where it would create logical connections between the school, residential areas and downtown areas. Many of the streets near the eastern residential areas of Tillamook lack pedestrian amenities. The city has a need to create a well-connected bicycle system and off-street trails because they are lacking in both areas. Because of the constrained right-of-way along Netarts Highway (131), three bicycle route options are assessed.

Many of the pedestrian, bicycle and trail projects are low cost improvements that can be performed without much effort. This subsection focuses on the relatively major construction or projects that could be considered less feasible. Refer to Table 4-6 for the list of pedestrian projects.

TABLE 4-6
Pedestrian/Bicycle/Trail Project Evaluation Summary

Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
East-West Bike Route											
Construct bike lanes and sidewalk on 3rd Street, east of Evergreen Drive to Trask River Road, repave roadway from Nestucca Avenue to city UGB. Provide marked crosswalks near Tillamook County Fairgrounds with pedestrian area warning signs. Restripe crosswalks near Wilson Elementary School/Goodspeed Park area on 3rd Street. Retrofit ramps along 3rd Street to ADA compliance near Goodspeed Park and Wilson Elementary School	++	+	++	-	-	0	0	++	--	0	TSP Project
Provide bike route on 3rd Street between Stillwell Avenue and Trask River bridge. Widen sidewalk to 10 feet both sides. Keep parking on both sides west of U.S. 101. East of U.S. 101, bike route separates between Oregon 6 couplet. Striping modifications required.	++	+	++	--	0	0	0	+	--	0	Reject
Provide bike route on 3rd Street between Stillwell Avenue to Trask River bridge. Remove parking on north side and provide bike lanes on both sides west of U.S. 101. East of U.S. 101, bike route separates between Oregon 6 couplet. Striping modifications required.	++	+	++	--	--	0	0	++	+	0	Reject
Provide bike route between Evergreen Drive to Trask River bridge. Eastbound: Route on 3rd Street, south onto Ash Avenue, east on 4th Street, north on Ocean Place, east on 3rd Street. Would require bike lanes on 3rd Street to Ash Avenue to shared roadway on Ash Avenue, 4th Street and Ocean Place. Westbound: 3rd Street from Evergreen Drive, north on Ocean Place, west on Oregon 6, cross U.S. 101 on First Street, south on Birch Avenue, west on 2nd Street, south on Ash Avenue, west on 3rd Street. Provide bike lanes on 3rd Street and Oregon 6, all other roads are shared roadway designation. Bike lanes on Oregon 6 can be provided with striping modifications. Requires advanced signing on U.S. 101 and 3rd Street.	++	+	++	0	0	0	0	++	+	0	TSP Project

TABLE 4-6
Pedestrian/Bicycle/Trail Project Evaluation Summary

Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
North-South Bike Route											
Create a bicycle bypass in downtown area along Stillwell Avenue. Create bike lane connections with U.S. 101 along Front Street and 11th Street. Provide advanced signing. Remove parking on one side of road to provide bike lanes. Coordinate with Hoquarten Slough Trail. Might require undercrossing with U.S. 101 at Front Street. Additional study required. Complete sidewalk system on Stillwell Avenue, Front to 1st Streets and 11th to 12th Streets. Construct ADA ramps along Stillwell Avenue near Liberty Elementary School (7th and 8th Street crossings). Restripe crosswalks along Stillwell Avenue.	++	++	++	--	-	0	0	++	--	0	TSP Project
U.S. 101 Pedestrian/Bike Projects											
Downtown sidewalk construction/replacement from Hoquarten Slough to 4th Street. Includes bulb-outs at 2nd, 3rd and 4th Streets. This is phase 1 of the TE project.	+	++	+	-	-	0	0	++	-	0	TSP Project
Downtown sidewalk construction/ replacement from 4th to 12th Streets. Includes bulb-outs at 9th and 11th Streets. This is phase 2 for the TE project.	+	++	+	-	-	0	0	++	--	0	TSP Project
Pedestrian-activated signal crossing on U.S. 101 between Wilson River Loop and Hoquarten Slough. Recommended location is at Hadley Road.	+	0	+	--	0	0	-	++	-	0	Reject
Local Road Pedestrian/Bike Projects											
Construct sidewalk and bike lanes on Evergreen Drive. Repave road with asphalt.	++	+	++	-	-	0	0	+	--	0	TSP Project
Construct sidewalk on 12th Street, east of the high school to Marolf Loop, repave from Miller Avenue to Marolf Loop. Provide adequate width along 12th Street from high school to Marolf Loop for shared roadway designation.	++	+	++	-	0	-	0	+	--	0	TSP Project
Complete sidewalk and provide bike lanes on 3rd Street, west of Ash Avenue. Removal of parking on one side.	+	+	+	--	0	0	0	+	0	0	TSP Project
Complete sidewalk system on Front Street	+	0	+	--	-	0	0	+	-	0	Reject

TABLE 4-6
Pedestrian/Bicycle/Trail Project Evaluation Summary

Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
Provide adequate bike lane width and sidewalk and repave Alder Lane between Evergreen Drive and Cypress/Dogwood intersection	++	+	++	-	-	0	0	++	--	0	TSP Project
Provide adequate shoulder on Brookfield Avenue. Road would need to be acquired by city.	++	0	+	--	0	-	0	+	-	0	TSP Project
Provide adequate shoulder on McCormick Loop for shared roadway designation, repave road at south end	++	0	+	-	0	-	0	+	-	0	TSP Project
Provide adequate shoulder on Marolf Loop for shared roadway designation, repave road, add sidewalk	++	0	+	-	0	-	0	+	-	0	TSP Project
Construct sidewalk along 4th Street from Nestucca to Miller Avenues. Contingent on development.	++	0	+	-	0	0	0	+	0	0	TSP Project
Provide ADA-compliant ramps along Miller Avenue. Provide painted crosswalks along Miller Avenue.	+	0	+	++	0	0	0	+	+	0	TSP Project
Construct ADA-compliant ramps along 10th Street. (Currently ramps exist only at Stillwell Avenue and U.S. 101 intersections.)	+	0	+	++	0	0	0	+	+	0	TSP Project
Provide sidewalk on north side of 11th Street between Stillwell Avenue and U.S. 101, retrofit south side sidewalk, overlay roadway between Stillwell and Miller Avenues	+	0	+	+	0	0	0	+	-	0	TSP Project
Provide bicycle parking in downtown Tillamook. Benches, drinking fountains, trash receptacles, and informational signage or historical kiosks are recommended.	0	++	+	+	0	0	0	0	+	0	TSP Project
Provide bicycle parking at sport fields on Alder Lane	0	0	+	++	0	0	0	0	++	0	TSP Project
Provide bicycle parking at Tillamook County Fairgrounds	0	0	+	++	0	0	0	0	++	0	TSP Project
Provide bicycle parking at TCTD 2nd Street and Laurel Avenue transit center	0	0	+	++	0	0	0	0	++	0	TSP Project
Provide bicycle parking at hospital	0	0	+	++	0	0	0	0	++	0	TSP Project
Provide bicycle parking at Goodspeed Park	0	0	+	++	0	0	0	0	++	0	TSP Project
Provide bicycle parking at 9th Street Park	0	0	+	++	0	0	0	0	++	0	TSP Project

TABLE 4-6
Pedestrian/Bicycle/Trail Project Evaluation Summary

Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
Provide bicycle parking at Carnahan Park	0	0	+	++	0	0	0	0	++	0	TSP Project
Trail Projects											
Develop Phase 1 of the Hoquarten Slough trail along south side of Hoquarten Slough for approximately 1,000 feet. Connect parks along Hoquarten Slough and proposed Stillwell Avenue bike route. This is a current project of the Tillamook County estuary organization.	0	+	0	-	0	0	0	++	+	0	TSP Project
Create trail plan to assess roadway connectivity and off-street trails projects. This incorporates the development of Phase 2 of the Hoquarten Slough trail.	++	++	++	-	0	-	0	0	+	0	TSP Project

ADA = Americans with Disabilities Act.
TE = transportation enhancement.
TCTD = Tillamook County Transportation District.
UGB = urban growth boundary.

East-West Bicycle Route

Rejected Projects. Widening the sidewalk along 3rd Street, west of U.S. 101 to provide an adequate width for bicyclists creates numerous conflict points with private driveways and intersections, and would require significant right-of-way acquisition. In addition, many bicyclists may not use the sidewalk, as they tend to favor bicycling on the road to increase their visibility.

Removing parking along 3rd Street to provide bicycle lanes would create a shortage of parking along this entire stretch of roadway and would conflict with the city's goal of promoting business in the downtown area.

Recommended TSP Projects. Designating a bike route along the local roads parallel to 3rd Street, west of U.S. 101, is a low-cost alternative to the options rejected above. This connection is a critical connection for bicyclists as the coastal bike route turns off U.S. 101 and heads west along the Netarts Highway (131). Although the local roads would be shared facilities, the volumes along the residential 1st and 4th Streets are low enough to provide a safer road on which to travel. Signing would be required along U.S. 101 and these residential roads to direct bicyclists between U.S. 101 and 3rd Street. Between the Trask River bridge and Ash Avenue, bike lanes would be required along 3rd Street. Although this may require the loss of some parking it is at the outskirts of town and would be for only a short distance.

East of U.S. 101 to Ocean Place, the east-west bike route would be along Oregon 6 and 4th Street. 4th Street would be a shared roadway for eastbound travel and Oregon 6 would be for westbound travel. A bike lane on this section of Oregon 6 would fit within the current right-of-way and would require only restriping.

After bicyclists are on 3rd Street, east of Ocean Place, bike lanes are recommended on both sides to McCormick Loop. Although this could require right-of-way acquisition, it would provide a critical connection between the residential areas of Tillamook to the downtown. No other roadway provides a direct route between these areas and if another route was suggested it would be circuitous.

The bicycle project locations are illustrated in Section 5.

North-South Bike Route

Recommended TSP Projects. Because of the restricted right-of-way along U.S. 101 in the downtown core, it is infeasible to provide bike lanes through this section. Stillwell Avenue provides a logical bypass that has convenient connections to U.S. 101 at Front Street and 11th Street. The Front Street connection may require a grade-separated bike lane under U.S. 101 to get northbound bicyclists on the eastern side of the U.S. 101. This project would provide a great connection to the planned Hoquarten Slough Trail project.

U.S. 101 Pedestrian/Bike Projects

Rejected Projects. Providing a pedestrian-activated signal on U.S. 101 near Hadley Road would improve the mobility across U.S. 101, but there is not enough pedestrian activity to meet the signal warrant requirements.

Recommended TSP Projects

Currently, sidewalks are provided along U.S. 101 everywhere except the short segment between Oregon 6 and Hoquarten Bridge. This sidewalk is a critical connection between the residential/downtown areas and the commercial strip. This project could be included with the operational improvements at Oregon 6 and U.S. 101. Some right-of-way may be required.

Tillamook applied for a transportation enhancements grant to improve the image of downtown by replacing the sidewalk along U.S. 101, providing pedestrian enhancements with intersection bulb-outs and placing utilities underground. These improvements would improve the pedestrian friendliness of the downtown area and promote other modes of travel. This project would have a high cost, but is a priority for downtown businesses, has support from local agencies, and has several pedestrian and economic benefits.

Local Road Pedestrian/Bike Projects

Rejected Projects. Completing the sidewalk system along Front Street is not recommended because the area west of Stillwell Avenue is the industrial area of town that experiences a low amount of pedestrian traffic. In addition, this street has a narrow right-of-way that would require extensive private acquisition. This improvement was considered for the recently constructed Front Street improvements. During the negotiation process, the costs associated with the right-of-way impacts were deemed infeasible.

Recommended TSP Projects. The local roadway system does not provide any bicycle connections or facilities except in a few short sections that are not connected. Therefore, many of the projects listed in Table 4-6 are required to provide a comprehensive pedestrian/bicycle system in Tillamook.

In some instances staging a project over time may prove to be more feasible because of right-of-way acquisition costs. Because many of the projects require additional right-of-way, it is suggested to initially stage sidewalks on one side of the roadway. This would improve the feasibility of the project being constructed.

Trail Projects

Recommended TSP Projects. An on-going project to create a trail along the Hoquarten Slough has support from many local agencies. This project would become the only off-street trail in Tillamook. The location of the trail is logical because it is adjacent to the downtown and residential areas, and it connects to the parks system along the slough. The trail could be connected to the Stillwell Avenue bicycle bypass to improve the overall city bike connections.

Safety

Roadway safety concerns in Tillamook can be separated into two categories: U.S. 101 and non-U.S. 101 locations. Many of the safety projects along U.S. 101 are the result of the high number of accidents, numerous driveways or the high traffic volume (specifically trucks) in the downtown pedestrian area. Several safety locations on the local street system are identified because of skewed or offset intersections that confuse drivers. At one location (Oregon 6 and Ocean Place) two options are evaluated. The first option is a low-cost, high-feasibility option that does not affect right-of-way while the other option is to construct a roundabout. In addition to the roadway safety projects, the 12th Street railroad crossing is not equipped with safety equipment comparable to the 3rd Street crossing even though it is a public crossing.

Projects that are already evaluated under another project types (U.S. 101 and Oregon 6, Netarts Highway [131] at Stillwell Avenue, and Oregon 6 at Wilson River Loop) are not evaluated in this section. It should be noted that these projects are recommended for improvements under another project type and those improvements are expected to create a safer environment.

Refer to Table 4-7 for the list of projects.

TABLE 4-7
Safety Project Evaluation Summary

Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
U.S. 101 Locations											
Consolidate driveways near intersection of U.S. 101 and Hadley Road (high accident rate). Provide a median barrier to restrict the driveways near the intersection to a right-in, right-out.	0	0	0	+	0	0	0	++	+	0	TSP Project
Improve driver awareness (bulb-outs, removal of parking, consolidation of driveways) at U.S. 101 (Pacific Avenue) at 3rd Street (top 10 percent SPIS site). Improve signing and striping on the eastbound approach.	+	+	+	+	-	0	0	++	+	0	TSP Project
Improve the pedestrian visibility (possible remedies include improved bulb-outs with parking removal, pedestrian activated crossing blinking lights, etc.) at U.S. 101 (Pacific Avenue) at 2nd Street (top 10 percent SPIS site) and at U.S. 101 and Main Avenue.	+	+	+	+	-	0	0	++	+	0	TSP Project
Reconstruct westbound approach and create one-way couplet to remove eastbound approach at U.S. 101 and Oregon 6 (skewed geometry, potential safety issues with confusing operations).											See Table 4-5
Realign intersection at 12th Street and U.S. 101 (Pacific Avenue) to provide adequate SSD.	+	+	+	0	-	0	0	+	-	0	TSP Project
Create gateway at southern end of U.S. 101 couplet	0	+	+	+	0	0	0	++	-	0	TSP Project
Non-U.S. 101 Locations											
Signalize intersection at Netarts Highway (131) and Stillwell Avenue (high accident rate).											See Table 4-5
Construct interchange at Oregon 6 and Wilson River Loop (high accident rate).											See Table 4-5
Provide a raised island at Ocean Place at 4th and 3rd Streets (skewed intersections) for a safe pedestrian refuge with marked crosswalks on every approach. Designate Ocean Place between the Oregon 6 couplet as northbound only (removes southbound SSD problem).	+	+	+	0	0	0	0	++	-	0	TSP Project

TABLE 4-7
Safety Project Evaluation Summary

Projects	Mobility/ Accessibility	Coordination	Non-Motorized Users	Feasibility	Parking	Environment	Capacity	Safety	Cost	Lifeline Routes	Consultant Recommendation
Construct a roundabout and realign approaches at Ocean Place at 4th and 3rd Streets (skewed intersections). Provide advanced signing and striping to provide safe operating conditions.	+	+	+	-	0	0	0	++	--	0	TSP Project
Redesign intersection of Alder Lane at Dogwood and Cypress Streets (offset intersection near school) to remove parking area (or revise to not interfere with intersection operations). Provide all-way, stop-controlled intersection. Provide shoulder along eastside of intersection for pedestrians and revise crosswalk locations.	+	+	+	0	0	0	+	++	-	0	TSP Project
Relocate stop bar at 12th Street and Tillamook River Road to provide better sight distance	0	+	0	-	0	0	0	++	++	0	TSP Project
Upgrade 12th Street railroad crossing with safety measures, such as gate and flashing lights. First step would be study by ODOT rail.	0	+	0	++	0	0	0	+	-	0	TSP Project

ODOT = Oregon Department of Transportation.

SPIS = Safety Prioritization Index System.

SSD = stopping sight distance.

U.S. 101

Recommended TSP Projects. Consolidating the driveways immediately south of the Hadley Road intersection would remove some of the conflict points at this intersection and improve the intersection's safety. In addition, median access control would remove some of the conflicting movements. Based on the accident descriptions, the adjacent driveways are the leading cause of the high number accidents. If these driveways were removed or had limited movements for entry and exit, then this intersection would not be considered a safety hazard. These improvements would need property agreements, but there are other driveways farther south that can operate as shared access.

The two Pacific Avenue projects at 2nd and 3rd Streets each could use better signing and striping near the intersection. Pedestrian bulb-outs would remove some parking at the intersection, but would improve the pedestrian visibility. There were two pedestrian accidents at 2nd Street. In addition, other pedestrian treatments, such as crossing flags, could be provided at the 2nd Street intersection.

To reduce vehicle speeds along Pacific Avenue near the south end of town, a gateway is recommended to create a driver awareness of the approaching conditions and force vehicles

to reduce speeds. In addition, realigning the 12th Street approaches with Pacific Avenue will improve the sight distance for turning cross-street traffic.

Non-U.S. 101 Locations

Recommended TSP Projects. Two options were evaluated at Oregon 6 and Ocean Place. Currently, there is limited sight distance especially from the north and pedestrians do not have a safe crossing area at this skewed intersection. Making Ocean Place a one-way northbound, north of Oregon 6 and constructing a physical island for a pedestrian refuge along with striped crosswalks is considered a short-term solution because it improves the critical needs at this location. Construction of a roundabout would improve driver expectations at this intersection. This project would require some right-of-way acquisition, therefore, it is recommended only if the other option improves the safety at this location.

The Alder Lane and Dogwood/Cypress Streets intersection is a skewed intersection that would be less confusing to drivers if it were an all-way, stop-controlled intersection. In addition, if the parking area in the intersection were redesigned to not interfere with the intersection operations, the operations and safety at the intersection would improve. The shoulder/crosswalk on the east side of the intersection is also in the travel width, therefore, right-of-way acquisition is recommended to provide a safe pedestrian area especially because this intersection is adjacent to two schools.

While trains at the 12th Street crossing proceed at low speeds, the crossing is adjacent to the high school, therefore, it is considered a high safety priority. It is recommended that ODOT conduct a safety analysis at this location before providing additional safety measures at the crossing.

Other Potential Projects

Maintenance and roadway overlay projects are grouped with other projects where applicable. Stand-alone pavement overlay projects are not addressed because pavement quality changes over time. An annual maintenance budget should address deficient pavement conditions.

Transit and rail projects are not evaluated in the Tillamook TSP because these two project types are not under the city's authority. These projects should be evaluated by the TCTD and the Port of Tillamook Bay.

SECTION 5

Transportation System Plan

Introduction

This section of the TSP document comprises the actual TSP for adoption by the City of Tillamook and acknowledgment by the State of Oregon. The rest of the document provides background documentation for the contents of this section.

This section begins with the TSP goals and objectives and identifies how the TSP meets the goals and objectives. The remainder of this section identifies the transportation projects and policies recommended for implementation during the next 20 years in Tillamook, along with estimated costs and timing.

TSP Goals and Objectives

As described in Section 2, goals and objectives were developed at the beginning of the TSP process. They are intended to provide a framework for the planning process, to represent the values of the city, and be consistent with and supportive of the policies of relevant agencies. The goals and objectives are implemented through the specific projects and policies identified in the TSP. These projects and policies are summarized for each goal and described in this section.

Goal 1: Coordination

Maintain a transportation system plan that is consistent with the goals and objectives of the City of Tillamook, Tillamook County and the state.

Objectives

1. Provide a transportation system that is consistent with other elements and objectives of the *City of Tillamook City Comprehensive Plan* and other policy documents.
2. Ensure consistency with state policies including the OTP and the OHP regarding transportation issues relating to Oregon 6 and U.S. 101.
3. Coordinate with the Port of Tillamook Bay regarding the Tillamook Airport, the Port of Tillamook Bay Industrial Park and the Port of Tillamook Bay shortline railroad.
4. Coordinate land use and transportation decisions to efficiently use public infrastructure investments to:
    a. Maintain the mobility and safety of the roadway system
    b. Foster compact development patterns
    c. Encourage the availability and use of transportation alternatives
    d. Enhance livability and economic competitiveness

5. Establish a local street master plan for the City of Tillamook.

Implementation Strategies

The TSP process has been coordinated with the plans and policies of relevant agencies through the plan and policy review conducted at the beginning of the process and provided in the Background Document, and through meetings of the PAC. The Port of Tillamook Bay staff participated on the PAC and reviewed draft documents. Consistency with relevant sections of the OHP and the TPR are documented throughout the TSP.

Goal 2: Safety

Provide a transportation system that maintains adequate levels of safety for all users.

Objectives

1. Enhance safety at the intersection of Oregon 6 and U.S. 101, and west toward the Hoquarten Slough Bridge.
2. Improve the safety of rail crossings, particularly at 12th Street and 3rd Street.
3. Identify safe connections for vehicles, bicycles and pedestrians across U.S. 101, Oregon 6 and Wilson River Loop.
4. Encourage improvements that minimize the impacts associated with frequent flooding.
5. Develop lifeline and evacuation routes in coordination with local, regional, state and private entities.
6. Undertake, as needed, special traffic studies in problem areas, especially around schools, to determine appropriate traffic controls to effectively and safely manage vehicle and pedestrian traffic.

Implementation Strategies

Numerous safety projects are included in the TSP, based on the review of existing and future conditions and input from the PAC. There are projects in the relevant sections of the TSP that correspond to all of the objectives for this goal.

Goal 3: Livability and Economic Viability

Provide a transportation system that balances transportation system needs with the community desire to maintain a pleasant, economically viable city.

Objectives

1. Minimize adverse social, economic and environmental impacts created by the transportation system, including balancing the need for street connectivity and the need to minimize neighborhood cut-through traffic.
2. Preserve, protect and ensure access to the city's significant natural features and historic sites, including the Pioneer Museum.

3. Improve transportation facilities without major disruption of existing neighborhoods or downtown.
4. Promote pedestrian-oriented design and the provision of pedestrian amenities in the downtown area, such as pedestrian-scale lighting.
5. Ensure adequate vehicle and bicycle parking and parking signage in the downtown commercial area, using techniques such as shared parking areas where appropriate.
6. Minimize traffic congestion in the downtown commercial area.
7. Develop and implement a street tree program, with emphasis on the downtown area.
8. Discourage through-traffic and high speeds in residential areas.

Implementation Strategies

Many of the needs identified in Tillamook relate directly to the issue of balancing the needs of highway traffic with local traffic and other community needs. As a result, the TSP reflects this goal throughout. Changes to the transportation system are focused on improving the existing system rather than creating new routes (with the exception of the street extension projects). The evaluation criteria for individual projects reflect this goal as do the projects included in the TSP.

Goal 4: Circulation and Mobility

Develop an interconnected, multimodal transportation system that serves the travel needs of Tillamook.

Objectives

1. Promote alternatives to ease adverse impacts (congestion, noise, safety) of commercial truck traffic in town.
2. Provide a network of arterials, collectors and local streets that are interconnected, appropriately spaced and reasonably direct.
3. Balance the simultaneous needs to accommodate local traffic and through-travel while incorporating traffic calming provisions.
4. Minimize travel distances and vehicle-miles traveled.
5. Safely, efficiently and economically move motor vehicles, pedestrians, bicyclists, transit, trucks, and trains to and through Tillamook.
6. Encourage development patterns that offer connectivity and mobility options for members of the community.
7. Recognize and balance freight needs with needs for local circulation, safety and access.

Implementation Strategies

Circulation and mobility in Tillamook are addressed in several areas of the TSP. The freight system plan identifies several improvements related to truck traffic in the city, in balance

with other modes and livability issues. Several street extensions, and pedestrian and bicycle improvements are identified to improve connectivity.

Goal 5: Capacity

Provide a transportation system that has sufficient capacity to serve the needs of all users.

Objectives

1. Enhance capacity at the intersection of Oregon 6 and U.S. 101, and west toward the Hoquarten Slough Bridge.
2. Protect capacity on existing and improved roads to provide acceptable service levels to accommodate anticipated demand.
3. Limit access points on highways and major arterials, and use techniques such as alternative access points when possible to protect existing capacity.
4. Minimize direct access points on to arterial rights-of-way.
5. Update and maintain required access management standards for new development and work toward modifications of existing development to preserve the safe and efficient operation of roadways, consistent with functional classification.

Implementation Strategies

Capacity needs in Tillamook were studied as part of the existing and future conditions analysis. Capacity improvements at the Oregon 6 and U.S. 101 intersection are included in the state roadway section of the TSP, as are access management improvements on U.S. 101 north of downtown. City code has been reviewed to identify potential changes to access management provisions.

Goal 6: System Preservation

Work to ensure that development does not preclude the construction of identified future transportation improvements, and that development mitigates the transportation impacts it generates when appropriate.

Objectives

1. Identify and preserve locations for potential future street connections.
2. Require developers to aid in the development of the transportation system by dedicating or reserving needed rights-of-way, by constructing half or full street improvements and by constructing off-street pedestrian, bicycle and transit facilities when appropriate and needed to serve new development.
3. Consider transportation impacts when making land use decisions, and consider land use impacts (in terms of land use patterns, densities, and designated uses) when making transportation-related decisions.
4. Ensure that development does not preclude the construction of identified future transportation improvements.

Implementation Strategies

Several changes to the Tillamook zoning code are recommended to coordinate future development with transportation system needs and to address the potential impacts of development on the transportation system.

Goal 7: Accessibility

Provide a transportation system that serves the needs of all members of the community for all routes and all available modes of transportation.

Objectives

1. Consider the transportation disadvantaged when developing alternatives to meet growing transportation needs.
2. Upgrade existing transportation facilities and work with public transportation providers to provide services that improve access for all users.
3. Develop and maintain travel routes for pedestrians, bicyclists and the physically handicapped.

Implementation Strategies

The TSP has been coordinated with TCTD and includes background information on the existing public transportation system and a description of TCTD's plans for improvements to the system. While no new public transportation facilities are included in the TSP because they are beyond the city's jurisdiction, the many pedestrian, bicycle and trail projects will aid pedestrians, bicyclists and those who use these modes in combination with transit.

Goal 8: Public Transportation

Work to improve cost-effective and safe public transportation through and within Tillamook.

Objectives

1. Work with the TCTD to develop transit systems and stations and related facilities in convenient and appropriate locations that adequately and efficiently serve Tillamook.
2. Work to improve the signage and amenities at transit stops and stations.
3. Work with TCTD to expand transit service as necessary during summer months of peak travel.
4. Provide for the transportation disadvantaged by complying with state and federal regulations and cooperating with the TCTD and other agencies to provide transportation services for the disadvantaged.

Implementation Strategies

The TSP has been coordinated with the TCTD and includes background information on the existing public transportation system and a description of TCTD's plans for improvements to the system. While no new public transportation facilities are included in the TSP because

they are beyond the city's jurisdiction, the many pedestrian, bicycle and trail projects will aid pedestrians, bicyclists and those who use these modes in combination with transit.

Goal 9: Pedestrian and Bicycle Facilities

Provide for an interconnected system of pedestrian and bicycle facilities in Tillamook.

Objectives

1. Ensure and strengthen the presence of safe, attractive and convenient pedestrian and bicycle access to and circulation in the downtown area.
2. Place priority on sidewalk pavement improvements for the downtown area.
3. Preserve and enhance the U.S. 101 coast bicycle route.
4. Work to develop safe, connected pedestrian and bicycle facilities near schools, residential districts and commercial districts.
5. Develop bicycle lanes or shoulder bikeways on all arterial streets, major collectors and minor collectors.
6. Ensure adequate pedestrian access on all streets in commercial zones.
7. Use unused rights-of-way for greenbelts, walking trails or bike paths where appropriate.
8. Promote multimodal connections where appropriate.
9. Develop safe and convenient pedestrian and bicycle systems that link all land uses, provide connections to transit facilities and provide access to publicly owned land intended for general public use.
10. Support and encourage increased levels of bicycling and walking.

Implementation Strategies

Many improvements to the pedestrian and bicycle system are included in the TSP, particularly near pedestrian generators, such as downtown and schools. Trail improvements are included.

Goal 10: Environment

Provide a transportation system that balances transportation facilities and services with the need to protect the environment and significant natural features.

Objectives

1. Promote a transportation system that encourages energy conservation, in terms of efficiency of the roadway network and the standards developed for street improvements.
2. Encourage use of alternative modes of transportation and encourage development that minimizes reliance on the automobile.
3. Minimize transportation impacts on coastal and inland natural resources.

Implementation Strategies

Beneficial environmental impacts will result from the connectivity/mobility projects and from pedestrian, bicycle and trail projects that support the use of non-motorized transportation in the city. Potential adverse environmental impacts were considered and identified through the project evaluation process. Where substantial environmental impacts would result from a proposed project, these are noted. Some projects with substantial impacts were eliminated from further consideration in the evaluation process.

Goal 11: Transportation Funding

Provide reasonable and effective funding mechanisms for city transportation improvements identified in the TSP.

Objectives

1. Develop a financing program that establishes transportation priorities and identifies funding mechanisms for implementation.
2. Develop proposed improvements with sufficient detail to qualify for funding of engineering and construction phases.
3. Develop and implement a transportation impact fee program to collect funds from new developments to be used for off-site and on-site transportation improvements.
4. Identify funding opportunities for a range of projects, and coordinate with county, state and federal agencies.
5. Develop improvements that meet applicable local, county, state and federal plans, standards and criteria.

Implementation Strategies

Section 6 includes the transportation financing plan that addresses this goal.

Transportation System Plan

This subsection identifies the transportation improvements and policies that should be implemented in the next 20 years in Tillamook to improve motor vehicle operations, safety, and pedestrian and bicycle travel. The plan also includes public transportation, rail and water elements. The transportation improvements and policies in this section were included on the basis of the information presented in previous sections of this document, including the analysis of existing and future, forecasted, no-build conditions; the analysis of alternatives and projects; and the selection of a preferred alternative.

The transportation system plan is divided into the following plan elements:

- State Roadway System
- Local Roadway System
- Freight System
- Pedestrian System
- Bicycle System

- Public Transportation
- Rail System

Figure 5-1 shows the locations of the roadway capacity and safety projects included in the TSP.

Because not all of the projects are likely to be funded under existing revenue sources, each project is given a priority in terms of years. The priorities are based on the measures of effectiveness and input from stakeholders, including the PAC. An order-of-magnitude cost also is included for most projects. The list of projects does not represent a financially constrained plan.

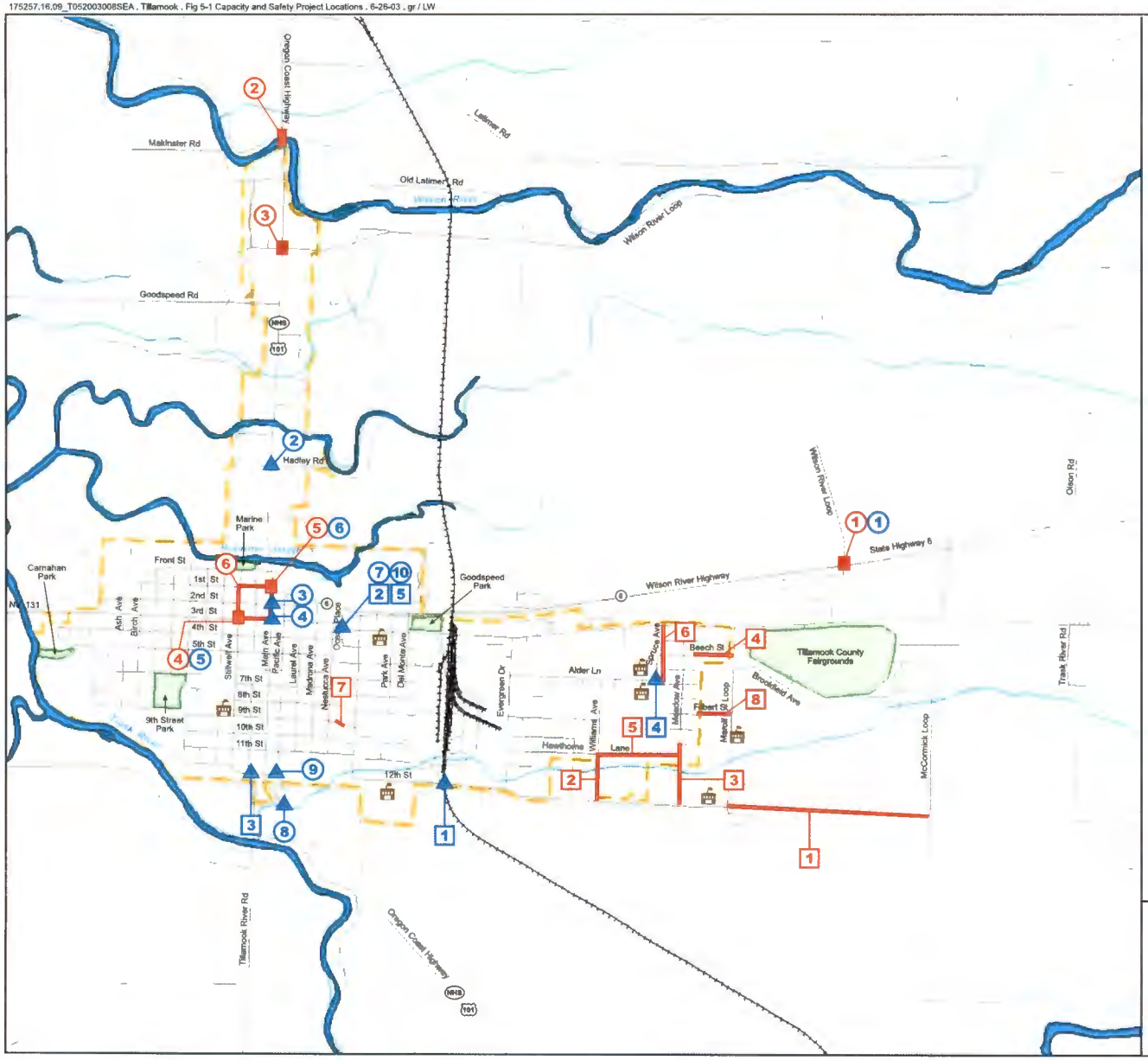
State Roadway System

The state roadway network in Tillamook, which consists of U.S. 101, Oregon 6 and Netarts Highway (131), serves both local and tourist traffic. In this subsection, capacity and safety improvements on U.S. 101 are outlined. This subsection also discusses highway segment designations, planning studies, functional classifications and lifeline routes.

Capacity Improvements

Table 5-1 presents the capacity improvements that are recommended for U.S. 101, Oregon 6 or Netarts Highway (131) in Tillamook. The projects are numbered and shown in Figure 5-1.

175257.16.09_T052003008SEA . Tillamook . Fig 5-1 Capacity and Safety Project Locations . 6-26-03 . gr / LW



City of
TILLAMOOK

CH2MHILL

LEGEND

- State Capacity Improvements
- State Safety Improvements
- Local Capacity Improvements
- Local Safety Improvements
- Road
- Railroad
- School
- Park
- City Limit
- Urban Growth Boundary

NORTH

500 0 500 Feet

Figure 5-1
Capacity and Safety Project Locations
Transportation System Plan
Tillamook, OR

TABLE 5-1
Recommended Capacity Improvements on State Facilities

Project Number	Location and Description	Estimated Cost	Priority (years)
1	Provide grade-separated interchange at Oregon 6 and Wilson River Loop intersection.[1] (Part of Draft 2004–2007 STIP.)	$8,270,000	0-5
2	Widen Wilson River Bridge at U.S. 101. Includes other capacity improvements outside the city's UGB. (Part of current STIP.)	$3,895,000	0-5
3	Provide an eastbound right-turn lane at U.S. 101 and Wilson River Loop intersection (to U.S. 101 southbound) while providing for safe pedestrian and bicycle movements.	$100,000	0-5
4	Install a traffic signal at Netarts Highway (131) (3rd Street) and Stillwell Avenue and provide northbound and southbound left-turn lanes.[1]	$250,000	5-10
5	Construct a pedestrian island that provides a channelized westbound right-turn at U.S. 101 and Oregon 6 intersection, reconstruct northeast corner, provide downstream lane and widen Hoquarten Slough Bridge. Provide signing that yields vehicles to pedestrians crossing the right-turn lane.[1]	$3,000,000	5-10
6	Create a one-way couplet system along 1st Street (westbound) and Netarts Highway (131) (3rd Street) (eastbound) between Stillwell Avenue and U.S. 101 (Main Avenue). Project includes signing, channelization/restriping and intersection signal equipment and timing modifications.[1]	$100,000	5-10

[1] Improvements included in other tables. The costs associated with this project should only be counted once.

It is noted that any modifications to the signing and traffic control on the state system would have to be approved by the State Traffic Engineer.

STIP = Statewide Transportation Improvement Program.

UGB = urban growth boundary.

Safety Improvements

Table 5-2 presents the safety improvements that are recommended for state facilities in Tillamook. The projects are numbered and shown on Figure 5-1.

TABLE 5-2
Recommended Safety Improvements on State Facilities

Project Number	Location and Description	Estimated Cost	Priority (years)
1	Construct Interchange at Wilson River Loop and Oregon 6.[1] (Part of Draft 2004–2007 STIP.)	$8,270,000	0-5
2	Consolidate driveways near intersection of U.S. 101 and Hadley Road and provide a median barrier to restrict the driveways near the intersection to right-in, right-out.	$50,000	0-5
3	Improve driver awareness (bulb-outs, removal of parking, consolidate of driveways) at U.S. 101 (Pacific Avenue) and 3rd Street. Improve signing and striping on the eastbound approach.	$50,000	0-5

TABLE 5-2
Recommended Safety Improvements on State Facilities

Project Number	Location and Description	Estimated Cost	Priority (years)
4	Improve the pedestrian visibility (by treatments such as improved corner bulb-outs with parking removal) at U.S. 101 (Pacific Avenue and Main Avenue) and 2nd Street.	$100,000	0-5
5	Signalize Netarts Highway (131) at Stillwell Avenue.[1]	$250,000	5-10
6	Reconstruct westbound approach at U.S. 101 and Oregon 6 (skewed geometry, potential safety issues with confusing operations) and create one-way couplet to remove eastbound approach.[1]	$3,100,000	5-10
7	Provide a raised island at Ocean Place and 4th and 3rd Streets for a safe pedestrian refuge with marked crosswalks on every approach. Designate Ocean Place between the Oregon 6 couplet as northbound only.	$200,000	5-10
8	Provide a gateway along Pacific Avenue at the south end of the city.	$150,000	10+
9	Realign 12th Street and U.S. 101 (Pacific Avenue).	$250,000	10+
10	Construct a roundabout at Ocean Place and 4th and 3rd Streets, and realign approaches. Provide advanced signing and striping to provide safe operating conditions.	$750,000	10+

[1] Improvements included in other tables. The costs associated with this project should be counted only once.

It is noted that any modifications to the signing and traffic control on the state system would have to be approved by the State Traffic Engineer.

Access Management

Access management improvements to consolidate driveways and provide a median barrier similar to U.S. 101 north of the Wilson River Loop intersection are recommended along U.S. 101, north of Hoquarten Bridge to Wilson River Loop intersection (see Goal 2). Consolidation of driveways should occur with redevelopment. Driveway consolidation and median access control is recommended near U.S. 101 and Hadley Road. Also, access management and the need for a local access road system near Suppress Road should be explored in a refinement study.

To protect transportation facilities and to provide for safe multimodal transportation in the City of Tillamook, several changes have been proposed to the city's ordinances. A new subsection has been added to the city's Zoning Ordinance, Section 22.1, Subsection 17, Access Management. This section provides for the closing or consolidation of access points and provides access spacing options to create walkable and safe pedestrian crossings. Optional language for shared driveways, vertical clearance and fire access has been included in Section 7. The city's existing Zoning Code, Section 22, Site Development Standards, includes a requirement for completion of a traffic impact study. This existing code and the proposed changes help the city to be in compliance with the TPR.

Highway Segment Designation

The OHP provides for special designation of certain highway segments to guide future planning and management decisions, and to balance the needs of through traffic with local traffic and development. The designations, which include STAs, commercial centers, and urban business areas, have specific objectives for access management, automobiles, pedestrian and bicycle accommodation, transit amenities and development. Neither the commercial center nor urban business area designations apply to the City of Tillamook. The STA designation does apply, as outlined below.

The city staff has expressed interest in pursuing an STA designation on a portion of U.S. 101 in Tillamook to better balance the needs of through traffic with local traffic and economic development. An STA designation, if appropriate, would help the city and ODOT address through traffic needs on U.S. 101 while supporting the city's desire to maintain and enhance the downtown area as an aesthetically appealing destination that functions well for pedestrians and bicyclists and is economically vibrant.

The STA designation is a tool developed and supported by the OTC designed to make a downtown district function well when the state highway is also the community's main street. For example, an STA may have special features that result in lower speeds, narrower lane widths and wider sidewalks on the state highway. The STA designation process is currently under review by ODOT. Some designations may require a detailed management plan (as described in OHP Policy 1B.11).

Potential STA Benefits

- Provides greater flexibility for state highway standards, such as highway mobility, street spacing, signal spacing and street treatments. For example, highway mobility standards may allow for more congestion than on other urban highways.
- Receives ODOT approval up front. Addresses exceptions early in the planning process and in writing.
- Provides certainty about how the highway will be managed.

Potential STA Drawbacks

- Criteria and the process are exacting—must be a good fit to the existing city conditions or the city must have future plans that would make it a good fit.
- It is a new program that has not yet been implemented on a statewide highway, such as U.S. 101
- There may be other, easier ways to make the desired changes, including the use of guidelines for downtown areas provided by the 2002 ODOT Highway Design Manual.

Review of STA Characteristics

Table 5-3 provides a preliminary review of STA characteristics as they relate to Tillamook and indicates that the downtown core area of the city on U.S. 101 already has many of the characteristics. The downtown core area is functioning as if an STA were in place: posted speeds are low, lane widths are relatively narrow, sidewalks are as wide as space allows. An

STA designation could help formalize these conditions by putting them in the form of an agreement between ODOT and the city.

Based on this and the city's interest in the STA, an STA designation is recommended for this segment of U.S. 101 between at least 1st Street and 9th Street, and possibly as far south as 12th Street (see Table 5-3). As of October 2003, the ODOT staff has recommended an STA designation in Tillamook on U.S. 101 (Main and Pacific Avenues) from 1st Street to 9th Street. The OTC will be asked to approve this designation in November 2003. If the OTC approves the designation at that time, a refinement study for the STA may not be needed.

TABLE 5-3
Preliminary Review of STA Characteristics as They Relate to Tillamook[1]

STA Characteristic	Is Characteristic Present Today or Likely in Future?	Notes
Location		
Must straddle a state highway; any new development to be built off of the highway or only on one side	Yes	Assuming STA was designated in downtown area.
Cannot be located on a freeway or expressway	Yes	U.S. 101 is a statewide highway and not a freeway or expressway.
Area has a majority, if not all, of STA attributes, either as existing or planned uses and infrastructure through an adopted plan	Maybe	Issues listed as "maybe" in this table would need to be resolved, such as through future development.
STA does not apply to entire city	Yes	Proposed STA area would be in downtown core area, such as 1st Street to 12th Street.
Traffic		
STA located in compact area with local street network to facilitate local auto and pedestrian circulation	Yes	Development in downtown core area is compact and there is a local street network.
Traffic speeds are slow, generally 25 mph or less	Yes	Current posted speed on U.S. 101 in the downtown core area is 20 mph.
Identify strategies for addressing freight and through traffic including speed, possible signalization, parallel or other routes, actions elsewhere in the corridor	Maybe	Would need to study options for parallel or alternative routes to assure adequate traffic capacity (see Freight Needs subsection of TSP).
Design		
In STA area, there are mixed uses; buildings are close together	Yes	The downtown commercial area has mixed uses with buildings close together.
Sidewalks have ample width and are adjacent to highway and buildings	Yes	Most sidewalks have ample width and are adjacent to the highway and buildings in the downtown commercial area.
Public road connections are preferred over private driveways	Maybe	Access management is a key component of an STA. Some driveway closures might be required in the downtown commercial area.
There is on-street parking or else there are shared parking lots located behind or to side of buildings	Yes	On-street parking is present throughout the downtown core area. The TSP includes plans for a parking study and possible additional off-street parking area.
Streets are designed for ease of crossing by	Yes	Improvements proposed in this plan would

TABLE 5-3
Preliminary Review of STA Characteristics as They Relate to Tillamook[1]

STA Characteristic	Is Characteristic Present Today or Likely in Future?	Notes
pedestrians		improve pedestrian crossing conditions.

[1] This table is based on the STA description in the Oregon Highway Plan. As of May 2003, the STA designation process is under review.

STA = special transportation areas.

TSP = transportation system plan.

Planning Studies

During the TSP process, a number of issues were raised for which resolution is beyond the scope of the TSP. Therefore, additional studies that focus solely on the issues/problems identified are recommended. Funding for these projects should be joint agreements between any related agencies. Table 5-4 presents the recommended planning studies for Tillamook.

TABLE 5-4
Recommended Planning Studies

Location and Description	Priority (years)
U.S. 101 Access Management Study	0-5
12th Street Railroad Crossing Safety	0-5
Detailed Large Vehicle Alternate Route Study	0-5
Downtown Parking Study	0-5
STA Management Plan (if needed, depends on ODOT requirements)	0-5
Trail Development Study. Include Phase 2 of Hoquarten Slough Trail.	5-10

STA = special transportation area.

Maintenance/Preservation/Operations

The TSP for Tillamook does not recommend specific maintenance, preservation and operations projects. If a roadway is recommended for other roadway improvements, it may be beneficial to include improvements for maintenance needs at that time. However, some of the projects included in Appendix B include maintenance, preservation or operation components that address existing deficiencies.

Functional Classifications

State Facilities

As discussed in Section 2, ODOT has identified the functional classifications of roadways of statewide significance within the Tillamook city limits. No changes to the functional classifications of the state highways U.S. 101, Oregon 6 and Netarts Highway (131) are recommended:

- U.S. 101 - principal arterial
- Oregon 6 - minor arterial
- Netarts Highway (131) - urban/rural major collector

Lifeline Routes

In the vicinity of Tillamook, several roadways—U.S. 101, Netarts Highway (131), Oregon 6, Latimer Road and Wilson River Loop—are designated as lifeline routes. U.S. 101 (south of Oregon 6), Netarts Highway (131), Latimer Road, Wilson River Loop and Oregon 6 (between U.S. 101 and Wilson River Loop) are designated as Priority 1 lifeline routes, which means they are essential for emergency responses in the first 72 hours after an incident. U.S. 101 (north of Oregon 6) and Oregon 6 (east of Wilson River Loop) are designated as a Priority 2 lifeline routes, which means they are desirable for emergency responses in the first 72 hours after an incident or are routes essential for economic recovery. No changes are recommended to these designations.

Local Roadway System

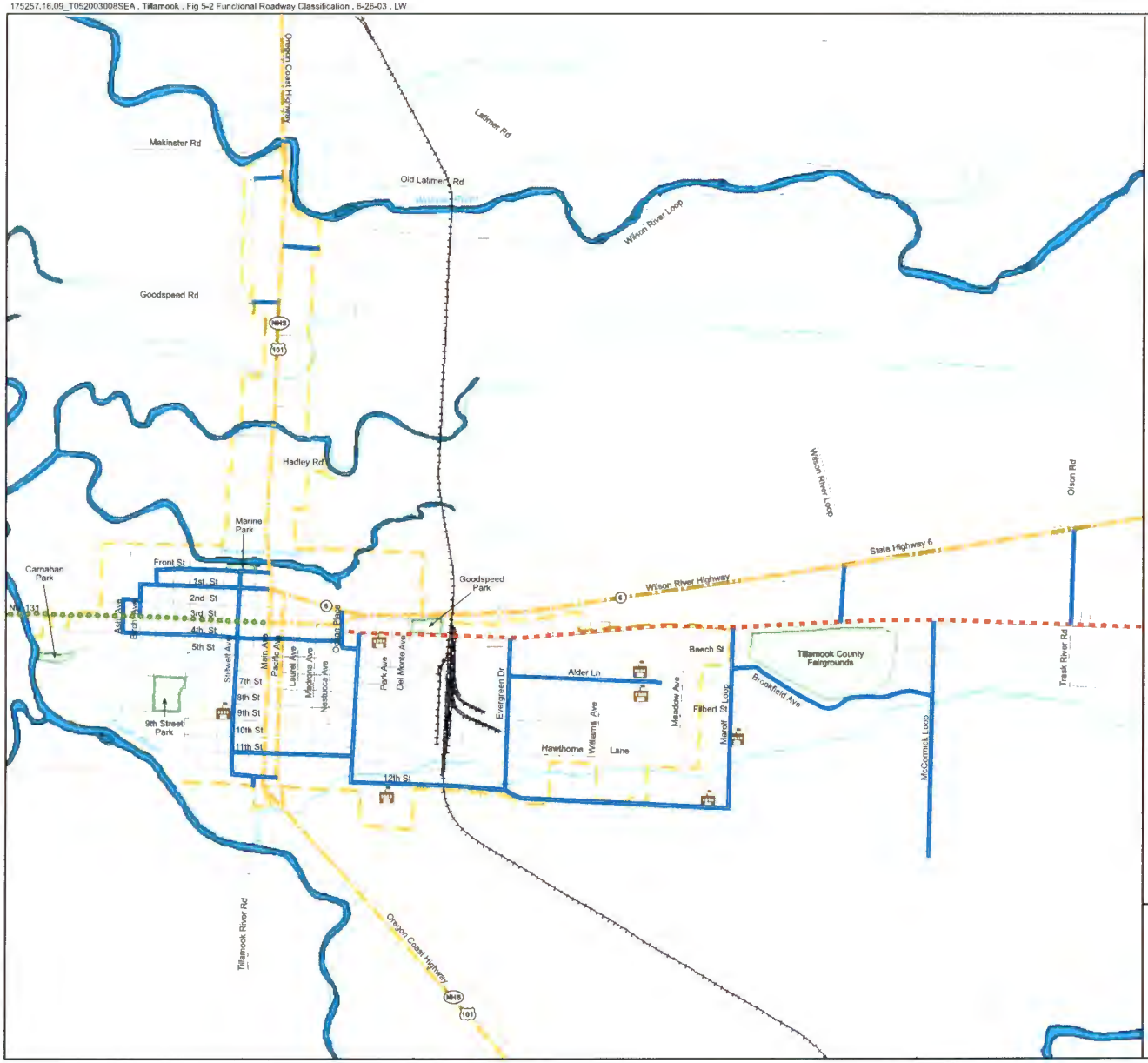
This subsection summarizes the recommended functional classifications for local roads in Tillamook to meet transportation system needs in the 20-year planning horizon. The recommendations in this section were based on input from the PAC, City of Tillamook staff, Tillamook County staff, and the inventory of existing conditions. Coordination between ODOT, the City of Tillamook and Tillamook County will be necessary to implement the functional classification modifications listed in this section. Associated design standards are discussed in the next subsection. The recommended functional classifications for the City of Tillamook are shown in Figure 5-2.

In addition to the recommendations listed in this section, the City of Tillamook, Tillamook County and ODOT should continue to review roadway functional classifications throughout the 20-year horizon and make changes as necessary based on ADT volumes, changes in use or development, pedestrian/bicycle usage, the surrounding road network, speed and access control.

The proper classification of each roadway is important to help determine the appropriate traffic control, design standards, pedestrian and bicycle facilities, and access to adjacent properties for a roadway segment. The following are the functional classification definitions for Tillamook:

- **Arterial Roadways.** The primary function of an arterial roadway is to provide mobility. Therefore, arterials typically carry higher traffic volumes and allow higher travel speeds while providing limited access to adjacent properties.
- **Collector Roadways.** The function of a collector roadway is to collect traffic from local streets and provide connections to arterial roadways. Generally, collectors operate with moderate speeds and provide more access in comparison to arterials.
- **Local Roadways.** The primary function of a local roadway is to provide access to local traffic and route users to collector roadways. Generally, local roadways operate with low speeds, provide limited mobility, and carry low traffic volumes compared with other roadway classifications.

175257.16.09_T052003008SEA . Tillamook . Fig 5-2 Functional Roadway Classification . 6-26-03 . LW



City of
TILLAMOOK

CH2MHILL

LEGEND

- Arterial
- Collector
- State Collector
- State Arterial
- Road
- Railroad
- School
- Park
- City Limit
- Urban Growth Boundary

NORTH

500 0 500 Feet

Figure 5-2
Functional Roadway Classification
Transportation System Plan
Tillamook, OR

Arterials

East of U.S. 101 to the city's UGB, the City of Tillamook and Tillamook County should consider classifying 3rd Street as an arterial. This recommendation is based on the relatively high ADT volumes, relatively high truck volumes, and multimodal use (that is, bicyclists, pedestrians and transit). An arterial functional classification is not recommended for any other roads under city or county jurisdiction. U.S. 101 (Main Street and Pacific Avenue) and Oregon 6 (1st Street and 3rd Street) will continue to function as the city's main streets. These streets are under ODOT jurisdiction and should continue to be classified as arterials as described above. The TSP aims to balance these dual functions through specific project and policies, including streetscape and pedestrian projects and potential STA designation.

Collectors

As shown in Table 5-5, the following roadway facilities should be classified as collectors:

TABLE 5-5
City of Tillamook Roadway Classification System

Road	Segment	Agency Jurisdiction
Olsen/Trask River Road	Oregon 6 to 3rd Street	Tillamook County
Tillamook River Road	City limits to 12th Street	Tillamook County
Wilson River Loop	U.S. 101 to city limits, Oregon 6 to 3rd Street	Tillamook County
12th Street	Stillwell Avenue to Marolf Loop	Tillamook County and City of Tillamook
Marolf Loop	Entire Length	Tillamook County
McCormick Loop	3rd Street to city limits	Tillamook County
Brookfield Avenue	Entire Length	Tillamook County, City of Tillamook, and Private
Evergreen Drive	North of Oregon 6	Tillamook County
Goodspeed Road	U.S. 101 to city Limits	Tillamook County
Makinster Road	U.S. 101 to city Limits	Tillamook County
Stillwell Avenue	Front Street to 12th Street	City of Tillamook
Alder Lane	Evergreen Drive to Dogwood/Cypress Street	City of Tillamook
Evergreen Drive	12th Street to 3rd Street	City of Tillamook
1st Street	Birch Avenue to U.S. 101	City of Tillamook
2nd Street	Ash Avenue and Birch Avenue	City of Tillamook
Ash Avenue	2nd Street to 4th Street	City of Tillamook
Front Street	Cedar Avenue to U.S. 101	City of Tillamook
Miller Avenue	3rd Street to 12th Street	City of Tillamook
4th Street	Ash Avenue to Miller Avenue	City of Tillamook
10th Street	U.S. 101 to Miller Avenue	City of Tillamook
11th Street	Stillwell Avenue to Miller Avenue	City of Tillamook
Ocean Place	4th Street to Oregon 6	City of Tillamook
Cedar Avenue	Front Street to 1st Street	City of Tillamook
Birch Avenue	1st Street to 3rd Street	City of Tillamook

ODOT currently classifies Williams Avenue as a collector. Based on a review of existing and future conditions, ODOT should consider re-classifying Williams Avenue as a local street. Williams Avenue is a very low volume road in a residential grid network and is misrepresented on ODOT mapping. On the ODOT mapping Williams Avenue is shown as extending from 3rd Street to 12th Street, when it actually only is between Alder Lane and Hawthorne Lane.

Any new roads or extensions that are constructed within the City of Tillamook, as listed in Table 5-6, should be classified based upon the ADT and usage by pedestrians, bicycles, and trucks. Many of the proposed extensions are expected to carry through traffic in addition to local traffic, which would likely lead to a collector functional classification.

Local

All city roadway facilities not listed above are recommended to be classified as local roads.

Roadway Design Standards

City and County Facilities

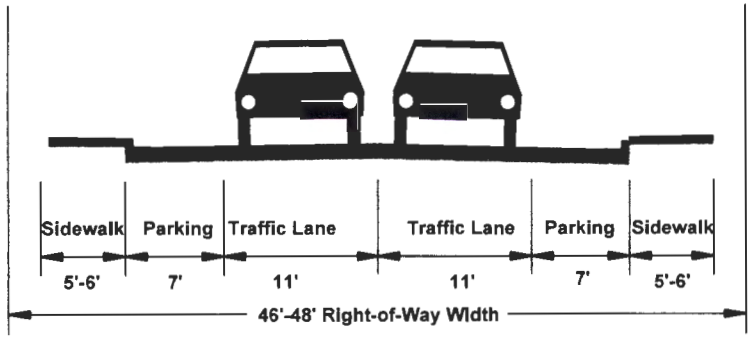
Roadway design standards were developed for each functional classification for city facilities. Each functional classification requires different design standards based on the operating conditions (volumes, access management, speeds) and users (bicyclists, pedestrians, motorists) of the roadway. The design standards are not intended to require the city to update and retrofit current roadways to new standards, but should be applied during future development. See Figures 5-3, 5-3A and 5-4 for proposed roadway standards on arterial, collector and local roadways.

Urban Growth Management Agreement

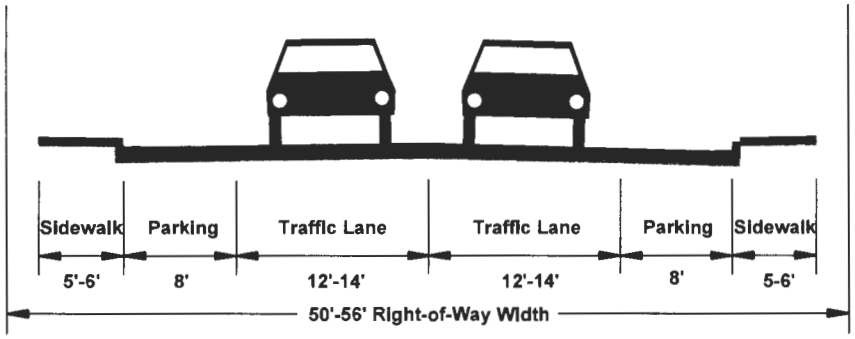
City standards generally apply to county roadways in the city limits and within the UGB. Tillamook County and the seven incorporated cities in the county (including Tillamook) have adopted Urban Growth Management Agreements (UGMAs) with each other. The purpose of the agreements is to provide for coordination of services in the city-county mutual interest area, defined as lands that are outside of the city limits, but within the city's UGB. By definition, these lands are determined to be necessary and suitable for future urban development. The UGMA requires that the city and county coordinate with each other regarding major transportation improvement projects, county road vacations, extensions of city services and annexations. The UGMA also recommends that the city and county consider the possibility of developing a common set of road, street and storm drainage standards to be used in the mutual interest area.

State Facilities

Roadway design standards were not developed for state facilities. Applicable standards on state roads are provided in the ODOT Design Manual.



2-Lane Arterial Road (U.S. 101 Downtown - Main Avenue)[1]



2-Lane Arterial Road (U.S. 101 Downtown - Pacific Avenue)

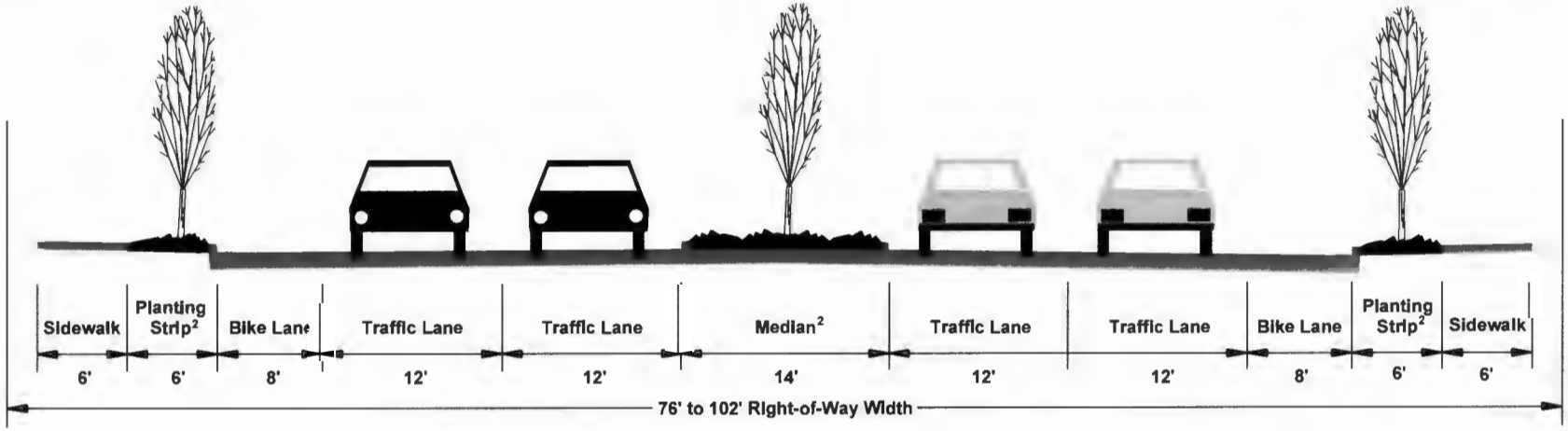
Notes:

[1] Widths are less than ODOT standards due to existing developement built at the edge of the roadway.

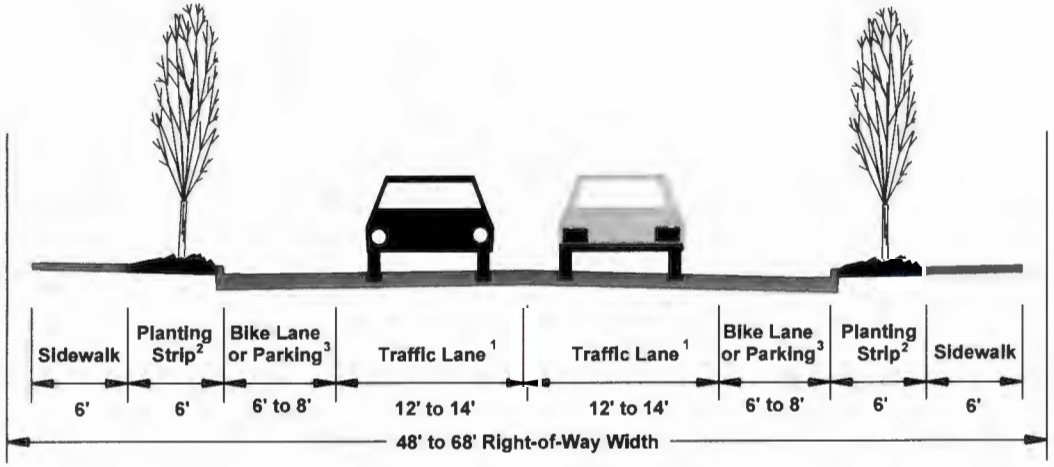
Figure 5-3

Roadway Cross Sections

Tillamook Transportation System Plan



4-Lane Arterial Road (U.S. 101 North of Downtown)



Collector Road

Notes:

[1] Where parking is constructed next to a travel lane, the travel lane width shall be increased to 14' to function as a shared roadway and accommodate bikes.

[2] Optional Feature

[3] Width for parking shall be 8' wide. Width for bike lane shall be 6' wide.

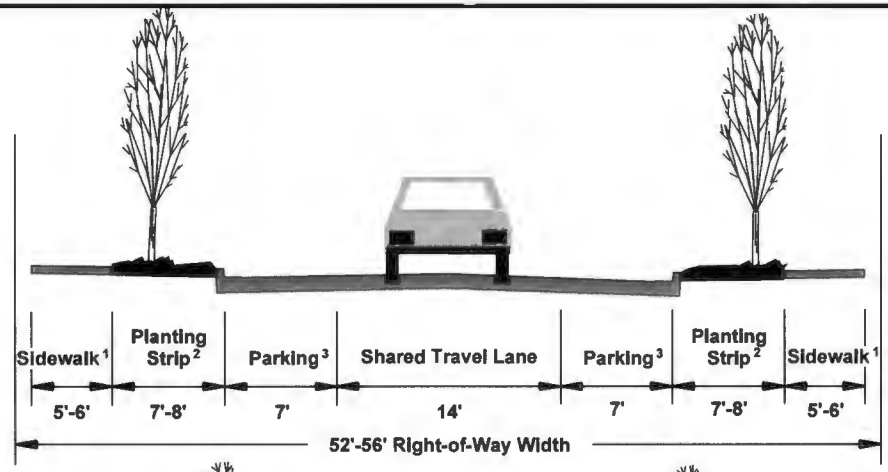
Figure 5-3A

Roadway Cross Sections

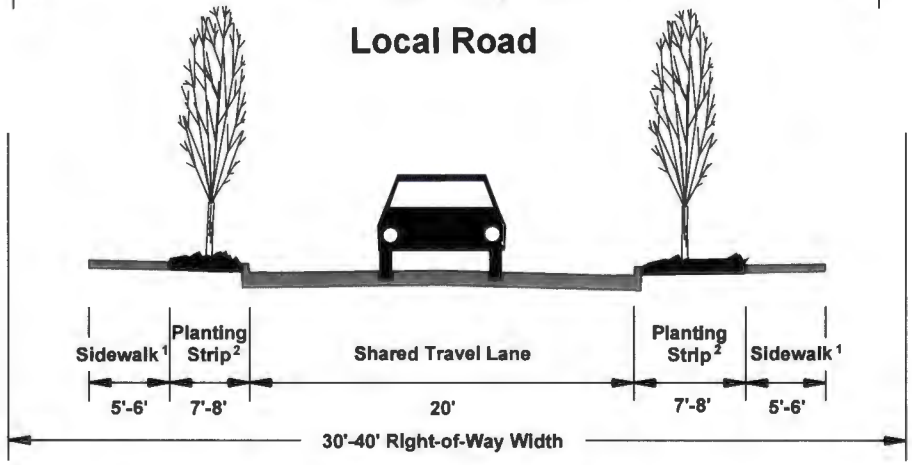
Tillamook Transportation System Plan

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Local Road



Alternative Local Road[4]

Notes:

[1] If sidewalks are not provided, a separated pedestrian walkway (eg. crushed aggregate separated by curb stops) is required on at least one side of the street.

[2] Optional Feature

[3] Where appropriate, parking may be provided on one side only, for a paved width of 24' (7' parking + 17' travel lane).

[4] The alternative local road standard may be used when approved by the City of Tillamook. The standard is intended to apply under one of the following circumstances:

1. The local road will serve 18 or fewer dwelling units upon buildout of adjacent property.
2. The ADT volume of the road is less than 250 vehicles/day.
3. Significant topographical or environmental constraints are present.

The alternative local road standard may be used provided:

A. Use of the alternative local road standard will not create gaps in connectivity or roadway standards with adjacent roadway sections (i.e. sidewalk, parking, travel lane widths).
B. The City of Tillamook and Emergency Service Providers have reviewed and accepted usage of the alternative local roadway standard.

Figure 5-4

Roadway Cross Sections

Tillamook Transportation System Plan

Capacity Improvements

Table 5-6 presents the capacity and widening improvements that are recommended for local facilities in Tillamook. The projects are numbered and shown in Figure 5-1. Many of the road extensions are dependent on development. If development occurs, then agreements with the developers should be required to construct these extensions.

TABLE 5-6
Capacity and Widening Improvements on Local Facilities

Project Number	Location and Description	Estimated Cost	Priority (years)
1	Extend 12th Street to McCormick Loop	$1,500,000	0-5
2	Extend Williams Avenue south to 12th Street	$275,000	0-5
3	Extend Meadow Avenue to 12th Street	$500,000	5-10
4	Extend Beech Street to Marolf Loop	$120,000	5-10
5	Extend Hawthorne Lane between Meadow and Williams Avenues	$1,100,000	5-10
6	Designate Spruce Avenue as a public road and remove the barriers at Apple and Beech Streets. Connect Spruce to Cypress to complete roadway grid system	$150,000	5-10
7	9th Street, cul-de-sac one side of the park and add parking on the other side	$100,000	5-10
8	Extend Filbert Street to Marolf Loop	$225,000	10+

Safety Improvements

Table 5-7 presents the safety improvements that are recommended for local facilities in Tillamook. The projects are numbered and shown in Figure 5-1.

TABLE 5-7
Recommended Safety Improvements on Local Facilities

Project Number	Location and Description	Estimated Cost	Priority (years)
1	Upgrade 12th Street railroad crossing with safety measures, such as gate and flashing lights. First step would be study by ODOT rail.	$250,000	0-5
2	On Ocean Place at 4th and 3rd Streets provide a raised island for a safe pedestrian refuge with marked crosswalks on every approach. Designate Ocean Place between the Oregon 6 couplet as northbound only.[1]	$200,000	0-5
3	12th Street and Tillamook River Road—relocate stop bar to provide better sight distance	$5,000	0-5
4	Redesign the intersection at Alder Lane and Dogwood and Cypress Streets to remove the parking area (or revise to not interfere with intersection operations), provide all-way, stop-controlled intersection. Provide shoulder along eastside of intersection for pedestrians and revise crosswalk locations.	$100,000	5-10

TABLE 5-7
Recommended Safety Improvements on Local Facilities

Project Number	Location and Description	Estimated Cost	Priority (years)
5	Construct a roundabout on Ocean Place at 4th and 3rd Streets, and realign the approaches. Provide advanced signing and striping to provide safe operating conditions.[1]	$750,000	10+

[1] Improvements are included in other tables. The costs associated with this project should be counted only once.

ODOT = Oregon Department of Transportation.

Parking Improvements

Table 5-8 presents the parking improvements that are recommended for Tillamook.

TABLE 5-8
Parking Improvements

Project Number	Location and Description	Estimated Cost	Priority (years)
1	Provide signing along U.S. 101 to off-street lots off U.S. 101	$5,000	0-5
2	Conduct parking study to understand parking use at various times during the year.	$50,000	0-5

Freight System

As part of the TSP process, City of Tillamook and Tillamook County staffs identified the need and desire to minimize the impacts of local and through freight truck traffic and large recreational vehicles in the City of Tillamook downtown commercial area and in residential neighborhoods in the city. Because of the complex nature of this problem, specific solutions are not recommended in the TSP. Several potential solutions are identified and discussed in the large vehicle alternate route study in Appendix C.

For the purposes of the TSP, the following additional study is recommended:

- Detailed Large Vehicle Alternate Route Study: Several specific recommendations for this study are identified in Appendix C. In summary, the detailed study would take the preliminary work from the large vehicle alternate route study done for the TSP and develop further detail, with a focus on cost-effective solutions that are most likely to be used (for example, minimize out-of-direction travel or trip time). It would also include an internal circulation study at the Tillamook Lumber Company mill site. This study would identify opportunities and constraints for changing circulation patterns at the mill to improve overall truck routing.

After completion of this refinement study, the priorities of projects included in the City of Tillamook TSP may shift, as many of the potential solutions include improvements on state and county facilities.

Pedestrian and Bicycle Systems

Table 5-9 displays the recommended pedestrian facility improvements along existing streets and roads in Tillamook for the next 20 years. Each of these projects is shown in Figure 5-5. If the project is only a pedestrian or bicycle project, it is denoted with a "P" or "B", respectively. If the project is a pedestrian and a bicycle project, then it is denoted with a "PB".

TABLE 5-9
Pedestrian and Bicycle System Improvements

Project Number	Project Type	Location and Description	Estimated Cost	Priority (years)
1	P	Downtown sidewalk construction/replacement from Hoquarten Slough to 4th Street. Includes bulb-outs at 2nd, 3rd and 4th Streets. This is Phase 1 of the transportation enhancement project.	$450,000	0-5
2	PB	Construct sidewalk on 12th Street, east of the high school to Marolf Loop, repave from Miller Avenue to Marolf Loop. Provide adequate width along 12th Street from high school to Marolf Loop for shared roadway designation.[1]	$1,400,000	0-5
3	B	Provide adequate bike lane width and sidewalk and repave Alder Lane between Evergreen Drive and the Cypress/Dogwood intersection[1]	$740,000	0-5
4	PB	Develop Phase 1 of the Hoquarten Slough Trail along the south side of Hoquarten Slough for approximately 1,000 feet. Connect parks along the slough and proposed Stillwell Avenue bike route. This is a current project of the Tillamook County estuary organization.	$100,000	0-5
5	PB	Create trail plan to assess roadway connectivity and off-street trails projects. Include the development of Hoquarten Slough Trail Phase 2.	$50,000	5-10
6	PB	Construct bike lanes and sidewalk on 3rd Street, east of Evergreen Drive to Trask River Road, repave roadway from Nestucca Avenue to the city UGB. Provide marked crosswalks near the Tillamook County Fairgrounds with pedestrian area warning signs. Restripe crosswalks near Wilson Elementary/ Goodspeed Park area on 3rd Street. Retrofit ramps along 3rd Street to ADA compliance near Goodspeed Park and Wilson School.[1]	$2,850,000	5-10

TABLE 5-9
Pedestrian and Bicycle System Improvements

Project Number	Project Type	Location and Description	Estimated Cost	Priority (years)
7	B	Provide bike route from Evergreen Drive to Trask River Bridge. **Eastbound:** Enter city on 3rd Street, south onto Ash Avenue, east on 4th Street, north on Ocean Place, east on 3rd Street. Would require bike lanes on 3rd Street to Ash Avenue, to shared roadway on Ash Avenue, 4th Street and Ocean Place. **Westbound**: On 3rd Street from Evergreen Drive, north on Ocean Place, west on Oregon 6 (1st Street), cross U.S. 101, south on Birch Avenue, west on 2nd Street, south on Ash Avenue, west on 3rd Street. Provide bike lanes on 3rd Street and Oregon 6. All other roads are shared roadway designation. Bike lanes on Oregon 6 can be provided with striping modifications. Bike lanes on 3rd Street west of Ash Avenue will require removal of parking on one side of road. Requires advanced signing on U.S. 101 and 3rd Street. Complete sidewalk on 3rd Street, west of Ash Avenue.[1]	$50,000	5-10
8	PB	Create a bicycle bypass in downtown area along Stillwell Avenue, create bike lane connections with U.S. 101 along Front Street and 11th Street. Provide advanced signing. Remove parking on one side of road to provide bike lanes. Coordinate with Hoquarten Slough Trail. Might require undercrossing with U.S. 101 at Front Street. Additional study required. Complete sidewalk system on Stillwell Avenue, Front to 1st Streets and 11th to 12th Streets. Construct ADA ramps along Stillwell Avenue near Liberty Elementary School (7th and 8th Street crossings). Restripe crosswalks along Stillwell Avenue.[1]	$1,800,000	5-10
9	P	Downtown sidewalk construction/replacement from 4th to 12th Street. Includes bulb-outs at 9th and 11th Streets. This is Phase 2 for the transportation enhancement project.	$900,000	5-10
10	PB	Construct sidewalk and bike lanes on Evergreen Drive. Repave road with asphalt.[1]	$790,000	5-10
11	P	Provide ADA-compliant ramps along Miller Avenue. Provide painted crosswalks along Miller Avenue	$30,000	5-10
12	P	Construct ADA-compliant ramps along 10th Street. (Currently ramps exist only at Stillwell Avenue and U.S. 101 intersections)	$25,000	5-10
13	PB	Provide bicycle parking in downtown Tillamook. Benches, drinking fountains, trash receptacles, and informational signage or historical kiosks are recommended	$50,000	5-10
14	B	Provide bicycle parking at sport fields on Alder Lane	$1,000	5-10
15	B	Provide bicycle parking at Tillamook County Fairgrounds	$1,000	5-10
16	B	Provide bicycle parking at TCTD, 2nd and Laurel Avenue, transit center	$1,000	5-10
17	B	Provide bicycle parking at hospital	$1,000	5-10
18	B	Provide bicycle parking at Goodspeed Park	$1,000	5-10

TABLE 5-9
Pedestrian and Bicycle System Improvements

Project Number	Project Type	Location and Description	Estimated Cost	Priority (years)
19	B	Provide bicycle parking at 9th Street Park	$1,000	5-10
20	B	Provide bicycle parking at Carnahan Park	$1,000	5-10
21	PB	Provide adequate shoulder on Brookfield Avenue. Road may need to be acquired by city.[1]	$220,000	10+
22	PB	Provide adequate shoulder on McCormick Loop for shared roadway designation, repave road at south end.[1]	$250,000	10+
23	PB	Provide adequate shoulder on Marolf Loop for shared roadway designation, repave road, add sidewalk.[1]	$250,000	10+
24	P	Construct sidewalk along 4th Street from Nestucca to Miller Avenues. Contingent on development.	$60,000	10+
25	P	Provide sidewalk on north side of 11th Street between Stillwell Avenue and U.S. 101, retrofit south side sidewalk, overlay roadway between Stillwell and Miller Avenues	$130,000	10+

[1] Project is a joint pedestrian/bicycle improvement and appears on Table 5-11, as well. The cost should be accounted for in one table only.

ADA = Americans with Disabilities Act.

TCTD = Tillamook County Transportation District.

UGB = urban growth boundary.

The cost associated with the sidewalk improvements is for both sides of the road. It is expected that with limited funds, the sidewalk projects may be phased over time and begin with construction sidewalk on one side only. This would reduce costs dramatically because right-of-way impacts could be significantly or altogether avoided.

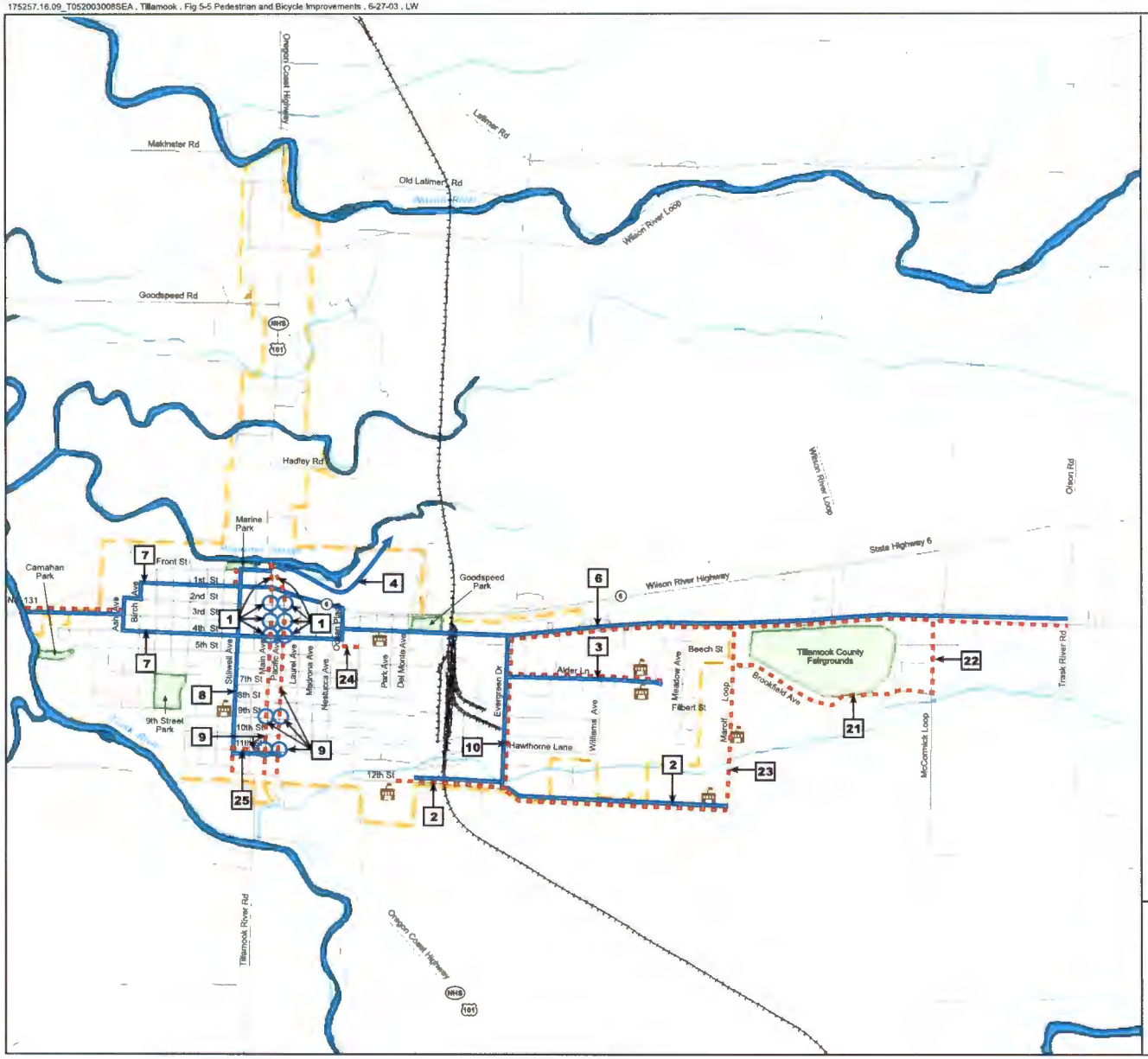
Pedestrian System Improvements

The Tillamook pedestrian system can be characterized as comprehensive in some areas of the city and lacking in some areas east of the downtown. Gaps in pedestrian connectivity exist in the residential areas. Also, the high number of private accesses and conflict opportunities are barriers to continuous, connected pedestrian facilities in certain areas of Tillamook. ADA compliance also is an important component of the Tillamook TSP.

Sidewalks

Existing sidewalk is generally located in all areas except in the east area of the city. Including Evergreen Drive, roads to the east either provide a narrow shoulder or have no pedestrian facilities. Sidewalk condition varies, with most areas exhibiting old, cracked sidewalk. In newer areas of the city, where development has occurred recently, the sidewalk is in good condition. This is noticeable in the commercial area along U.S. 101 to the north. In most areas, the sidewalk does not comply with ADA ramping and width requirements.

175257.16.09_T052003008SEA . Tillamook . Fig 5-5 Pedestrian and Bicycle Improvements . 6-27-03 . LW



City of
TILLAMOOK

CH2MHILL

LEGEND

- Bicycle/Trail Improvements
- Sidewalk/Shoulder Improvements (ROW Widening in Some Cases)
- Crosswalks/Intersections Improvements
- Road
- Railroad
- School
- Park
- City Limit
- Urban Growth Boundary

Note: Projects that include bicycle and sidewalk improvements include both designations.

NORTH

500 0 500 Feet

Figure 5-5
Pedestrian and Bicycle Improvements
Transportation System Plan
Tillamook, OR

To provide a network of safe and connected facilities that will promote a balanced transportation system, sidewalk improvements have been identified. Particular focus is placed on increasing pedestrian safety by installing new sidewalks in areas frequently used by pedestrians. Where sidewalks do not exist and where it is not feasible to build them, shoulder widening is recommended.

Crosswalks

To assist pedestrians in crossing busy roadways and improve pedestrian safety, marked crosswalks and pedestrian warning signage should be installed at several locations: near Tillamook schools, the hospital, Tillamook County Fairgrounds, any parks and along U.S. 101.

Pedestrian Standards and Policies

To enhance pedestrian safety, circulation and connectivity, and to comply with the TPR, several changes have been proposed to the Zoning Ordinance in Tillamook. Much of the pending language for inclusion in the Zoning Ordinance that supports pedestrian safety and circulation (such as access management and access spacing) has been recommended for adoption. The proposed code changes also address pedestrian access, requiring construction of pathways when street connections are not feasible. The new street cross sections, recommended for adoption into the city's *Design Standards and Details* document, reflect new street design standards, which require sidewalks along all new arterials and collectors as well as providing for either a sidewalk or a 5-foot-wide shoulder along new local streets. Optional planting strips can serve to buffer pedestrians from automobile traffic. These new standards and policies encourage pedestrian trips because they facilitate safe, direct and convenient access to local destinations. See Section 7 for detailed information on recommended amendments to the city's ordinances.

Pedestrian System Plan

Pedestrian activity in Tillamook is concentrated in the downtown area, the residential areas east and west of downtown, and the commercial area north of downtown. The focus of the pedestrian system element of the TSP is to improve connections in the community and enhance pedestrian access to Tillamook's recreational features.

Providing a connected network of pedestrian facilities in Tillamook is important to:

- Serve shorter pedestrian trips from neighborhoods to area recreational and activity centers, such as schools
- Provide access to public transit
- Meet residents' and visitors' recreational needs
- Provide circulation in the downtown area

To meet specific goals and objectives identified in this TSP, the city will encourage walking as a means of transportation by addressing the following:

- **Connectivity.** The city will work to develop a connected network of pedestrian facilities. Connected networks are important to provide continuity between communities and to improve safety.
- **Safety.** The city will work to provide a secure walking environment. For residents to use the pedestrian system, it must be perceived as safe.
- **Design.** The city can ensure pedestrian-oriented design by adopting policies and development standards that integrate pedestrian scale, facilities, access and circulation into the design of residential, commercial and industrial projects.

The pedestrian system plan identifies system and facility improvements that will contribute to a safe and well-connected pedestrian environment. The system will promote walking as a viable transportation mode and address needs of the transportation disadvantaged. Figure 5-6 shows the pedestrian system on the city's arterial and collector system. (A pedestrian facility inventory on local streets was beyond the scope of the TSP.)

Bicycle System Improvements

The Oregon Coast Bike Route passes through Tillamook along U.S. 101 and uses marked bike lanes or shoulders that are 3 feet wide or wider and are marked with signage.

The remainder of the Tillamook bicycle system generally consists of either shared roadways (particularly on local roads) or shoulder bikeways and are characterized by good pavement condition. Aside from the Oregon Coast Bike Route, most bikeways are not marked with bicycle signage. The bicycle system lacks facilities in Tillamook. The current designated roads, such as Alder Lane, are characterized by low visibility pavement markings, small travel width and a multitude of various vehicles types that can cause barriers or hazards for bicyclists.

Bikeways and Trails

To promote safe and convenient bicycle links between commercial, recreational and other land uses, improvements to the bicycle system have been identified. Further, to better enhance the downtown area and connect bicycle traffic with parks and the designated bicycle routes, a bicycle trail along the south side of Hoquarten Slough has been identified as a high priority project. This project is being studied by the Tillamook County estuary organization. To further enhance the trail system, a study that examines opportunities to develop trails east and north of the city should be conducted.

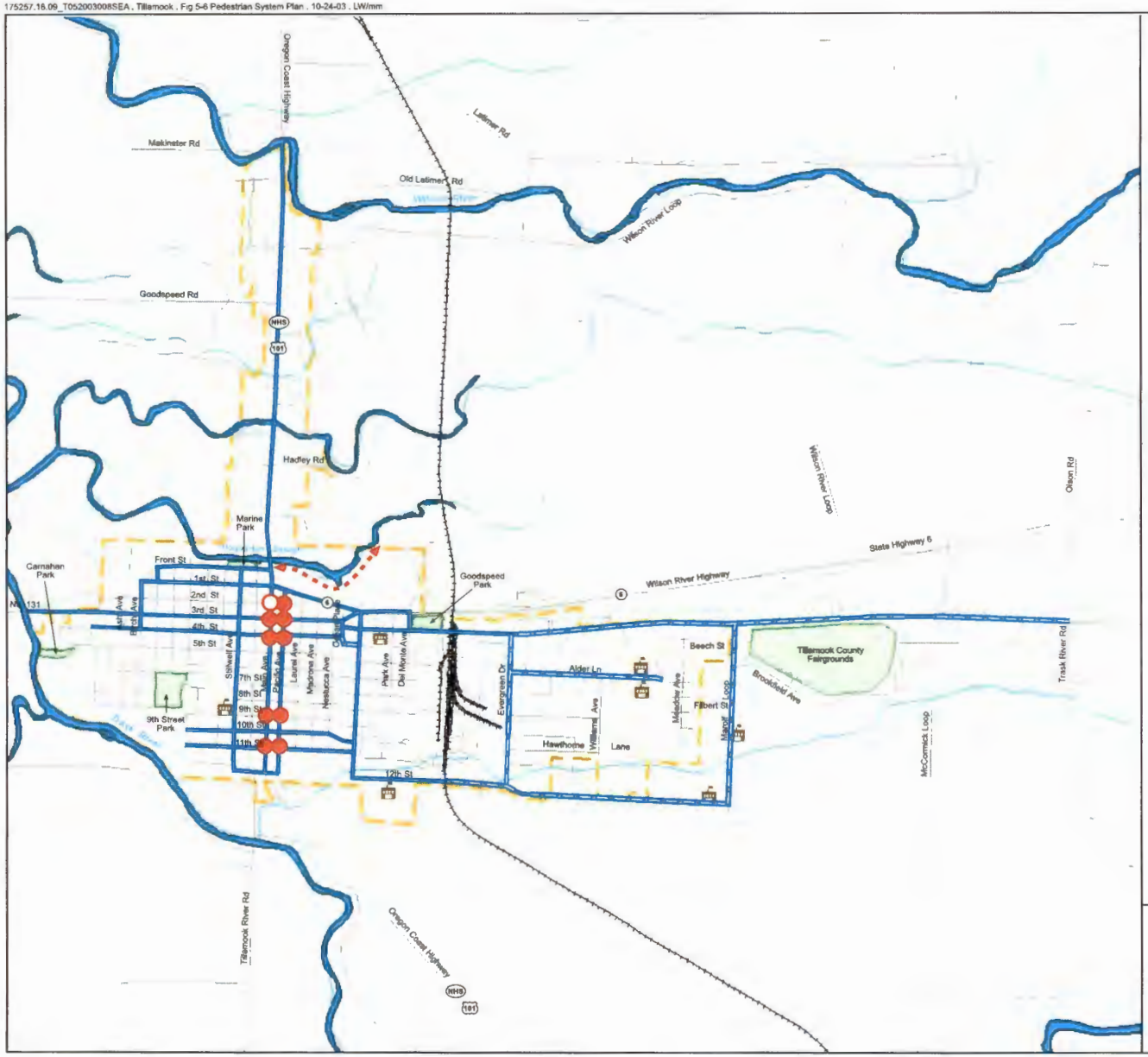
Signage

To promote safety and awareness of bicyclists where they share facilities with pedestrian and vehicular traffic, designation signage is recommended along U.S. 101, Oregon 6 and Netarts Highway (131).

Bicycle Parking

To comply with the standards stated in the OBPP, bicycle parking will be installed at community activity centers, such as the transit center, various schools and parks in Tillamook, the Tillamook County Fairgrounds, downtown area and hospital. Refer to Table 5-10 for the list of bicycle parking locations.

175257.16.09_T052003008SEA , Tillamook , Fig 5-6 Pedestrian System Plan , 10-24-03 , LW/mm



City of TILLAMOOK

CH2MHILL

LEGEND

- Existing Intersection Bulb-Outs
- Proposed Intersection Bulb-Outs
- Proposed Trail
- Existing Sidewalk
- Proposed Sidewalk
- Road
- Railroad
- School
- Park
- City Limit
- Urban Growth Boundary

Note: This figure only includes pedestrian facilities on arterial and collector streets. Pedestrian facilities on local streets are not shown.

Sidewalks may only be available on one side of the road for some segments currently labeled with sidewalks. All of these locations are proposed to have sidewalks constructed along both sides. Figure 2-7 identifies these locations in detail.

NORTH

500 0 500 Feet

Figure 5-6
Pedestrian System Plan

Transportation System Plan
Tillamook, OR

Bicycle Standards and Policies

To enhance bicycle safety, circulation and connectivity, and to comply with the TPR, several changes have been proposed to the city's Zoning Ordinance. Recommendations have been made to include bicycle parking standards in the Zoning Ordinance and to adopt new street cross sections. The new street cross sections, recommended for adoption into the city's *Design Standards and Details* documents, reflect new design standards, which require bikeways on arterials and provide options for their construction on collector streets constructed in the city. The proposed changes also address bicycle access and circulation, requiring construction of multi-use pathways when street connections are not feasible. These new standards and policies encourage bicycle trips because they facilitate direct, safe and convenient access to local destinations. See Section 7 for detailed information on recommended amendments to the city's ordinances.

Bicycle System Plan

Bicycle travel offers commuters, children and others an important option for transportation and is a transportation choice for people who do not own vehicles. Cycling is also an important recreational option, especially in scenic areas of Oregon such as Tillamook.

This bicycle system element of the TSP establishes a network of bicycle lanes and routes throughout Tillamook, to connect trip generators and provide a safe, interconnected bicycle system. While all roadways and streets can be used as bikeways, designated routes along bicycle streets and roads and/or separated bicycle lanes on busy streets can improve safety as well as increase bicycle use.

Figure 5-7 illustrates the bicycle plan for Tillamook. It includes shared roadways, shoulder bikeways, bicycle lanes, and designated bike routes. Table 5-10 describes Tillamook's designated bicycle routes and labels them as city or state facilities. Projects to improve the bicycle system are listed with the pedestrian system improvements in Table 5-9.

TABLE 5-10
Tillamook Designated Bicycle Routes

Bike Facility Name	Between		Management
U.S. 101	North city limits	Oregon 6	ODOT
U.S. 101	12th Street	South city limits	ODOT
Stillwell Avenue	Front Street	12th Street	City
Front Street	Stillwell Avenue	U.S. 101	City
Oregon 6	East city limits	U.S. 101	ODOT
First Street	U.S. 101	Birch Avenue	City
Birch Avenue	1st Street	2nd Street	City
2nd Street	Birch Avenue	Ash Avenue	City
Ash Avenue	2nd Street	4th Street	City
Netarts Highway (131) (3rd Street)	Ash Avenue	West city limits	ODOT
4th Street	Ash Avenue	Ocean Place	City
Ocean Place	4th Street	Oregon 6	City
3rd Street	Ocean Place	McCormick Loop	City/County

TABLE 5-10
Tillamook Designated Bicycle Routes

Bike Facility Name	Between		Management
12th Street	Miller Avenue	Marolf Loop	City/County
Miler Avenue	3rd Street	12th Street	City
Evergreen Drive	3rd Street	12th Street	City
Alder Lane	Evergreen Drive	Dogwood Street	City
11th Street	Stillwell Avenue	Miller Avenue	City
Marolf Loop	3rd Street	12th Street	City/County
McCormick Loop	3rd Street	South city limits	City/County

ODOT = Oregon Department of Transportation.

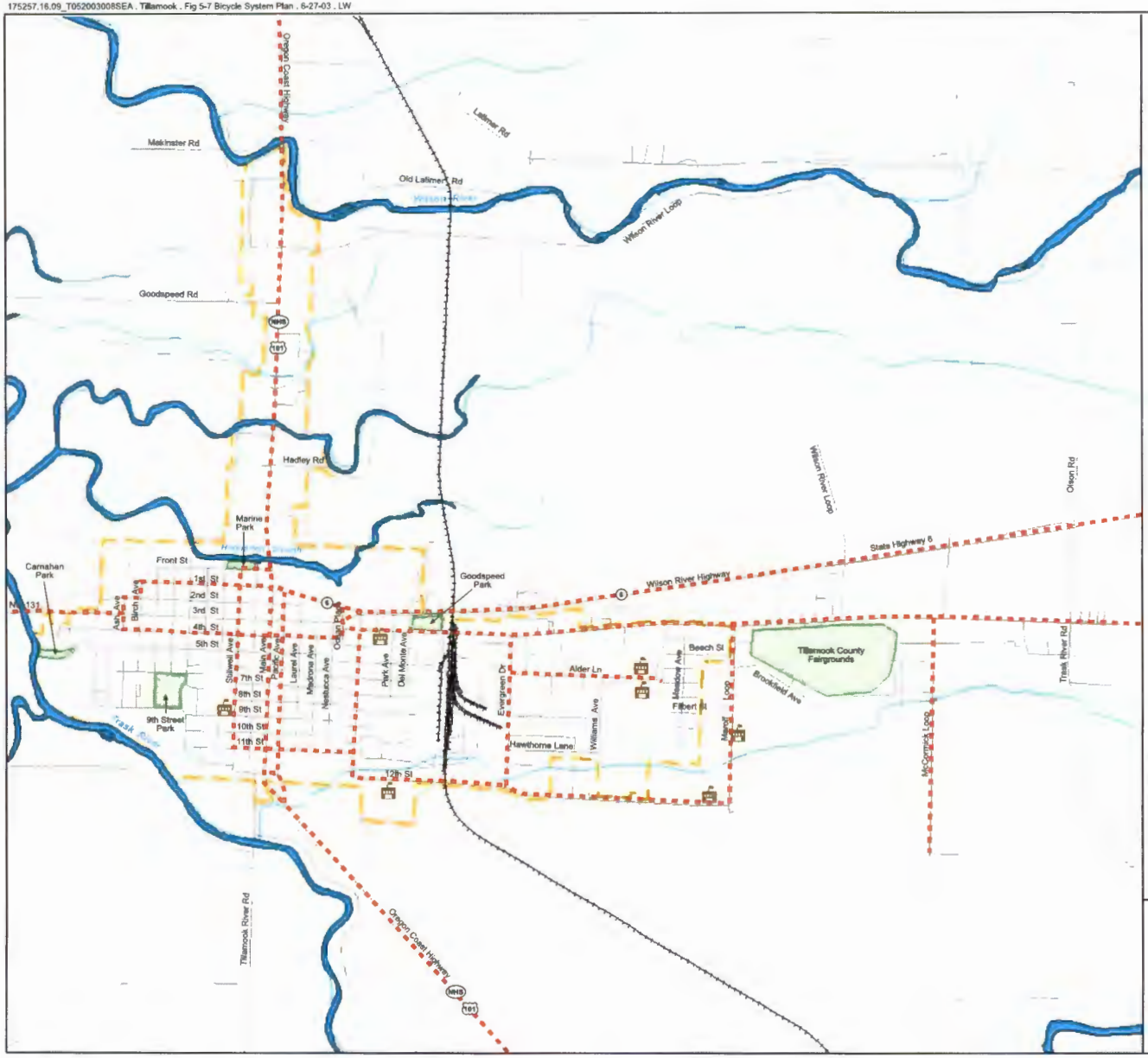
Public Transportation

The TCTD currently operates public transportation services both in Tillamook, and between Tillamook and surrounding communities. In Tillamook, the addition of transit amenities at transit stops should be considered, including covered benches, bus pullouts, signage and concrete landing pads. These amenities would make the system more visible to potential users and possibly attract new riders. Also, all transit stops should be accessible to all potential riders per ADA standards.

TCTD has outlined opportunities to improve public transportation services on a county level, including the following items:

- **Provide annual incremental route expansion**
- **Provide park-and-ride services at the TCTD's building headquarters.** This is a planned facility included in the Phase 2 construction of the TCTD's new headquarters building. It is expected that the park-and-ride will provide 25 stalls. Two STIP projects were awarded to TCTD for the new bus facilities (STIP #12484 and #12089).
- **Improve connections with other transit service providers.** Currently, connections between transit service providers, including Sunset Empire, Greyhound, Pacific Transit and Oregon Coachways are not available or not well coordinated.
- **Provide transit pull-outs on state and county facilities**
- **Enlarge transit shelters.** This is a current proposal to the Tillamook City Council. It includes expansion of the transit center on 2nd Street and Laurel Avenue, and adds additional shelters at stops where there are none.
- **Provide additional services at the 2nd Street and Laurel Avenue transit center stop.** Includes providing restrooms, customer service station and bike racks.
- **Advertise and promote TCTD services**
- **Coordinate TCTD, ODOT and Tillamook County efforts** to explore the need for implementing TDM measures, such as carpooling and vanpooling in the county.

175257.16.09_T052003008SEA . Tillamook . Fig 5-7 Bicycle System Plan . 6-27-03 . LW



City of
TILLAMOOK

CH2MHILL

LEGEND

- Bicycle Route
- Road
- Railroad
- School
- Park
- City Limit
- Urban Growth Boundary

NORTH

500 0 500 Feet

Figure 5-7
Bicycle System Plan
Transportation System Plan
Tillamook, OR

- **Expand services** to these communities: Manzanita, Bayside Gardens, Nehalem, Wheeler, Oceanside, and Pacific City.
- **Form a citizen advisory committee to develop a public transportation program.**

Rail System

The existing rail line owned and operated by the Port of Tillamook Bay serves the Tillamook Lumber Company and the port. There are two existing at-grade crossings along this line, which are located at 3rd Street (flashing lights and automatic gate) and 12th Street (signage only). The existing rail line currently is being upgraded to a Class II rail facility. When the rail facility is upgraded and train speeds increase in Tillamook, safety improvements at the 12th Street crossing should become a high priority.

The existing rail line in Tillamook is part of a countywide rail system. On a county level, the following rail issues have been identified and should be addressed:

- Identify and prioritize improvements on railroad bridges throughout the county to ensure the system is able to function throughout the 20-year design horizon.
- Explore opportunities to expand tourist rail services throughout the county and in the City of Tillamook.
- Consider improvements at the Latimer Road railroad crossing as necessary to accommodate increased truck traffic.
- Upgrade the existing railroad tracks from Tillamook to Blimp Boulevard. This improvement is currently underway.
- Expand the ability of the system to transport rock from local quarries and wood chips. To transport these products along the existing rail lines, the Port of Tillamook Bay would need to acquire new cars to carry rock and chips.
- Improve marketing of the Port of Tillamook Bay, including improving the appearance (road improvements) and infrastructure (storm drainage, rail line) of the port.

SECTION 6

Transportation Funding Plan

This section summarizes funding sources available to City of Tillamook so as to establish a transportation investment baseline for maintenance and capital improvement projects in the TSP. Existing local, state and federal funding sources are described. Potential future funding sources for projects included in the Tillamook TSP also are discussed.

Existing City Funding Sources

Table 6-1 summarizes City of Tillamook's revenues and expenditures for transportation maintenance and capital improvements during the past 5 fiscal years (1997 through 2002), as well as the projected budgets for years 2002 through 2004. As shown in Table 6-1, the city's primary sources of transportation revenue are state and local gas taxes, which represent approximately 60 and 40 percent of its total transportation funds, respectively.

Table 6-1 also illustrates how local transportation funds were spent during 3 fiscal years (1999 through 2002). The City of Tillamook spent transportation funds on capital improvements, maintenance projects and special projects. As is evident from Table 6-1, transportation funding was variable during the 3-year period, averaging less than $200,000 per year.

State Funding Sources

In Oregon, the STIP provides funding for capital improvements on federal, state, county and city transportation systems. Within the STIP, which is updated every 2 years, funds are allocated for multimodal projects, including roadway, public transportation, bicycle and pedestrian, air, freight and bridge projects. Each STIP lists projects that are planned for construction during a 4-year period. Projects that are included in the STIP are regionally significant, as they have been given a high priority through planning efforts.

Transportation projects in the STIP generally are categorized in the following manner:

- **Modernization Projects:** Improvements to accommodate existing traffic and/or projected traffic growth. They include:
  - Addition of lanes: High-occupancy vehicle (HOV) lanes, new alignments and new facilities (bypasses)
  - Highway reconstruction with major alignment improvements or major widening
  - Grade separations
  - Widening of bridges to add travel lanes

TABLE 6-1
City of Tillamook Sources of Transportation Funds
Fiscal Years 1997/1998 through 2003/2004

	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
	Actual Budget	Actual Budget	Actual Budget	Actual Budget	Actual Budget	Projected Budget	Projected Budget
Revenue Sources							
State Gas Tax Revenue	$170,113	$190,693	$189,618	$185,582	$180,137	$162,367	$170,781
Interest (state)	$2,550	$4,558.70	$4,264	$2,426	$799	$100	$100
Miscellaneous Revenue (state)	$0	$5,206	$6,640.58	$3,340	$16,703	$100	$100
Local Gas Tax	$122,637	$128,955	$120,847	$121,672	$136,671	$137,330	$137,000
Interest (local)	$970	$2,388	$3,272	$2,172	$2,542	$350	$400
Miscellaneous Revenue (local)	$12,500	$200	$2,388	$0	$840	$0	$0
Total Revenue	**$308,770**	**$332,001**	**$327,030**	**$315,192**	**$337,692**	**$300,247**	**$308,381**
Expenditures							
Capital Outlays					$220,414.81		
Service Contracts			$720				
Maintenance			$6,002.06	$5,461.68			
Special Projects			$106,154.47	$60,917.73			
Linden Drive				$68,918.23			
Materials Expense					$123,625.93		
Total Expenditures			**$112,876.53**	**$135,297.64**	**$344,040.74**		

  - Immediate Opportunity Fund (IOF) projects
  - New safety rest areas

- **Safety Projects:** An investment program focused on improvements to address priority hazardous highway locations and corridors, including the interstate, to reduce the number of fatal and serious injury crashes. Projects funded through this program meet strict benefit/cost criteria. They include:
  - Capital improvements, such as passing lanes, turn lanes and wider shoulders
  - Access management
  - New guardrails
  - Illumination, delineation or signing
  - Channelization in the existing roadway at intersections
  - Continuous shoulder rumble strips
  - Enforcement of traffic laws
  - Railroad crossing improvements (separate funding source)
- **Pavement Preservation:** Improvements to rebuild or extend the service life of existing facilities, and rehabilitative work on roadways. Preservation projects add useful life to the road without increasing the capacity. They include:
  - Pavement overlays (includes minor safety and bridge improvements)
  - Interstate Maintenance (IM) Program (pavement preservation projects on the interstate system)
  - Reconstruction to re-establish an existing roadway
  - Resurfacing projects
- **Bridge Projects:** Improvements to rebuild or extend the service life of existing bridges and structures beyond the scope of routine maintenance. They include:
  - Rehabilitation, replacement, major repair and major maintenance
  - Overpass screening
  - Tunnels
  - Large (more than 6-foot-wide) culverts
- **Operations:** System management and improvements that lead to more efficient and safer traffic operations and greater system reliability. They include:
  - Signals and signs, illumination, and other operational improvements
  - Rockfalls and slides (chronic rockfall areas and slides; not emergency repair work)
  - ITS (includes ramp metering, incident management, emergency response, traffic management operations centers, and mountain pass and urban traffic cameras)
  - Slow-moving-vehicle turnouts, traffic circles or roundabouts
  - TDM (includes rideshare, vanpool, and park-and-ride programs)

Oregon Transportation Investment Act

The Oregon Transportation Investment Act (OTIA) was passed by the 2001 Oregon legislature and is funded through bond proceeds derived from increased Oregon Department of Motor Vehicles fees. OTIA currently provides $650 million (including $150 million local matching funds) for 173 construction projects that will improve pavement conditions, increase lane capacity, and improve bridges throughout Oregon. Projects were selected with extensive input from local communities and other stakeholders. In 2002, the OTC allocated these funds for modernization, preservation and bridge projects throughout the state.

State-Funded Projects in Tillamook

The 2002-2005 STIP, 2004-2007 draft STIP, and OTIA-funded projects combine to generate more than $17 million in project work for 6 years in the vicinity of the City of Tillamook that will result in an average $2.8 million in funding per year. Projects in this total include the following:

- U.S. 101: Wilson River Bridge Project ($312,000)
- U.S. 101: Suppress Road to Wilson River Bridge Project ($3,895,000)
- Oregon 6 at Wilson River Loop Project ($8,270,000)
- U.S. 101 at Long Prairie Road Project ($902,000)
- Netarts Highway (131) (Ocean Street to U.S. 101) Overlay Project ($1,198,000)
- Earl Bridge Project ($145,772)
- Tillamook County Bus Facilities Project ($434,000)
- Tillamook County District Transit Facilities Project ($199,000)
- Oregon 6: Tillamook Railroad Overpass to Jordan Creek Bridge Project ($2,533,000)

Several of these projects include major improvements outside of Tillamook's UGB. Within Tillamook's UGB, the 2002-2005 STIP, 2004-2007 draft STIP, and OTIA-funded projects combine to generate more than $13 million in project work during 6 years (approximately $2.2 million in funding per year).

Table 6-2 summarizes the proposed STIP and OTIA funding for projects in Tillamook from 2002 to 2007.

TABLE 6-2
STIP and OTIA Funding in Tillamook

Year	Bridge	Preservation	Transit	OTIA Bridge	OTIA Modernization	Modernization	OTIA Preservation
2002		$2,533,000	$434,000				
2003			$199,000	$145,772			
2004							$1,198,000
2005	$312,000					$3,895,000	
2006					$902,000		
2007						$8,270,000	

Source: 2002-2005 STIP, Draft 2004-2007 STIP.

OTIA = Oregon Transportation Investment Act.

STIP = Statewide Transportation Improvement Program.

Transportation System Plan Financing

Overall, the TSP contains more than $35 million in multimodal transportation improvements during the next 20 years, with the majority of improvements occurring on the state facilities serving the City of Tillamook. The TSP assumes that existing revenues and expenditures for transportation maintenance and capital improvements during the next 20 years will remain stable. As a result, the city will need a combination of state and/or federal assistance in addition to additional local revenue to address funding needs. Table 6-3 summarizes timing and costs for projects listed in Section 5 under the categories of modernization, safety and pedestrian/bicycle.

TABLE 6-3
Transportation System Plan Improvements Costs

Type of Improvement	Priority			Total Cost
	1-5	6-10	10+	
State Capacity	$12,265,000	$3,350,000	$0	**$15,615,000**
State Safety	$150,000	$3,300,000	$1,150,000	**$4,600,000**
Local Widening and Safety	$2,230,000	$2,070,000	$975,000	**$5,275,000**
Local Bike and Pedestrian[1]	$2,690,000	$6,552,000	$860,000	**$10,102,000**

[1] Some of the local bike and pedestrian projects overlap onto state facilities. Funding between the agencies will need to be resolved before the project start-up.

Potential Future Funding Sources

U.S. Department of Transportation TEA-21 Reauthorization

The 2004 budget lays the groundwork for a $247 billion, 6-year reauthorization proposal, as compared to TEA-21's current level of $218 billion. Of the proposed total, $195 billion would fund the highway program (up from $168 billion) for 6 years, and $45 billion would fund the transit program (up from $41 billion). Federal funding typically is distributed through the state.

U.S. Department of Homeland Security

Several agencies formerly under the U.S. Department of Transportation now reside in the U.S. Department of Homeland Security (DHS). Based on spending by various agencies and offices that have moved to DHS proposed funding for the $36 billion agency represents a 64 percent increase. The DHS's focus is to reduce the nation's vulnerability to terrorism, and minimize the damage and recover from attacks that may occur. Funding for projects that involve military operations and lifeline routes should be pursued through the DHS.

ODOT Bicycle and Pedestrian Program

The state-funded Bicycle and Pedestrian Program distributes approximately $3 million per year. Many of the pedestrian and bicycle projects included in the TSP would be eligible for funding through this program. Therefore, the City of Tillamook should consider applying for these funds for pedestrian and bicycle projects included in the TSP.

System Development Charges

System development charges (SDC) create a mechanism for development to pay for transportation improvements necessary to support trips generated by development. SDCs are used in many cities and counties in Oregon and generally are based on the number of vehicle trips generated by the development.

Local Gas Tax

Tillamook receives revenue from state and local gas taxes. To increase revenue and fund additional transportation related improvements, the city could increase the local gas tax.

Road Pricing

As described in this TSP, tourism accounts for major increases in traffic volumes on state facilities in Tillamook and Tillamook County. In coordination with the state, Tillamook County could employ some form of tolling to support transportation-related improvements.

Revenue and General Obligation Bonds

Revenue bonds sold by government agencies and repaid by user charges. Typically, the bonds are secured by stable revenue stream, such as a local gas tax, street utility fee or toll.

Similarly, general obligation bonds serve the same purpose, however, they are secured by the full faith and credit of the issuing municipality. Such bonds are authorized by vote. Revenue bonds also can be issued with this backing.

Property Tax

The city could fund additional improvements through an increase in local property taxes.

Street Utility Fees

A street utility fee could be implemented by the city, which would assess a fee to businesses and households for use of streets based on the traffic generated by a particular use. Street utility fees generally are collected for maintenance purposes.

Special Assessment/Local Improvement Districts (LIDs)

Special assessments are fees levied on property owners to fund local neighborhood facilities or services. These types of fees generally are collected for maintenance or street paving purposes. Special assessments are justified by demonstrating that maintenance or public works services enhance the value of a property and provide benefits to the owner.

Local improvement districts (LIDs) are established by local governments to administer or levy special assessments.

Parking Fees

Parking fees could be implemented in the downtown or Port of Tillamook Bay areas to generate revenue for transportation-related improvements.

SECTION 7

Recommended Ordinance Modifications and TPR Compliance

Recommended Ordinance Modifications

This section recommends changes to several of the City of Tillamook's planning documents in order to comply with implementation provisions of the TPR as codified in OAR 660-012-045. The previously prepared plan and policy review (see Background Document) includes an outline that compares TPR code elements with the current city code. This comparison served as the guide for identifying sections of the comprehensive plan or land use codes that needed revisions.

This section is organized by applicable section of the TPR. Each section of the TPR is included in a text box with a discussion of recommended changes to the city's ordinances following this text box. The following city documents have been proposed for modification based on TPR requirements:

- City of Tillamook Comprehensive Plan (October 1982)
- City of Tillamook Zoning Ordinance (DRAFT December 2002)
- City of Tillamook Design Standards and Standard Details (December 1999)

Modifications to these documents are indicated as follows: deletions are shown with ~~strikethrough~~ and additions are shown underlined. In addition, Angelo Eaton & Associates (AEA) developed new code language to meet TPR requirements given the existing conditions and regulatory framework in the City of Tillamook. AEA used the Model Transportation Planning Rule Ordinances and Policies for Small Jurisdictions and the Model Development Code & Users Guide for Small Jurisdictions as reference documents for recommended code revisions. Areas of the city's documents that are proposed for modification for compliance with OAR 660-12-0045 will be addressed in this memorandum; language which is additional to the city's strict compliance with the TPR is included in *italics*. Notes and comments for the Oregon Department of Transportation, city staff, or the PAC are contained in text boxes with Comic sans font.

A. Proposed Comprehensive Plan changes

New policies are needed to support the adoption of the Transportation System Plan as part of the city's Comprehensive Plan. The city's existing transportation-related policies are listed below and proposed new policies, which the city can discuss are recommended in underlined text. In addition to these policy changes, the city will adopt Section 5 of the Transportation System Plan, called "Transportation System Plan" as the Transportation System chapter of the Comprehensive Plan and will delete most of the supporting text in the current Comprehensive Plan as noted by the text in ~~strikethrough.~~

Transportation System

Goal: To provide and encourage a safe, convenient and economical transportation system."

Objectives: To increase the safety of the Tillamook transportation system.

To provide a convenient and economical road system.

This section of the comprehensive plan is an analysis and guide for improvement in the City's transportation system and makes recommendations regarding transportation corridors and more localized transportation routes. The City of Tillamook adopted a Transportation System Plan in 2003. Section 5 of this Plan is adopted into this Comprehensive Plan in this section of the Plan. The remainder of the TSP is included in the Comprehensive Plan as a Technical Appendix. Transportation-related policies are included at the end of this chapter.

Note to City: Add Section 5 of Tillamook Transportation System Plan here.

~~*Vehicular Circulation*~~

~~The most important transportation facility is the road and street system and is illustrated in the Technical Report. The state's classification system includes: principal arterials (Highway 101), minor arterials (Wilson River Highway from the east to Main), major collectors (Third Street from Main going west), minor collectors (most other streets) and unpaved streets and unimproved rights-of-way.~~

Note to City: The proposed classification system in the TSP Section 5 as follows:
Arterials:
Main Avenue - north City Limits to south City Limits
Pacific Avenue - south City Limits to First Street
First Street - Shild Road to Main Avenue

Collectors:
County Roads (per the Tillamook County Transportation Plan)
Olsen/Trask River Road – Oregon 6 to 3rd Street
Tillamook River Road – City Limits to 12th Street
Wilson River Loop – U.S. 101 to City limits, Oregon 6 to 3rd Street
12th Street

Marolf Loop
McCormick Loop
Brookfield Avenue
Evergreen Drive
Goodspeed Road – U.S. 101 to City Limits
Makinster Road – U.S. 101 to City Limits

City Roads
Stillwell Avenue – Front Street to 12th Street
Alder Lane – Evergreen Drive to Dogwood/Cypress Avenue
Evergreen Drive–or 12th Street to 3rd Street
First Street – Birch Avenue to U.S. 101
Front Street – Cedar Avenue to U.S. 101
Miller Avenue – Oregon 6 to 12th Street
4th Street – U.S. 101 to Miller Avenue
11th Street – Stillwell Avenue to Miller Avenue
12th Street – Tillamook River Road to U.S. 101 Couplet and Miller Avenue to Marolf Loop
Brookfield Avenue – Marolf Loop to McCormick Loop
Ocean Place – 4th Street to Oregon 6
Cedar Avenue – Front Street to 1st Street
Birch Avenue – 1st Street to 3rd Street

Currently, the State has designated roads within Tillamook as either Urban Collector/Rural Major Collector or Minor Collector. They include:

3rd Street – Oregon 6 to City UGB – Rural Major Collector
Trask/Olson Road – Rural Major Collector
12th Street – between U.S. 101 Couplet - Urban Collector
McCormick Loop – Minor Collector
Tillamook River Road – Rural Major Collector
Marolf Loop– Minor Collector
11th Street – U.S. 101 Couplet to Miller Avenue – Minor Collector
12th Street – Miller Avenue to Marolf Loop – Minor Collector
Williams Avenue – Alder Lane to Hawthorne Lane – Minor Collector

It is proposed that Williams Avenue be reclassified by ODOT as a local street. Williams Avenue is misrepresented on state mapping and is currently a very low volume road within a residential grid network.

Based on the roadway classification criteria, the remaining classifications are consistent with the facility's purpose and no changes are recommended.

Local
All City roadway facilities not listed above are recommended to be classified as local roads.

Policy 51: Tillamook shall take full advantage of its present investment in street improvements and also take actions to insure future developments are in the best interest of the local residents, which includes facilitating the flow of good and services for the local economy.

Policy 52: The City should pursue funds from the State for implementing transportation programs. Emphasis shall be placed on programs which minimize adverse social, economic and environmental impacts and costs.

Policy 53: Carpooling for work trips is encouraged.

~~Policy 54: The Traffic Safety Plan listed in Policy #36 addresses road maintenance and improvement programs for the City's Street system. Those shall be reviewed annually and updated as necessary. (A copy of this document is provided as Appendix N).~~

Deletion of Policy 54 and 55: The Transportation System Plan includes a plan for road maintenance issues incorporated in Section 3 and 5 of the TSP. The TSP includes a review of the transportation issues associated with U.S. 101.

~~The General Plan adopted in 1972 has a bypass to Highway 101 located to the east of Trask River Road. This is no longer considered a viable alternative by the State highway Division. Traffic on state highways remains a major problem for downtown Tillamook.~~

~~Policy #55 Tillamook City shall analyze traffic patterns and congestion involving Highway 101 and shall develop specific options for rerouting 101 traffic. Study must be given to both east-west travel and the north-south corridor.~~

~~**Street Connections and New Streets**~~

~~Connecting street links are currently needed in various locations through the urbanized area. In other areas, connecting sections will be necessary in the future as the land is developed and the need is generated. These are mainly minor collectors. Some of these connections can be made through requiring dedication and construction of streets as part of the subdivision process. Others will require funding from the city, county and state sources.~~

Street connectivity is addressed in Section 3 and Section 5 of the TSP.

~~Policy 56:~~

~~The City shall implement the following street links to facilitate the connection of various locations throughout the urbanized area.~~

~~1. Fifth Street extended to the Sewage Treatment Plant.~~

~~2. A road connecting Fifth and Ninth Streets just east of the Sewage Treatment Plant~~

~~3. Twelfth Street between Miller and Pacific~~

~~4. Williams and Meadow Avenues extended to Marlof Loop Road to facilitate a north-south movement.~~

~~5. A new street to provide access to the interior of the block bounded by Evergreen, Alder, Maple and Willams.~~

~~6. Beech and Filbert Streets extended to Marolf Loop Road.~~

~~7. A new road connecting the southeast turn of Marlof Loop Road and McCormick Loop Road.~~

8. Third Street should be improved to include curbs, storm drainage and pedestrian walkways.

~~The location of these proposed connecting streets in illustrated on the Plan Map. The locations are intended to be general and not exact.~~

We recommend bringing forward Policies 57 and 58 (and renumbering them for consistency). Policy 59 is addressed in Section 5 of the TSP.

Policy 5~~4~~7: All new commercial developments and all new residential developments larger than a duplex shall be located on fully improved streets.

Policy 5~~5~~8: The streets in new subdivisions will be designed to improve traffic circulation in nearby existing subdivisions.

~~Policy 59: A program shall be established and coordinated by the responsible state, county and city agencies to schedule and fund road maintenance and improvements. The City will establish the scheduling and budging of its street improvements through a capital improvement program. The City may budget funds through a local improvement district, pursue funding through state sources, and various tax measures for road maintenance and improvements.~~

~~Pedestrian and Bicycle Circulation~~

~~Most of the developed areas on the west side of the Southern Pacific right-of-way are served with sidewalks. Many roads on the east side of that right-of-way do not have sidewalks or pedestrian and bike paths. This is a safety problem near schools and along more heavily traveled roads.~~

Policy ~~6~~0-56: New subdivisions shall provide curbs and sidewalks brought up to City standards, and are encouraged to provide bike paths in the right-of-way and bring existing non-conforming curbs, sidewalks and bike paths up to current City standards.

Pedestrian and bike access from the east side to the west side of the Tillamook urbanized areas is restricted. A path that follows a drainage way on the east and the Trask River on the west is proposed and is shown on the Plan Map. The Oregon Coast Bike Trail travels through Tillamook. The City shall coordinate with the Highway Departrnent on the particular needs of bikers using that trail.

Policy ~~6~~1-57: A pedestrian/bikeway shall be encouraged in the following locations.

1. Along the drainage way on the east

2. Along the Trask River on the west
3. Adjacent to Third Street from the Southern Pacific Railroad tracks from the Trask River Road.

The sewer line that is to be extended in the east area will probably follow the natural drainage way. When easements for the sewer line area acquired, access easements for a pedestrian and bike path could be acquired.

Pedestrian and bicycle connectivity are addressed in Section 5 of the TSP

Policy ~~62~~ 58: Various state programs available for development of pedestrian and bike path systems will be pursued.

Other Transportation Systems:

In addition to the street and pedestrian/bike path system, Tillamook is served by other means of transportation. These transportation services are an important part of the total transportation system.

Policy ~~63~~ 59: The City recognizes the important of transportation systems in the City and encourages the continuation and, where appropriate, the expansion of the following networks in addition to streets and pedestrian/bikeway systems.

Railroads:	Southern Pacific
Barge:	At Garibaldi, 9 miles north
Motor Carriers:	One common carrier
Air:	Tillamook Airport
Intercity bus:	Greyhound
Local bus:	Senior Citizen's Group
Taxi:	Tillamook Taxi (private company)

Policy ~~64~~ 60: Development of public transportation is encouraged. A bus systems such as that of the senior citizen's should be developed for all age groups. The City shall pay particular attention to the transportation disadvantaged when developing alternatives to meet growing transportation needs.

We recommend that the City adopt the following additional policies:

Policy __: Section 5 of the Transportation System Plan is included in the City of Tillamook Comprehensive Plan as the Transportation chapter. The entire TSP is included in the City's Comprehensive Plan as a Technical Appendix.

Policy ____: The City of Tillamook shall protect the function of existing and planned roadways as identified in the Transportation System Plan.

Policy: The City of Tillamook shall include a consideration of land use impacts on existing or planned transportation facilities in all land use decisions.

B. Proposed Zoning Ordinance changes—New Definitions

Definitions
New definitions are needed to support the amendments and updates to the Zoning Ordinance that bring it into compliance with the TPR. The definitions listed below are recommended for inclusion in Section 4, Definitions.

BICYCLE FACILITIES - A GENERAL TERM DENOTING IMPROVEMENTS AND PROVISIONS MADE TO ACCOMMODATE OR ENCOURAGE BICYCLING, INCLUDING PARKING FACILITIES AND ALL BIKEWAYS.

Bikeway - Any road, path or way that is in some manner specifically open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are shared with other transportation modes. The five types of bikeways are:

a. Multi-use Path. A paved way (typically 10 to 12-feet wide) that is physically separated from motorized vehicular traffic; typically shared with pedestrians, skaters, and other non-motorized users.
b. Bike Lane. A portion of the roadway (typically 4 to 6-feet wide) that has been designated by permanent striping and pavement markings for the exclusive use of bicycles.
c. Shoulder Bikeway. The paved shoulder of a roadway that is 4 feet or wider; typically shared with pedestrians in rural areas.
d. Shared Roadway. A travel lane that is shared by bicyclists and motor vehicles.
e. Multi-use Trail. An unpaved path that accommodates all-terrain bicycles; typically shared with pedestrians.

Pedestrian Facilities - Improvements and provisions made to accommodate or encourage walking, including sidewalks, accessways, crosswalks, ramps, paths, and trails.

Street shall mean a public or private way of being the entire width from lot line to lot line that is created to provide ingress or egress for persons to one or more lots, parcels, areas or tracts of land and including the term "road" "highway", "land" "avenue", alley, or similar designations.

a. Arterial. A street of considerable continuity which is primarily a traffic artery for intercommunication among large areas. A cross section of an arterial is provided in the Standards and Specifications document, Figure A.

b. Cul-de-sac. ~~(Dead end street).~~ A short street having one end open to traffic and being terminated by a vehicle turn-around. Cul-de-sac standards are located in Table A and Table B of the Standards and Specifications document.

Transportation facilities and improvements - The physical improvements used to move people and goods from one place to another; i.e., streets, sidewalks, pathways, bike lanes, airports, transit stations and bus stops, etc.). Transportation improvements include the following:

Transportation Facilities and Improvements:

1. Normal operation, maintenance;
2. Installation of improvements within the existing right-of-way;
3. Projects identified in the adopted Transportation System Plan not requiring future land use review and approval;
4. Landscaping as part of a transportation facility;
5. Emergency Measures;
6. Street or road construction as part of an approved subdivision or partition;
7. Transportation projects that are not designated improvements in the Transportation System Plan; (Conditional Use Permit for Transportation System Facilities and Improvements) and
8. Transportation projects that are not designed and constructed as part of an approved subdivision or partition (Conditional Use Permit for Transportation System Facilities and Improvements).

OAR 660-12-0045 Implementation of the Transportation System Plan (TSP)

(1) Each local government shall amend its land use regulations to implement the TSP.

(a) The following transportation facilities, services and improvements need not be subject to land use regulations except as necessary to implement the TSP and, under ordinary circumstances do not have a significant impact on land use:

(A) Operation, maintenance, and repair of existing transportation facilities identified in the TSP, such as road, bicycle, pedestrian, port, airport and rail facilities, and major regional pipelines and terminals;
(B) Dedication of right-of-way, authorization of construction and the construction of facilities and improvements, where the improvements are consistent with clear and objective dimensional standards;
(C) Uses permitted outright under ORS 215.213(1)(m) through (p) and ORS 215.283(1)(k) through (n), consistent with the provisions of 660-012-0065; and
(D) Changes in the frequency of transit, rail and airport services.

B. Proposed Zoning Ordinance changes—Permitted and Conditional Uses

Several sections of the Zoning Ordinance should be modified related to this rule requirement. Transportation facilities are not addressed in most of the city's land use zones. We recommend that the city modify each of the city's land use zones as described in the following table to permit outright or conditionally allow Transportation Facilities and Improvements as listed on the next page.

	Permit Outright	Conditional Use
Open Space	None	1-8
Residential - Single Family	1-6	7-8
Residential - Single Family & Duplex	1-6	7-8
Residential - Multiple Use	1-6	7-8
Commercial - Neighborhood	1-6	7-8
Commercial - Highway	1-6	7-8
Commercial - Central	1-6	7-8
Commercial - Town Center	1-6	7-8
Industrial - Light	1-6	7-8
Industrial - General	1-6	7-8
Public & Semi-Public	1-6	7-8
Limited Use Overlay	None	1-8
Flood Hazard Overlay	None	1-8
Airport Overlay	1-6	7-8
Hazard Overlay	None	1-8
Water Resource Protection Overlay	None	1-8

NOTE: Conditional Use approval would utilize the standards in the next section, Transportation System Facilities and Improvements. Also, uses 2-8 (transportation uses other than operation and maintenance of existing facilities) would be allowed in estuarine and coastal shoreland zones only if consistent with Statewide Planning Goals 16 (Estuarine Resources) and 17 (Coastal Shorelands).

Proposed Zoning Ordinance text:

Transportation Facilities and Improvements:

1. Normal operation, maintenance;
2. Installation of improvements within the existing right-of-way;
3. Projects identified in the adopted Transportation System Plan not requiring future land use review and approval;
4. Landscaping as part of a transportation facility;
5. Emergency Measures;
6. Street or road construction as part of an approved subdivision or partition;
7. Transportation projects that are not designated improvements in the Transportation System Plan;
8. Transportation projects that are not designed and constructed as part of an approved subdivision or partition.

OAR 660-12-045
(1)(b) To the extent, if any, that a transportation facility, service or improvement concerns the application of a comprehensive plan provision or land use regulation, it may be allowed without further land use review if it is permitted outright or if it is subject to standards that do not require interpretation or the exercise of factual, policy or legal judgment;

To address this portion of the TPR, transportation facilities and improvements that are not part of the City's TSP and are **not** part of a subdivision or partition subject to development review should be allowed in all districts as conditional uses. It is recommended that a new Section 27A, Conditional Uses and Criteria for Certain Transportation Facilities and Improvements be added to the Code following Section 27, Conditional Uses.

C. Proposed Zoning Ordinance changes—Conditional Uses and Criteria for Transportation Facilities and Improvements.

Section 27A Conditional Uses and Criteria for Certain Transportation Facilities and Improvements

(1) Construction, reconstruction, or widening of highways, roads, bridges or other transportation facilities that are (1) not designated in the adopted City of Tillamook Transportation System Plan ("TSP"), or (2) not designed and constructed as part of an approved subdivision or partition, are allowed in all Zones subject to a Conditional Use Permit—Transportation Facilities and satisfaction of all of the following criteria:

a. The project and its design are consistent with City of Tillamook adopted TSP and TPR.

b. The project design is compatible with abutting land uses in regard to noise generation and public safety and is consistent with the applicable zoning and development standards and criteria for the abutting properties.

c. The project design minimizes environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities, and a site with fewer environmental impacts is not reasonably available. The applicant shall document all efforts to obtain a site with fewer environmental impacts, and the reasons alternative sites were not chosen.

d. The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.

e. The project includes provisions for bicycle and pedestrian access and circulation consistent with the comprehensive plan, the requirements of this ordinance, and the TSP.

(2) State transportation system facility or improvement projects. The State Department of Transportation ("ODOT") shall provide a narrative statement with the application demonstrating compliance with all of the criteria and standards in Section 27A 1.b-e.

Where applicable, an Environmental Impact Statement or Environmental Assessment may be used to address one or more of these criteria.

(3) Proposal inconsistent with TSP. If the City determines that the proposed use or activity or its design is inconsistent with the TSP, then the applicant shall apply for and obtain a plan and/or zoning amendment prior to or in conjunction with conditional use permit approval. The applicant shall choose one of the following options:

a. If the City's determination of inconsistency is made prior to a final decision on the conditional use permit application, the applicant shall withdraw the conditional use permit application; or

b. If the City's determination of inconsistency is made prior to a final decision on the conditional use permit application, the applicant shall withdraw the conditional permit application, apply for a plan/zone amendment, and re-apply for a conditional use permit if and when the amendment is approved; or

c. If the City's determination of inconsistency is made prior to a final decision on the conditional use permit application, the applicant shall submit a plan/zoning amendment application for joint review and decision with the conditional use permit application, along with a written waiver of the ORS 227.178 120-day period within which to complete all local reviews and appeals once the application is deemed complete; or

d. If the City's determination of inconsistency is part of a final decision on the conditional use permit application, the applicant shall submit a new conditional use permit application, along with a plan/zoning amendment application for joint review and decision.

(4) Expiration. A Conditional Use Permit for Transportation System Facilities and Improvements shall be void after five (5) years.

NOTE: We recommend that an approved Conditional Use Permit for Transportation Facilities and Improvements last longer than 1 year for a normal CU as assembling funding for transportation projects often takes longer than is customary for development projects. For reference, current standards in Section 27.C state that permits last for a year. We recommend that the city use 5 years as the standard.

OAR 660-12-045

(1) (c) In the event that a transportation facility, service or improvement is determined to have a significant impact on land use or to concern the application of a comprehensive plan or land use regulation and to be subject to standards that require interpretation or the exercise of factual, policy or legal judgment, the local government shall provide a review and approval process that is consistent with 660-012-0050. To facilitate implementation of the TSP, each local government shall amend its land use regulations to provide for consolidated review of land use decisions required to permit a transportation project.

To comply with the above TPR requirement, the following provisions for noticing ODOT should be added to the existing notice procedures in the City's Zoning Ordinance, Section 10, Application Procedures and Fees.

NOTE to ODOT: We have used a 500 feet radius for ODOT notification.

D. Proposed Zoning Ordinance changes — Notification Requirements

NOTIFICATION REQUIREMENTS

11. Notice of hearings. Upon fixing the time of public hearing before the Commission, the Director shall cause notice of such hearing to be given by mail, posting, publication or broadcast as required by the provision of subsections 11 and 12 herein. In case of public hearing before the Council, the City Recorder shall cause such notice to be given in accordance with the provisions of subsections 11 and 12 herein.

D. Mailed notice to the Oregon Department of Transportation (ODOT) for all land use reviews requiring a public hearing with the Planning Commission or City Council of land use applications related to property within *500 feet* of a state highway or that will impact State facilities.

E. Mailed notice to the Oregon Department of Transportation (ODOT) for the following all public hearings; subdivisions and partitions and any land use application affecting private access or access to a state highway.

OAR 660-12-0045
(2) Local governments shall adopt land use or subdivision ordinance regulations, consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions. Such regulations shall include:
(a) Access control measures, for example, driveway and public road spacing, median control and signal spacing standards, which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;

The City's Zoning Ordinance currently does not contain guidelines for access management; we recommend the creation of a new section within the city's Zoning Ordinance, Section 22.1, Section #17, Access Management to include access spacing standards for arterials and different options for access management and standards for different functional classifications.

E. Proposed Zoning Ordinance Changes---Access Management

17. Access Management. Access shall be managed to maintain an adequate "level of service" and to maintain the "functional classification" of roadways as required by the City of Tillamook Transportation System Plan. Major roadways, including arterials, and collectors, serve as the primary system for moving people and goods within and through the city. "Access management" is a primary concern on these roads. Local streets and alleys provide access to individual properties. If vehicular access and circulation are not properly designed, these roadways will be unable to accommodate the needs of development and serve their transportation function.

The regulations in this section further the orderly layout and use of land, protect community character, and conserve natural resources by promoting well-designed road and access systems and discouraging the unplanned subdivision of land.

1. The City or other agency with access permit jurisdiction may require the closing or consolidation of existing curb cuts or other vehicle access points, recording of reciprocal access easements (i.e., for shared driveways), development of a frontage street, installation of traffic control devices, and/or other mitigation as a condition of granting an access permit, to ensure the safe and efficient operation of the street and highway system. Access to and from off-street parking areas shall not permit backing onto a public street.

2. Access Options. When vehicle access is required for development (i.e., for off-street parking, delivery, service, drive-through facilities, etc.), access shall be provided by one of the following methods (a minimum of 10 feet per lane is required). These methods are "options" to the developer/subdivider.
    (a) Option 1. Access is from an existing or proposed alley or mid-block lane. If a property has access to an alley or lane, alley access is preferred.
    (b) Option 2. Access is from a private street or driveway connected to an adjoining property that has direct access to a public street (i.e., "shared driveway"). A public access easement covering the driveway shall be

recorded in this case to assure access to the closest public street for all users of the private street/drive.

(c) Option 3. Access is from a public street adjacent to the development parcel. If practicable, the owner/developer may be required to close or consolidate an existing access point as a condition of approving a new access. Street accesses shall comply with the access spacing standards in Subsection 6, below.

4. Subdivisions Fronting Onto an Arterial Street. New residential land divisions fronting onto an arterial street shall be required to provide alleys or secondary (local or collector) streets for access to individual lots. When alleys or secondary streets cannot be constructed due to topographic or other physical constraints, access may be provided by consolidating driveways for clusters of two or more lots (e.g., includes flag lots and mid-block lanes).

5. Through Lots and Parcels. When a lot has frontage onto two or more streets, access shall be provided first from the street with the lowest classification. For example, access shall be provided from a local street before a collector or arterial street. Except for corner lots, the creation of new double-frontage lots shall be prohibited in the Open Space Land Use District (O District); Single Family Residential (R 7.5) and R-5.0); Multiple Use Residential (R-O); Neighborhood Commercial District (C-N); Highway Commercial District (C-H); Central Commercial District (C-C District); Town Center District (TC); Light Industrial (I-L); General Industrial (I-G) unless topographic or physical constraints require the formation of such lots. When double-frontage lots are permitted in these zones, a landscape buffer with trees and/or shrubs and ground cover not less than *20* feet wide shall be provided between the back yard fence/wall and the sidewalk or street; maintenance shall be assured by the owner (i.e., through homeowner's association, etc.).

We recommend the following access spacing standards for the City of Tillamook:

6. Access Spacing: Driveway accesses shall be separated from other driveways and street intersections in accordance with the following standards and procedures:

(a) Local Streets. A minimum of 10 feet separation (as measured from the sides of the driveway/street) shall be required on local streets (i.e. streets not designated as collectors or arterials).

(b) Collector Streets. Access spacing on collector streets, and at controlled intersections (i.e. with four-way stop sign or traffic signal) shall be 50 feet for a collector.

(c) Arterials. Access spacing on arterial streets, and at controlled intersections (i.e. with four-way stop sign or traffic signal) shall be 100 feet. Access to State Highway 101 and State Highway 6 shall be subject to the applicable standards and policies contained in the Oregon Highway Plan.

(d) Number of Access Points. For single-family (detached and attached), two-family, and three-family housing types, one street access point is permitted per lot, when alley access cannot otherwise be provided; except that two access points may be permitted for two-family and three-family housing on corner lots (i.e., no more than one access per street), subject to the access spacing standards in Subsection '6', above. The number of street access points for multiple family, commercial, industrial, and public/institutional developments shall be minimized to protect the function, safety and operation of the street(s) and sidewalk(s) for all users. Shared access may be required, in conformance with Section I, below, in order to maintain the required access spacing, and minimize the number of access points.

OAR 660-12-045
(2)(b) Local governments shall adopt ...Standards to protect future operation of roads, transit ways and major transit corridors;
(2) (c) Measures to protect public use airports by controlling land uses within airport noise corridors and imaginary surfaces, and by limiting physical hazards to air navigation;
(2) (d) A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;
(2)(e) Local governments shall adopt ...A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors and sites.

OAR 660-12-045 (2) (c) addresses the City's need for an Airport Overlay—The city addresses this in Section 20.1, Airport Overlay Zone, or AO District. This TPR requirement is met.

Subsections (2) (d) and (e) addresses the need to account for potential development impacts to roadways and transit corridors and to ensure that they continue to meet community needs. In addition to coordination with affected agencies, access management, and adherence to road design standards, requiring a traffic impact study ("TIS") in certain cases where the potential impact to roads is over a certain threshold, is one way to meet this requirement. The city's Zoning Ordinance, Section 22, Site Development Standards contains language for a Traffic Capacity Analysis. This TPR requirement is met.

OAR 660-12-045
(2) (f) Regulations to provide notice to public agencies providing transportation facilities and services, MPO's and ODOT of:
A. Land use applications that require public hearings;
(B) Subdivision and partition applications;
(C) Other applications which affect private access to roads; and
(D) Other applications within airport poise corridors and imaginary surfaces which affect airport operations.

Revised Zoning Ordinance text regarding notification to ODOT are included in this memorandum in Section D, Notification Requirements which meets this requirement.

OAR 660-12-045
(2)(g) Local governments must adopt...Regulations assuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities and levels of service of facilities identified in the TSP.

This TPR requirement ensures that amendments to the Comprehensive Plan and land use regulations are reviewed for their impact on transportation facilities identified in the TSP. The Zoning Ordinance classifies Zoning Code amendments as a quasi-judicial land use procedure, which requires referral of applications to affected agencies and if our recommendations of this memo are implemented, will specifically require notice to ODOT. However, it does not include specific provisions for amendments that impact transportation facilities and it is not clear where amendments to land use regulations are addressed.

To comply with the Rule, we have added a subsection to the required land use criteria (P) which specifies how land use amendments are to comply with the TSP. New language in is also included to provide guidance in determining *when* a code amendment is considered to have an impact on transportation facilities. The section also discusses how to ensure that amendments to the comprehensive plan or to the development code are consistent with the TSP when it significantly affects a transportation facility. This new criteria, (P) is applicable to the following land use applications as noted in the table below: Change of Zone, Conditional Use; and Urban Growth Boundary Amendment.

F. Proposed Zoning Ordinance changes---Transportation Planning Rule Compliance

Section 10 APPLICATION PROCEDURES AND FEES

No changes have been recommended for subsections 1 through 7

8. Application Fees and Required Land Use Criteria

Required Land Use Criteria: the following information is required, as listed above, for all land use actions within the Urban Growth Boundary of the City of Tillamook:

Request	Required Land Use Criteria
Annexation	A, B, C, D
Appeals*	Not Applicable
Change of Zone	A, B, C, D. P
Conditional Use	All
Site Plan Review	All (except P)
Flood Hazard Permit	A, B, C
Urban Growth Boundary Amend.	A, B, C, D, P
Right-of-Way Vacation	A, B, C, D, E
Variance	A-L
Minor Partition	A, B, C, D, O
Major Partition	A, B, C, D, E, F, O

Planned Unit Development	All (except P)
Subdivision	All (except P)

No changes have been recommended for subsections A through O

P. Transportation System Plan Compliance.

(1) Review of Applications for Effect on Transportation Facilities. When a development application includes a proposed comprehensive plan amendment or land use regulation change, the proposal shall be reviewed to determine whether it significantly affects a transportation facility, in accordance with Oregon Administrative Rule (OAR) 660-012-0060 (the Transportation Planning Rule – "TPR"). "Significant" means the proposal would:

a. Change the functional classification of an existing or planned transportation facility. This would occur, for example, when a proposal causes future traffic to exceed the capacity of "collector" street classification, requiring a change in the classification to an "arterial" street, as identified by the City of Tillamook Transportation System Plan ("TSP"); or

b. Change the functional classification of an existing or planned transportation facility. This would occur, for example, when a proposal causes future traffic to exceed the capacity of "collector" street classification, requiring a change in the classification to an "arterial" street, as identified by the City of Tillamook Transportation System Plan ("TSP"); or

c. Change the standards implementing a functional classification system; or

d. Allow types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility; or

e. Reduce the performance standards of the facility below the minimum acceptable level identified in the TSP.

(2) Amendments That Affect Transportation Facilities. Amendments to the comprehensive plan and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the TSP. This shall be accomplished by one of the following:

(a) Amending the TSP to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirements of the TPR; or,

(b) Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes of transportation.

(c) Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes of transportation.

(d) Traffic Impact Study. A Traffic Impact Study shall be submitted with a plan amendment or land use district change application. See Section XXX - Traffic Impact Study.

We also recommend adding a notation to Section 10 Application Procedures and Fees to include a requirement to illustrate bicycle parking and pedestrian circulation areas (Section Q) on plans at the time of submittal. This requirement also references the TPR's pedestrian and bicycle circulation area requirement.

Q. The location of all pedestrian and bicycle circulation areas and bicycle racks/storage, including sidewalks, internal pathways, pathway connections to adjacent properties and any bicycle lanes or trails.

To make the addition of Section 10 Criterion Q consistent with the submittal requirements, we recommend the addition of the same information to the list of application submittal requirements in Section 22.

5. Site Plan Procedures. The site plan shall be drawn to scale and indicate the following:

   A. Site Plan to locate where appropriate:

      1) Structures, both existing and proposed
      2) Driveways
      3) Landscaped areas
      4) Off-Street vehicle and bicycle parking spaces
      5) Points of egress and ingress, including on-site traffic movement
      6) Loading areas
      7) Utility service and drainage areas
      8) Pedestrian ~~walks~~ pathways and internal circulation systems
      9) Fences and walls
      10) Relationship of site to abutting properties

OAR 660-12-045

(3) Local governments shall adopt land use or subdivision regulations for urban areas and rural communities as set forth below. The purposes of this section are to provide for safe and convenient pedestrian, bicycle and vehicular circulation consistent with access management standards and the function of affected streets, to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel in areas where pedestrian and bicycle travel is likely if connections are provided, and which avoids wherever possible levels of automobile traffic which might interfere with or discourage pedestrian or bicycle travel.

(a) Bicycle parking facilities as part of new multi-family residential developments of four units or more, new retail, office and institutional developments, and all transit transfer stations and park-and-ride lots.

(b) On-site facilities shall be provided which accommodate safe and convenient pedestrian and bicycle access from within new subdivisions, multi-family developments, planned developments, shopping centers, and commercial districts to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. Single-family residential developments shall generally include streets and accessways. Pedestrian circulation through parking lots should generally be provided in the form of accessways.

(A) Neighborhood activity centers includes but is not limited to, existing or planned schools, parks, shopping areas, transit stops or employment centers.

(B) Bikeways shall be required along arterials and major collectors. Sidewalks shall be required along arterials, collectors and most local streets in urban areas, except that sidewalks are not required along controlled access roadways, such as freeways;

(C) Cul-de-sacs and other dead-end streets may be used as part of a development plan, consistent with the purposes set forth in this section;

(D) Local governments shall establish their own standards or criteria for providing streets and accessways consistent with the purposes of this section. Such measures may include but are not limited to: standards for spacing of streets or accessways; and standards for excessive out-of-direction travel;

(E) Streets and accessways need not be required where one or more of the following conditions exist:

(i) Physical or topographic conditions make a street or accessway connection impracticable. Such conditions include but are not limited to freeways, railroads, steep slopes, wetlands or other bodies of water where a connection could not reasonably be provided;

(ii) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or

(iii) Where streets or accessways would violate provisions of leases, easements, covenants, restrictions or other agreements existing as of May 1, 1995, which preclude a required street or accessway connection.

(c) Where off-site road improvements are otherwise required as a condition of development approval, they shall include facilities accommodating convenient pedestrian and bicycle travel, including bicycle ways along arterials and major collectors;

(d) For purposes of subsection (b) "safe and convenient" means bicycle and pedestrian routes, facilities and improvements which:

(A) Are reasonably free from hazards, particularly types or levels of automobile traffic which would interfere with or discourage pedestrian or cycle travel for short trips;

(B) Provide a reasonably direct route of travel between destinations such as between a transit stop and a store; and

(C) Meet travel needs of cyclists and pedestrians considering destination and length of trip; and considering that optimum trip length of pedestrians is generally ¼ to ½ mile.

(e) Internal pedestrian circulation within new office parks and commercial developments shall be provided through clustering of buildings, construction of accessways, walkways and similar techniques.

The purpose of this portion of the TPR is to ensure that safe and convenient facilities are provided for pedestrians and bicyclists, within new residential and commercial development and on public streets. The Zoning Ordinance does not include provisions for bicycle parking. Therefore, it is recommended that a new subsection of Section 25, Off-Street Parking and Loading, #13 Bicycle Parking be added to the Zoning Code.

H. Proposed Zoning Ordinance changes --- Bicycle Parking Requirements

Section 25, Off-Street Parking and Loading

13. Bicycle Parking Requirements

The following new developments shall be required to provide bicycle parking in compliance with this subsection:

a. New multifamily residential with four or more units shall provide at least one sheltered bicycle parking space for each dwelling unit. Sheltered bicycle parking spaces may be located within a garage, storage shed, basement, utility room or similar area. In those instances in which the residential complex has no garage or other easily accessible storage unit, the bicycle parking spaces may be sheltered from sun and precipitation under an eave, overhang, an independent structure, or similar cover.

b. New retail, office, and institutional development shall provide at least one bicycle parking space for each retail, office and institutional development. Individual uses shall provide their own parking, or spaces may be clustered to serve up to six (6) bicycles. Bicycle parking spaces should be located in front of the stores along the street, either on the sidewalks or in specially constructed areas such as pedestrian curb extensions. Inverted "U" style racks or ribbon racks are recommended. Bicycle parking shall not interfere with pedestrian passage, leaving a clear area of at least 36 inches between bicycles and other existing and potential obstructions. These spaces may or may not be sheltered.

c. Transit transfer and park and ride lots shall provide a minimum of one bicycle parking space for every 10 motor vehicle parking spaces.

Discussion point: The following bicycle parking requirements noted in italics (d-g) are not required by the Transportation Planning Rule, however, the city may want to consider adding these options to the Zoning code to encourage bicycle use around town and provide options for a variety of transportation modes. Requirements h-m are added for clarity of implementation for the required parking standards.

d. Parking Lots. All public and commercial parking lots and parking structures provide a minimum ofone bicycle parking space for every 10 motor vehicle parking spaces.

e. Schools. Elementary and middle schools, both private and public, provide one bicycle parking space for every 10 students and employees. High schools provide one bicycle parking space for every 5

students and employees. All spaces shall be sheltered under an eave, overhang, independent structure, or similar cover.

f. Colleges and trade schools provide one bicycle parking space for every 10 motor vehicle spaces plus one space for every dormitory unit. Fifty percent of the bicycle parking spaces shall be sheltered under an eave, overhang, independent structure, or similar cover.

g. Multiple Uses. For buildings with multiple uses (such as a commercial or mixed use center), bicycle parking standards shall be calculated by using the total number of motor vehicle parking spaces required for the entire development. A minimum of one bicycle parking space for every 10 motor vehicle parking spaces is required.

h. Exemptions. This Section does not apply to single family, two-family, and three-family housing (attached, detached or manufactured housing), home occupations, agriculture and livestock uses, or other developments with fewer than 10 vehicle parking spaces.

i. Location and Design. Bicycle parking shall be conveniently located with respect to both the street right-of-way and at least one building entrance (e.g., no farther away than the closest parking space). It should be incorporated whenever possible into building design and coordinated with the design of street furniture when it is provided. Street furniture includes benches, street lights, planters and other pedestrian amenities.

j. Visibility and Security. Bicycle parking shall be visible to cyclists from street sidewalks or building entrances, so that it provides sufficient security from theft and damage.

k. Options for Storage. Bicycle parking requirements for long-term and employee parking can be met by providing a bicycle storage room, bicycle lockers, racks, or other secure storage space inside or outside of the building.

l. Lighting. Bicycle parking shall be least as well lit as vehicle parking for security.

m. Reserved Areas. Areas set aside for bicycle parking shall be clearly marked and reserved for bicycle parking only and shall not impede or create a hazard to pedestrians.

The city's Zoning Ordinance currently does not contain guidelines for pedestrian connectivity; we recommend the creation of a new section within the city's Zoning Ordinance, Section 22.1, Section #18, Pedestrian and Bicycle Access and Circulation to include standards that facilitate pedestrian and bicycle access and circulation, and implements related policies of the TSP and TPR.

18. Pedestrian and Bicycle Access and Circulation

A. Purpose. The primary pedestrian and bicycle circulation plan is addressed in the City's adopted Transportation System Plan (TSP). The TSP provides for a Pedestrian System Plan and a Bicycle System Plan to ensure safe, direct and convenient pedestrian and bicycle circulation. New streets should be constructed to the standards specified in the TSP to allow for pedestrian and bicycle access. In cases where a new street is not practicable per Section 22.1, new development, except single family detached housing (i.e., on individual lots), shall provide a continuous pedestrian and/or multi-use pathway system. (Pathways only provide for pedestrian circulation. Multi-use pathways accommodate pedestrians and bicycles.) The system of pathways shall be designed based on the standards in Subsections (a) and (b) below:

1. Continuous Pathways. The pathway system shall extend throughout the development site, and connect to all future phases of development, adjacent trails, public parks and open space areas whenever possible. The developer may also be required to connect or stub pathway(s) to adjacent streets and private property, in accordance with the provisions of Section 39, Streets, and the Standards and Specifications document for the City.

2. Safe, Direct, and Convenient Pathways. Pathways within developments shall provide safe, reasonably direct and convenient connections between primary building entrances, and all adjacent streets based on the following definitions:

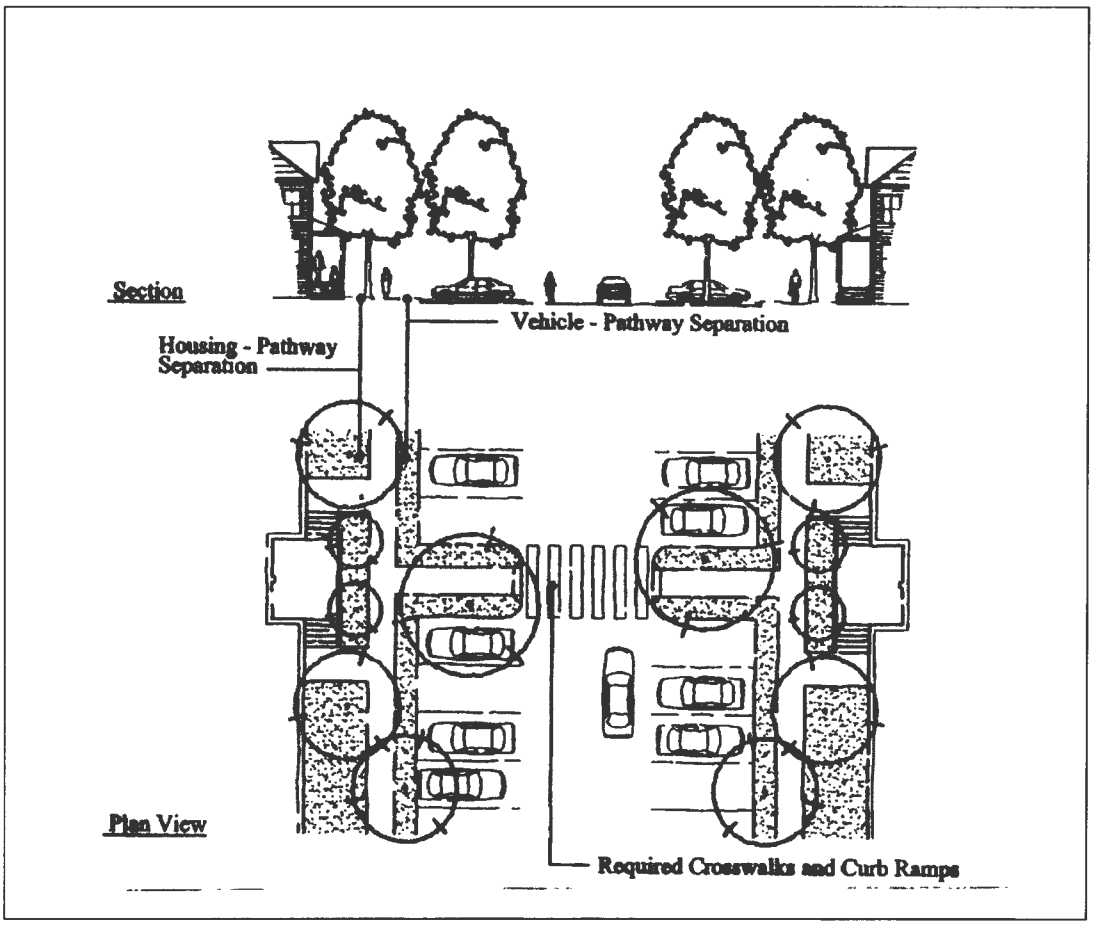
   a. Reasonably direct. A route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users.
   b. Safe and convenient. Bicycle and pedestrian routes that are reasonably free from hazards and provide a reasonably direct route of travel between destinations.

3. *Pathway connectivity. Pathways (for pedestrians and bicycles) shall be provided at or near mid-block where the block length exceeds 600 feet on arterials or the length otherwise required by Section 22.1, Street Standards. Pathways shall also be provided where cul-de-sacs or dead-end streets are planned, to connect the ends of the streets together, to other streets, and/or to other developments as per Section 22.1(8), Cul-de-Sacs. Pathways used to comply with these standards shall conform to all of the following criteria:*

a. *Multi-use pathways (i.e., for pedestrians and bicyclists) are no less than 6 feet wide and located within a 10 foot right-of-way or easement that allows access for emergency vehicles;*
b. *If streets within a subdivision or neighborhood are lighted, pathways shall also be adequately lit;*
c. *Stairs or switchback paths using a narrower right-of-way/easement may be required in lieu of a multi-use pathway where grades are steep (greater than 20%);*
d. *The decision-maker may determine, based upon facts in the record, that a pathway is impracticable due to: physical or topographic conditions (e.g., freeways, railroads, extremely steep slopes, sensitive lands, and similar physical constraints); buildings or other existing development on adjacent properties that physically prevent a connection now or in the future, considering the potential for redevelopment; and sites where the provisions of recorded leases, easements, covenants, restrictions, or other agreements recorded as of the effective date of this Code prohibit the pathway connection*

The following graphic is included for illustrative purposes, the city may wish to include it in this section for reference.

Figure 22.1-17 - Pathway Standards



a) Design and Construction. Pathways shall conform to all of the standards in a-e:

(a) Vehicle/Pathway Separation. Where pathways are parallel and adjacent to a driveway or street (public or private), they shall be raised 6 inches and curbed, or separated from the driveway/street by a 5-foot minimum strip with bollards, a landscape berm, or other physical barrier. If a raised path is used, the ends of the raised portions must be equipped with curb ramps.

(b) Pathway Surface. Pathway surfaces shall be concrete, asphalt, brick/masonry pavers, or other durable surface, at least 6 feet wide, and shall conform to ADA requirements. Multi-use paths (i.e., for bicycles and pedestrians) shall be the same materials, at least 6 feet wide. (See also, City of Tillamook Street and Storm Drainage Design Standards Section 3.02, Walks, Ramps, Driveways and Curb Cuts.

In order to further implement OAR 660-12-045 (3), we have included minor amendments throughout Section 22.1, Street Standards. These amendments address future street development, cul-de-sac development, and (new) right-of-way widths for the City. The City's street cross sections are also included in the City's *Design Standards and Standards Details* which is addressed in the next section of this memorandum.

I. Proposed Zoning Ordinance changes -- Vehicular Circulation

Section 22.1 Street Standards

6. Street Standards.

A. General Provisions. The following provisions shall apply to the dedication, construction, improvement or other development of all public streets in the City of Tillamook.

1. The location, width, and grade of streets shall be considered in their relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of the land to be served by the streets.

2. Development proposals shall provide for the continuation of existing principal streets where necessary to promote appropriate traffic circulation in the vicinity of the development.

3. Alignment: All streets other than minor streets or cul-de-sacs, as far as practical, shall be in alignment with existing streets by continuation of the centerlines-thereof. The staggering of street alignments resulting in "T" intersections shall, wherever practical, leave a minimum distance of 200 feet between the center lines of streets having approximately the same direction and otherwise shall not be less than 100 feet.

4. Future extension of streets: Where necessary to give access to or permit a satisfactory future development of adjoining land, streets shall be extended to the boundary of a tract being developed and the resulting dead-end streets may be approved without turnarounds. Reserve strips and street plugs may be required to preserve the objectives of street extensions. Section ____ of the

Transportation System Plan identifies locations for future streets or roadways and should be used as a reference when extending streets.

5. Intersection angles: Streets shall be laid out to intersect at angles as near to right angles as practical, except where topography requires lesser angles. Intersections of less than 60 degrees shall require special intersection designs. Streets shall have at least 50 feet of tangent adjacent to intersections unless topography requires lesser distances. Intersections, which are not at right angles, shall have minimum corner radii of 15 feet. Major arterial intersections shall have curb radii of not less than 35 feet. Other street intersections shall have curb radii of not less than 20 feet.

6. Existing Streets: Whenever existing public streets adjacent to or within a tract are of inadequate width, additional right-of-way shall be provided at the time of subdivision, partitioning, or development.

7. Half-Streets: Half-streets, while generally not acceptable, may be approved where essential to the reasonable development of an area and when the Planning Commission finds it to be practical to require the dedication of the other half when the adjoining property is developed. Whenever a half-street is adjacent to a tract to be developed, the other half of the street shall be dedicated. Reserve strips and street plugs may be required to preserve the objectives of half-streets.

~~8. Cul-de-sacs: Cul-de-sacs shall have maximum lengths of 600 feet. All cul-de-sacs shall terminate with circular turnarounds.~~

8. Cul-de-sac.

a. Cul-de-sacs shall only be allowed when one or more of the following conditions exist:

- Physical or topographic conditions make a street connection impracticable. Such conditions include but are not limited to freeways, railroads, steep slopes (greater than 20% grade) wetlands or other bodies or water where a connection could not reasonably be provided.
- Buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or
- Where streets would violate provisions of leases, easements, covenants, restrictions or other agreements existing as of the date of adoption of the City's Transportation System Plan, which precluded a required street connection.

b. Cul-de-sacs shall have maximum lengths of 600 feet. All cul-de-sacs shall terminate with circular turnarounds.

c. Cul-de-sacs or dead end hammerhead streets shall be connected with walking or bicycle paths in accordance with the Pedestrian and Bicycle Access and Circulation section.

9. Street Names/Addressing: Street names and address numbers shall conform to the established pattern in the City and shall be subject to the approval of the Planning Commission.

10. Grades and Curves: Grades shall not exceed 7 percent on arterials, 10 percent on collector streets or 15 percent on any other street. Street grades of 15 percent shall not exceed 200 feet in length. To provide for adequate drainage, all streets shall have a minimum slope of 0.5 percent. On arterials there shall be a tangent of not less than 100 feet between reversed curves.

11. Marginal Access Streets: If a development abuts or contains an existing or proposed arterial street, the Planning Commission may require marginal access streets, reverse frontage lots with suitable depth, screen planting contained in a non-access reservation along the rear or side property line, or such other treatment as may be necessary for adequate protection of residential properties and to afford separation of through and local traffic.

12. Alleys: Alleys shall be provided in commercial and industrial districts unless other permanent provisions for access to off-street parking and loading facilities are made as approved by the Planning Commission. While alley intersections and sharp changes in alignment shall be avoided, the corners of necessary alley intersections shall have radii of not less than 10 feet.

13. Clear Vision Areas: Clear vision areas shall be maintained on corner lots at the intersection of all public streets and at the intersections of a public street with a private street, alley or drive which serves more than three parcels. No structure planting shall be permitted within a clear vision area, which would impede visibility between a height of 3 feet and 10 feet above the curb grade of the intersecting streets.

NOTE: The following table has been modified to reflect the proposed cross-sections included in the City's *Design Standards and Standards Details.*

B. General Right-of-Way and Improvement Widths. The following standards are general criteria for public streets in the City of Tillamook. These standards shall be the minimum requirements for all streets, except where modifications are permitted in this section.

Table __
Right of Way widths

Street Classification	~~Minimum~~ Roadway Width	~~Minimum~~ R.O.W.
Alleys	12 feet	15 feet
2-Lane Arterial Road/Truck Routes (U.S. 101)		

	~~44 feet~~ 46 to 56 feet	~~60~~ 46 to 56 feet
4-Lane Arterial Road (U.S. 101 North of Downtown)	76 feet	76 to 102 feet
Collector ~~s/Commercial and Industrial~~.	~~40 feet~~ 36 to 44 feet	~~60~~ 48 to 68 feet
~~Cul-de-sacs (up to 200' in length)~~	~~R =36 feet~~	~~R =45 feet~~
~~Cul-de-sacs (200'- 400' in length)~~	~~R =45 feet~~	~~R =50feet~~
~~Hammerhead Turnaround~~	~~20 feet~~	~~20 feet~~
Private Streets (up to 900' in length)	18 feet	25 feet
~~Residential~~ Local Streets	~~36~~ 38 feet	~~50~~ 52 to 56 feet
~~Reduced Residential~~ Alternative Local Road ~~Streets~~	~~34~~ 30 feet	~~40~~ 30 to 40 feet

Width to be determined by the Public Works Director based upon anticipated traffic volumes. Further details can be found in the City of Tillamook Public Works Construction Standards.

For clarity, we recommend creating a new table for cul de sac and hammerhead standards.

Table ___

	Minimum Roadway Width	Minimum R.O.W. -
Cul-de-sacs (up to 200' in length)	R =36 feet	R =45 feet
Cul-de-sacs (200'- 400' in length)	R =45 feet	R =50feet
Hammerhead Turnaround	20 feet	20 feet

C. Modification of Right-of-Way and Improvement Width. The Planning Commission, pursuant to the review procedures of this section, may allow modification to the public street standards listed above, when both of the following criteria are satisfied:

1) The modification is necessary to provide design flexibility in instances where:

   a. Unusual topographic conditions require a reduced width or grade separation of improved surfaces; or
   b. Parcel shape or configuration precludes accessing a proposed development with a street which meets the full standards of this section; or

   c. A modification is necessary to preserve trees or other natural features determined the Planning Commission, or City Manager Designate, to be significant to the aesthetic character of the area; or
   d. A Planned Unit Development is proposed and the modification of street standards is necessary to provide greater privacy or aesthetic quality to the development.

2) Modification of the street standards of this subsection shall only be approved if the Planning Commission, or City Manager Designate, finds that the specific

design proposed provides adequate vehicular access based on anticipated traffic volumes.

D. Construction Specifications. Public streets shall comply with the criteria of the most recently adopted public works construction specifications of the City of Tillamook.

E. Private Streets. Streets and other right-of-ways serving a subdivision or planned unit development that are not dedicated for public use shall comply with the following:

1) Private streets shall be allowed where the applicable criteria of this section are satisfied. Private streets shall have a minimum easement width of 25 feet and a minimum paved width of 18 feet.

2) All private streets shall be constructed to the same cross-sectional specifications required for public streets. Provision for the maintenance of the street shall be provided in the form of a maintenance agreement, homeowners association, or other instrument acceptable to the City Attorney.

3) A turnaround shall be required for any private residential street which has only one outlet and which is in excess of 150 feet long. Non-residential private streets shall provide a turnaround if in excess of 200 feet long and having only one outlet. Turnarounds for private streets shall be either a circular turnaround with a minimum paved radius of 36 feet, or a "tee" or "hammerhead" turnaround with a minimum paved dimension across the "tee" of 20 feet.

4) The City may require provision for the dedication and future extension of a public street.

F. Partition Access Easements. A private access easement created as the result of an approved partitioning shall conform to the following.

1) Partition access easements shall only be allowed where the applicable criteria of this section are satisfied. The easement shall comply with the following standards:

a. Minimum width: 20 feet (25 feet preferred)
b. Minimum paved width: 20 feet
c. Maximum length: 250 feet
d. No more than 4 dwelling units shall have direct access to the easement

2) All access easements serving more than two dwelling units shall be constructed to the same cross-sectional specifications required for public streets. Provision for the maintenance of the street shall be provided in the form of a maintenance agreement, homeowners association, or other instrument acceptable to the City Attorney.

3) A turnaround shall be required for any access easement which has only one outlet and which is in excess of 150 feet long. Turnarounds shall be either a circular turnaround with a minimum paved radius of 36 feet, or a tee" or "hammerhead" turnaround with a minimum paved dimension across the "tee" of 20 feet.

4) All private access easements shall be designated as fire lanes and signed for no parking.

In order to increase safety and connectivity for pedestrians and vehicles, we recommend reducing *maximum* block length overall and to *include* a maximum block length for arterials. We reduced the *minimum* block length along arterials from 1,800 feet to 1,000 feet because we recommended a maximum length. We added the provision for a 500-foot maximum block length in the Town center (Commercial—Neighborhood, Commercial—Central and Commercial—Town Center zones) to create a more walkable downtown, and to be consistent with the existing block sizes in that part of Tillamook.

11. Blocks

A. Maximum Block Size. In Commercial - Neighborhood, Commercial -- Town Center, and Commercial -- Central zones, ~~No block shall be more than 1,000~~ maximum block length shall be 500 feet ~~in length~~. In all other zones, block length shall not exceed 600 feet between street corner lines of rectilinear developments unless it is adjacent to an arterial street or unless the topography of the location of adjoining streets justified as exception. Maximum block perimeter shall not exceed 1,800 feet. Along arterial streets, the maximum block length shall be 1,800 feet. Pedestrian connections in the form of local street connections, partial local street connections (such as right-in/right-out), or accessways shall be provided every 600 feet in order to provide safe and convenient pedestrian movement.

B. Minimum Block Size along Arterial streets. The recommended minimum length of blocks along an arterial street is ~~1,800~~1,000 feet. A block shall have sufficient width to provide for two tiers of building sites unless topography or the location of adjoining streets justifies an exception.

The city's street cross sections are in the city's *Design Standards and Standards Details;* to further meet OAR 660-12-045(3), it is recommended that the city amend this document. This section contains road design standards, including right-of-way width, pavement width and design speed. However, it lacks other standards, which are critical for complying with the TPR. To be compliant with the TPR, the road design standards must provide for bicycle lanes on arterials and collectors and sidewalks. New cross sections in the Standards Document will reflect these additional road design standards. There should also be a range of right-of-way widths, rather than just a minimum right-of-way.

NOTE to City: The city may want to consider condensing the street cul de sac and hammerhead turnaround standards into the city's Subdivision Ordinance—instead of listing them as a street classification. The city of Tillamook Street Cross-Sections, Drawing #1 will be supplemented by new cross-sections.

Discussion for the City: Table A includes standards for the minimum centerline grade, minimum horizontal radius and minimum stop sight distance. We have modified Table A to reflect this existing format. Another option for the city to consider is to eliminate these three columns and refer to AASHTO standards instead.

Table A

Street Classification	~~Minimum~~ ROW	~~Minimum~~ Roadway Width	Minimum Sidewalk Width (including curb)	Minimum Horizontal Radius at C.L.	Minimum Stopping Sight Distance
Cul-de-sac (up to 200' length)	R=45'	R=36'	4.5'	~~100'~~ **	~~100'~~ **
Cul-de-sac (>200' to 400' length)	R=50'	R=45'	4.5'	~~100'~~ **	~~160'~~ **
Private Street (up to 900' length)	25'	18'	4.5' (1 side)	~~75'~~ **	~~100'~~ **
~~Residential Street~~ Local Street	~~50'~~ 48' to 58'	~~36'~~ 38'	5'	~~100'~~ **	~~160'~~ **
~~Reduced Residential~~ Alternative Local Street	~~40'~~ 30' to 40'	~~34'~~ 20'	~~4.5' (1 side)~~ 5'	~~100'~~ **	~~160'~~ **
~~Hammerhead Turnaround~~	~~20'~~	~~20'~~	~~None~~	~~75'~~ **	~~100'~~ **
Collector/~~Commercial/Industrial~~	48' to 68'	36' to 44'	6'	~~250'~~ **	~~240'~~ **
2 Lane Arterial Road/Truck Route	48' to 78'	36' to 54'	6'	~~250'~~ **	~~240'~~ **

**Design criteria to be based on design speed and guidelines in AASHTO: Policy on Geometric Design of Highways and Streets.

We recommend that the city have consistent standards and terminology between the adopted cross sections and Table A and B. Therefore, we have modified Table B to be similar to Table A. We recommend that the city delete the columns regarding percentage of Trucks, Truck Weight and Design Traffic Number because the TSP proposes a Street Classification map which is a clearer indicator of the type of street to provide in a specific location.

Table B

Street Classification	Design ADT	~~% Trucks~~	~~Truck Weight~~	~~Design Traffic Number*~~
Cul-de-sac and private Street	~~500~~ 0 to 500	~~2~~	~~15,000~~	~~1~~
~~Residential~~ Local Road	~~1,000~~ 0- 1,200	~~4~~	~~20,000~~	~~6~~
Alternative Local Road	0-250			
Collector	3,000	~~5~~	~~20,000~~	~~25~~
Two Lane Arterial Road	3,000			
Commercial-Industrial	1,000 to 3,000	~~10~~	~~48,000~~	~~180~~

Standards and Specifications, Figure A, Arterial Road Cross Section

Standards and Specifications, Figure B, Collector Road Cross Section

Standards and Specifications, Figure C, Local Road Cross Section

Standards and Specifications, Figure D, Alternative Local Road Cross Section

[insert local road cross section here]

[insert alternative local road cross section here]

[insert two lane arterial road cross section here]

Summary of TPR Compliance

In April 1991, the LCDC, with the concurrence of ODOT, adopted the TPR, OAR 660 Division 12. Outlined below in Table 7-1 is a list of recommendations (designated by italics) and requirements for a TSP and how each of those were addressed in the City of Tillamook TSP. The comparison demonstrates that the City of Tillamook TSP is in compliance with the provision of the TPR.

TABLE 7-1
TPR Requirements for a Transportation System Plan

TPR Requirements	City of Tillamook TSP Compliance
OAR 660-012-0015: Preparation and Coordination of the TSPs	
(3) Preparation, adoption, and amendment of Local TSPs	
(a) Local TSPs shall establish a system of transportation facilities and services adequate to meet identified local transportation needs and shall be consistent with adopted elements of regional and state TSPs.	Section 2 and 3 document the City's existing and future local transportation needs. Section 5 contains the City's TSP, the chapter that provided a system of transportation facilities and services to meet these needs. These chapters have been prepared in accordance with the Oregon Transportation Planning Rule and the Oregon Highway Plan.
(b) Coordinate the preparation of the local TSP to assure regional and state transportation needs are met.	All state transportation needs were considered in the development of the City of Tillamook TSP throughout the use of the Project Management Team and various coordination meeting with affected organizations and agencies.
(4) Cities shall adopt regional and local TSPs as part of their comprehensive plan.	The City will adopt Section 5 of the TSP as part of its Comprehensive Plan.
(5) TSPs preparation shall be coordinated with affected state, federal, and regional agencies; local governments; special districts; and private providers of transportation services.	To ensure that the City of Tillamook TSP would be consistent with the policies, goals, and needs of affected agencies, a Project Management Team (PMT) was established at the outset of the planning process. The PMT was made up of public representatives from the City, plus the Oregon Department of Transportation, and the Department of Land Conservation and Development.
OAR 660-012-0020: Elements of Transportation System Plans	
(1) Establish a coordinated network of facilities to serve state, regional, and local transportation needs.	All planned transportation facilities were coordinated with the identified needs of state and local agencies.
(2) The TSP shall include the following elements:	
(a) Determination of transportation needs per OAR 660-012-0030.	The City of Tillamook's 20-year transportation needs are documented in Section 3 of this report.
(b) A road plan for a system of arterials and collectors and standards for the layout of local streets and connections.	The City of Tillamook roadway plan is documented in Section 5 of this report.

TABLE 7-1
TPR Requirements for a Transportation System Plan

TPR Requirements	City of Tillamook TSP Compliance
(c) A public transportation plan.	The City of Tillamook transportation plan is documented in Section 5
(d) A bicycle and pedestrian plan consistent with ORS 365.514.	The City of Tillamook pedestrian and bicycle plan is documented in Section 5.
(e) An air, rail, water, and pipeline plan that identifies public use airports, mainline and branchline railroads, port facilities, and major regional pipelines and terminals.	The air, rail water and pipeline system plans are documented in Sections 3 and 5.
(h) Policies and land use regulation for TSP implementation per OAR 660-012-0045.	These will be a part of the Ordinance Modification memorandum included in Section 7 of this report.
(i) For areas within an urban growth boundary containing a population of 2500 or more , a transportation financing program as provided in OAR660-12-0040	The transportation financing program is described in Section 6.
(3) Each element identified in (2)(b)-(d) shall contain:	
(a) An inventory and assessment of existing and committed facilities and services by function, type, capacity, and condition.	An inventory of Tillamook's existing transportation facilities is documented in Section 2 of this Plan.
(b) A system of planned facilities, services, and major improvements.	A system of planned facilities, services and major improvements is documented in Section 5 of this plan.
(c) A description of planned facilities, services, and major improvements including a map showing general location of proposed improvements, minimum and maximum right-or-way widths, and a description of facility or service.	Section 5 of this Plan contains a description of Tillamook's planned facilities, services, and major improvements. A map showing the general location of the proposed improvements is included in Section 5-1. A description of each facility type is provided in Section 5
(d) Identification of the provider of each facility or service.	The responsible agency/provider of each facility is documented in Section 5.
OAR 660-012-0025: Complying with the Goals in TSP Preparation	
(1) Adoption of a TSP shall constitute the land use decision regarding the need for transportation facilities services, and major improvements and their function, mode, and general location.	Pending
(2) Findings of compliance with applicable statewide planning goals and comprehensive plan policies shall be developed in conjunction with adoption of the TSP.	Pending
OAR 660-012-0030: Determination of Transportation Needs	
(1) The TSP shall identify transportation needs including:	
(a) State and local transportation needs;	State and local transportation needs are documented in Section 5 of this plan.

TABLE 7-1
TPR Requirements for a Transportation System Plan

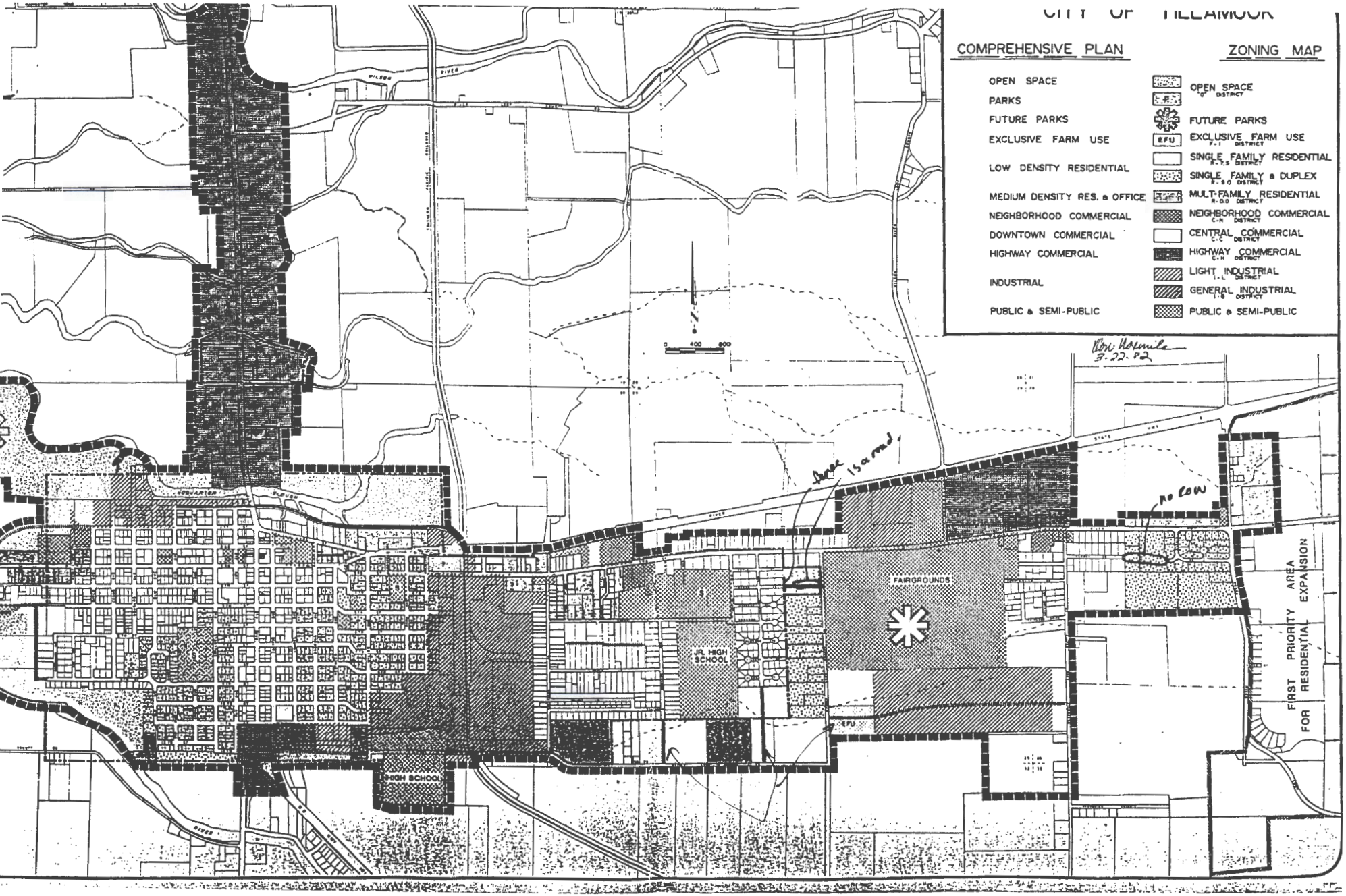
TPR Requirements	City of Tillamook TSP Compliance
(b) Needs of the transportation disadvantaged;	The needs of the transportation disadvantages are documented in Section 2 and 3 of this plan.
(c) Needs for the movement of goods and services.	The needs for movement of goods and services are documented in Section 5 of this plan.
OAR 660-012-0035: Evaluation and Selection of Transportation System Alternatives	
(1) The TSP shall be based upon evaluation of potential impacts of system alternatives that can reasonably be expected to meet the identified needs at reasonable cost. The following shall be evaluated as components of the system alternatives:	
(a) Improvements to existing facilities or services;	Reasonable and cost effective solutions to existing facilities were evaluated before new facilities were considered.
(b) New facilities and services including different modes of travel;	All new facilities were evaluated based on their reasonableness and cost-effectiveness.
(c) Transportation system management measures;	Transportation system management strategies were anticipated in the development of the TSP.
(d) Demand management measures;	Demand management measures were addressed in the development of the preferred alternative in Section 5.
(e) A no-build system alternative required by the national EPA.	Section 3 reviews the "no-build" scenario.
(3) The following standards shall be used to evaluate and select alternatives:	
(a) The transportation system shall support urban and rural development by providing types and levels of facilities and services appropriate to serve the land uses identified in the acknowledged comprehensive plan;	The TSP is based on the current, acknowledged comprehensive plan for the City and provides enhancement of the integration of transportation and land use systems.
(b) The transportation system shall be consistent with state and federal standards for the protection of air, land and water quality;	The standards used to evaluate and select transportation alternates are documented in Sections 4 of this plan.
(c) The transportation system plan shall minimize adverse economic, social, environmental, and energy consequences;	The standards used to evaluate and select transportation alternates are documented in Section 4 of this plan.
(d) The transportation system shall minimize conflicts and facilitate connections between modes of transportation.	The standards used to evaluate and select transportation alternates are documented in Section 4 of this plan.
(e) The transportation system plan shall avoid principal reliance of any one mode of transportation and reduce principal reliance on the automobile.	The standards used to evaluate and select transportation alternates are documented in Section 4 of this plan.

TABLE 7-1
TPR Requirements for a Transportation System Plan

TPR Requirements	City of Tillamook TSP Compliance
(7) Local TSPs shall include interim benchmarks to assure satisfactory progress towards meeting the requirements of this chapter at five-year intervals. Local governments shall evaluate progress in meeting interim benchmarks at five year intervals from adoption of the TSP.	The City will evaluate progress toward meeting the requirements of the TPR though regular review of the TSP at five-year intervals.
OAR 660-012-0040: Transportation Financing Program	
(1) For areas within an urban growth boundary containing a population greater than 2,500 persons, the TSP shall include a transportation-financing program.	The City's funding plan is included in Section 6.
(2) A Transportation financing program shall include the items listed in (a) – (d):	
(a) A list of planned transportation facilities and major improvements;	A list of planned transportation facilities and major improvements is provided in Section 5 and in Appendix B.
(b) A general estimate of the timing for planned facilities and major improvements;	Section 5 and Appendix B lists the planned transpiration facilities and major improvements within the 0-5, 6-10 and 11-20 year timeline.
(c) A determination of rough cost estimates for the facilities and major improvements identified in the TSP;	Section 5 and Appendix B lists the rough cost estimates and major improvements within the 0-5, 6-10 and 11-20 year timeline.
(3) The financing plan shall include a discussion of the facility provider's existing funding mechanisms to fund the development of each facility and major improvement.	Documentation of Oregon and the City of Tillamook's existing funding mechanisms is included in Section 6 of the Plan.
(5) The financing program shall provide for phasing of major improvements to encourage infill and redevelopment of urban lands prior to premature development of urbanizing or rural lands.	Investment in transportation improvements has been prioritized to encourage development of downtown Tillamook, including residential and commercial areas.

APPENDIX A

Comprehensive Land Use and Zoning


CITY OF TILLAMOOK
COMPREHENSIVE PLAN
ZONING MAP
OPEN SPACE
PARKS
FUTURE PARKS
EXCLUSIVE FARM USE
LOW DENSITY RESIDENTIAL
MEDIUM DENSITY RES. & OFFICE
NEIGHBORHOOD COMMERCIAL
DOWNTOWN COMMERCIAL
HIGHWAY COMMERCIAL
INDUSTRIAL
PUBLIC & SEMI-PUBLIC
OPEN SPACE
FUTURE PARKS
EXCLUSIVE FARM USE
SINGLE FAMILY RESIDENTIAL
SINGLE FAMILY & DUPLEX
MULT-FAMILY RESIDENTIAL
NEIGHBORHOOD COMMERCIAL
CENTRAL COMMERCIAL
HIGHWAY COMMERCIAL
LIGHT INDUSTRIAL
GENERAL INDUSTRIAL
PUBLIC & SEMI-PUBLIC
FAIRGROUNDS
JR. HIGH SCHOOL
HIGH SCHOOL
FIRST PRIORITY AREA FOR RESIDENTIAL EXPANSION
Bob Hamile 3-22-82
here is a road
no cow

APPENDIX B
Project List

Appendix

City of Tillamook TSP -Unevaluated Project List

Project Type	Description	Source	Facility	BEG MP	END MP
Access Management	Provide Access Management treatments such as medians/consolidation of driveways/right-in, right-out treatments along US 101, north of OR 6 to Wilson River Loop intersection. Implement as redevelopment occurs.	DRAFT Oregon Coast Highway Master Plan and Field Work	US 101	64.57	65.64
ITS	Variable Message Signing for Parking/Truck Route/Flooding	Field Work	US 101and OR 6	N/A	N/A
Mobility/ Connectivity	Extend Meadow to 12th Street	City Comp. Plan	Meadow	N/A	N/A
Mobility/ Connectivity	Trout Street, between 3rd and Highway 6	City Staff	Trout Street	N/A	N/A
Mobility/ Connectivity	Extend 12th Street from Miller Avenue to Pacific Avenue (US 101 Northbound)	City Comp. Plan	12th Street	N/A	N/A
Mobility/ Connectivity	Extend Beech Street to Marolf Loop	City Comp. Plan	Beech Street	N/A	N/A
Mobility/ Connectivity	Designate Spruce Avenue as a public road and remove the barriers at Apple and Beech Streets. Connect Spruce to Cypress to complete roadway grid system	City Staff	Spruce Avenue	N/A	N/A
Mobility/ Connectivity	Extend 1st Street to Netarts Highway	City Comp. Plan	1st Street	N/A	N/A
Mobility/ Connectivity	9th Street, cul-de-sac both dead ends	City Staff	9th Street	N/A	N/A
Mobility/ Connectivity	Filbert Street extension to Marolf Loop	City Staff	Filbert Street	N/A	N/A
Mobility/ Connectivity	Extension between Meadow and Williams Avenue	Field Work	Maple or Hawthorne Lane	N/A	N/A
Mobility/ Connectivity	Extend Evergreen Drive to Highway 6. (Included in Freight projects.)	City Comp. Plan	Evergreen Drive	N/A	N/A
Mobility/ Connectivity	Extend Marolf Loop to Highway 6. Included in Freight projects.	PAC	Marolf Loop	N/A	N/A
Mobility/ Connectivity	Extend Williams Avenue south to 12th Street	City Comp. Plan	Williams Avenue	N/A	N/A
Mobility/ Connectivity	Create a scenic northbound only bypass of the US 101 and OR 6 intersection along Hoquarten Slough with access to US 101 just south of Hoquarten Slough and access from OR 6 just east of Madrona Avenue.	City Staff	Hoquarten Slough Road	N/A	N/A
Mobility/ Connectivity	Extend 12th Street to McCormick Loop (if development occurs in area)	City Comp. Plan	12th Street	N/A	N/A
Modernization - Operational	Construct a pedestrian island that channelizes the westbound right-turn at US 101 and OR 6 intersection, reconstruct corner, provide downstream lane and widen Hoquarten Bridge. Provide signing that yields vehicles to pedestrians crossing this lane.	Existing and Future No-Build Operational Analysis and DRAFT Oregon Coast Highway Master Plan	Highway 6 and US 101 intersection	65.64	65.64
Modernization - Operational	Provide an eastbound right-turn lane (to US 101 southbound) while providing for safe pedestrian and bicycle movements.	Future No-Build Operational Analysis	US 101 and Wilson River Loop Intersection	64.57	64.57
Modernization - Roadway	Install traffic signal at 3rd and Stillwell and provide a northbound and southbound left-turn lane.	Existing and Future No-Build Operational Analysis	Netarts Highway (3rd Street) and Stillwell Avenue Intersection	8.98	8.98
Modernization - Roadway	Reconstruct intersection, provide grade separated interchange.[1]	ODOT Study and Existing and Future No-Build Operational Analysis	Highway 6 and Wilson River Loop	1.80	1.80
Bridge	Widen US 101 Wilson River Bridge. Part of current STIP.	ODOT 04-07 STIP #11667, ODOT Bridge Sufficiency Rating below 50	US 101	64.23	64.23
Modernization - Roadway	Create a couplet system along First Street and Netarts Highway (3rd Street) between Stillwell Avenue and US 101 (Main Street) to improve operations at US 101 and OR 6. First Street would be westbound only and 3rd Street would be eastbound only between Stillwell and US 101. Project includes signing, channelization/restriping and intersection signal equipment and timing.	Future No-Build Operational Analysis, PAC	1st Street and 3rd Street between Stillwell Avenue and US 101 (Main Street)	65.74	65.74
Parking	Conduct parking study to understand parking utilization at various times during the year.	Field Work		N/A	N/A
Parking	Provide signing along US 101 to off-street lots off of US 101	Field Work	US 101	N/A	N/A
Parking	Construct off-street parking at City owned lot along Ivy Avenue. Provide signing along US 101 to this lot.	Field Work and City Staff	Off-Street property	N/A	N/A
Ped/Bike	Construct bike lanes and sidewalk on 3rd Street, east of Evergreen Drive to McCormick Loop, repave roadway from Nestucca Avenue to City UGB. Provide marked crosswalks near Tillamook Fairgrounds with pedestrian area warning signs. Restripe crosswalks near Wilson Elementary/Goodspeed Park area on 3rd Street. Retrofit ramps along 3rd Street to ADA compliance near Goodspeed Park and Wilson School	Field Work	3rd Street	N/A	N/A
Ped/Bike	Construct sidewalk and bike lanes on Evergreen Drive. Repave road with asphalt	Field Work	Evergreen Drive	N/A	N/A
Ped/Bike	Construct sidewalk on 12th Street, east of high school to Evergreen Drive, repave from Miller Avenue to Marolf Loop. Provide edequate width along 12th Street from Evergreen Drive to Marolf Loop for shared roadway designation.	Field Work	12th Street	N/A	N/A
Ped/Bike	Provide bike route on 3rd Street between Stillwell Avenue to Trask River bridge. Widen sidewalk to 10 feet both sides. keep parking on both sides west of US 101. East of US 101, bike route separates between OR 6 couplet. Striping modifications required.	Field Work	Various locations	N/A	N/A
Ped/Bike	Provide bike route on 3rd Street between Stillwell Avenue to Trask River bridge. Provide southside with parking and bike lane on both sides west of US 101. East of US 101, bike route separates between OR 6 couplet. Striping modifications required.	Field Work	Various locations	N/A	N/A
Ped/Bike	Provide bike route between Evergreen Drive to Trask River bridge. Eastbound: Route on 3rd Street, south onto Ash Avenue, east on 4th Street, north on Ocean Place east of 3rd Street. Would require bike lanes on 3rd to Ash Avenue to shared roadway on Ash Avenue, 4th Street and Ocean Place. Westbound: 3rd Street from Evergreen, north on Ocean Place, west on OR 6, cross US 101 on First Street, south on Birch Street, west on 2nd Street, south on Ash Avenue, west on 3rd Street. Provide bike lanes on 3rd Street and OR 6, all other roads are shared roadway designation. Bike lanes on OR 6 can be provided with striping modifications. Requires advanced signing on US 101 and 3rd Street.	Field Work	Various locations	N/A	N/A
Ped/Bike	Create a bicycle bypass in downtown area along Stillwell Avenue, create bike lane connections with US 101 along Front Street and 12th Street. Provide advanced signing. Remove parking on one side of road to provide bike lanes. Coordinate with Hoquarten Slough Trail. Might require undercrossing with US 101 at Front Street. Additional study requirad. Complete sidewalk system on Stillwell Avenue, Front to 1st Streets and 11th to 12th Streets. Construct ADA ramps along Stillwell Avenue near Liberty Elementary School (7th and 8th Street crossings). Restripe crosswalks along Stillwell Avenue.	Field Work	Stillwell Avenue (with Front and 12th Street connections)	N/A	N/A
Ped/Bike	Complete sidewalk and provide bike lanes on 3rd Street, west of Ash Avenue. Removal of parking on one side.	ODOT and Field Work	Netarts Highway (3rd Street)	N/A	N/A
Ped/Bike	Complete sidewalk system on Front Street	Field Work	Front Street	N/A	N/A

Project Type	Description	Source	Facility	BEG MP	END MP
Ped/Bike	Provide adequate bike lane width and sidewalk and repave Alder Lane between Evergreen Drive and Cypress/Dogwood Intersection	Field Work	Alder Lane	N/A	N/A
Ped/Bike	Provide adequate shoulder on Brookfield Avenue. Road would need to be acquired by City	Field Work	Brookfield Avenue	N/A	N/A
Ped/Bike	Provide adequate shoulder on McCormick Loop for shared roadway designation, repave road at south end	Field Work	McCormick Loop	N/A	N/A
Ped/Bike	Provide adequate shoulder on Marolf Loop for shared roadway designation, repave road	Field Work	Marolf Loop	N/A	N/A
Ped/Bike	Construct sidewalk along 4th Street from Nestucca to Miller Avenues. Contingent on development.	Field Work	4th Street	N/A	N/A
Ped/Bike	Downtown sidewalk replacement from Hoquarton Slough to 4th Street. Includes bulb-outs at 2nd, 3rd and 4th. This is phase 1 of the TE project	US 101 (Main and Pacific Avenues)	US 101	65.59	65.79
Ped/Bike	Downtown sidewalk replacement from 4th to 12th Street. Includes bulb-outs at 9th and 11th. This is phase 2 for the TE project	US 101 (Main and Pacific Avenues)	US 101	65.79	66.24
Ped/Bike	Pedestrian activated signal crossing on US 101 between Wilson River Loop and Hoquarten Slough. Recommended location is at Hadley Road.	Field Work and DRAFT Oregon Coast Highway Master Plan	US 101	N/A	N/A
Ped/Bike	Provide ADA compliant ramps along Miller Avenue. Provide painted crosswalks along Miller Avenue	Field Work	Miller Avenue	N/A	N/A
Ped/Bike	Construct ADA ramps along 10th Street. (Currently ramps exist only at Stillwell and US 101 intersections)	Field Work	10th Street	N/A	N/A
Ped/Bike	Provide sidewalk on north side between Stillwell and US 101, retrofit south side sidewalk, overlay roadway between Stillwell and Miller	Field Work	11th Street, between Stillwell and Miller Avenues	N/A	N/A
Ped/Bike	Develop Phase 1 of the Hoquarton Slough trail along south side of Hoquarton Slough for approximately 1000 feet. Connect parks along Slough and proposed Stillwell bike route. This is a current project of the Tillamook County Estuary organization.	City Center Plan, City Staff		N/A	N/A
Ped/Bike	Create trail plan to assess roadway connectivity and off-street trails projects. This incorporates the development of Phase 2 of the Hoquarton Slough trail.	City Staff, DRAFT Oregon Coast Highway Master Plan		N/A	N/A
Ped/Bike	Provide bicycle parking in Downtown Tillamook. Benches, drinking fountains, trash receptacles, and informational signage or historical kiosks are recommended	Field Work and DRAFT Oregon Coast Highway Corridor Master Plan and Tillamook Oregon Downtown Development Association's Report		N/A	N/A
Ped/Bike	Provide bicycle parking at sport fields on Alder Lane	Field Work		N/A	N/A
Ped/Bike	Provide bicycle parking at Tillamook Fairgrounds	Field Work		N/A	N/A
Ped/Bike	Provide bicycle parking at TCTD 2nd and Laurel Avenue Transit Center	Field Work		N/A	N/A
Ped/Bike	Provide bicycle parking at hospital	Field Work		N/A	N/A
Ped/Bike	Provide bicycle parking at Goodspeed Park	Field Work		N/A	N/A
Ped/Bike	Provide bicycle parking at 9th Street Park	Field Work		N/A	N/A
Ped/Bike	Provide bicycle parking at Carnahan Park	Field Work		N/A	N/A
Safety	US 101 at Hadley Road (high accident rate) - consolidate driveways near intersection, and provide a median barrier to restrict the driveways near the intersection to a right-in, right-out.	Accident Analysis	US 101	65.25	65.25
Safety	US 101 (Pacific Avenue) at 3rd Street (Top 10% SPIS Site) - improve driver awareness (bulb-outs, removal of parking, consolidate of driveways). Improved signing and striping on the eastbound approach.	Accident Analysis	US 101	65.77	65.77
Safety	Netarts Highway (#131) at Stillwell Avenue (high accident rate) - Signalize intersection. See above under Modernization-Operational.	Accident Analysis	Netarts Highway	8.98	8.98
Safety	OR 6 at Wilson River Loop (high accident rate) - Construct Interchange.[1] See above under Modernization-Operational.	Accident Analysis	OR 6	1.80	1.80
Safety	US 101 (Pacific Avenue) at 2nd Street (Top 10% SPIS Site) Improve the pedestrian visibility (possible remedies include bulb-outs with parking removal, pedestrian activated crossing blinking lights, crossing flags, etc.)	Accident Analysis	US 101 (Main and Pacific Avenues)	65.69	65.69
Safety	US 101 and OR 6 (skewed geometry, potential safety issues with confusing operations) - Reconstruct westbound approach and create one-way couplet to remove eastbound approach. (See above under Modernization-Operational)	PAC, Field Work, ODOT	US 101 and OR 6	65.64	65.64
Safety	Ocean Place at 4th and 3rd Streets (skewed intersections) - provide a raised island for a safe pedestrian refuge with marked crosswalks on every approach. Designate Ocean Place between the OR 6 couplet as northbound only (removes southbound SSD problem).	PAC, City Staff, Field Work	Ocean Place	N/A	N/A
Safety	Ocean Place at 4th and 3rd Streets (skewed intersections) - Construct a roundabout and realign approaches. Provide advanced signing and striping to provide safe operating conditions.	PAC, City Staff, Field Work	Ocean Place	N/A	N/A
Safety	Alder Lane at Dogwood and Cypress Streets (offset intersection near school), redesign intersection to remove parking area (or revise to not interfere with intersection operations) provide all-way stop control at intersection. Provide shoulder along eastside of intersection for pedestrians and revise crosswalk locations.	PAC, City Staff, Field Work	Alder Lane	N/A	N/A
Safety	Create Gateway at southern end of US 101 Couplet	PAC	US 101	N/A	N/A
Safety	12th Street and US 101 (Pacific Avenue) - realign intersection to provide adequate SSD when 12th Street extension is constructed	PAC	12th Street	N/A	N/A
Safety	12th Street and Tillamook River Road - relocate stop bar to provide better sight distance	PAC	12th Street		
Safety	Upgrade 12th Street railroad crossing with safety measures such as gate and flashing lights. First step would be study by ODOT rail.	City Staff, PAC, Field Work	12th Street and POTB Rail	N/A	N/A
Roadway Preservation (Overlay)	Netarts Highway (MP 0.00 to MP 9.08) (in 2003-2007 STIP, #12308). Currently being designed. Coordinate with 3rd Street sidewalk improvement project.	STIP	Netarts Highway	N/A	N/A
Roadway Preservation (Overlay)	Highway 6 (various segments between MP 0.50 to MP 18.00) (in 2002-2005 STIP, #10748)	STIP	OR 6	N/A	N/A
Roadway Preservation (Overlay)	11th Street (Elm Avenue to Miller Avenue)	Field Work	11th Street	N/A	N/A
Roadway Preservation (Overlay)	10th Street (Elm Avenue to Miller Avenue)	Field Work	10th Street	N/A	N/A
Transit	Provide Park and Ride at headquarters. In conjunction, work to create a carpooling program with support from ODOT and City	STIP	TCTD Headquarters	N/A	N/A
Transit	Provide adequate transit pull-outs at stops with paved landing areas	TCTD	Various roadways	N/A	N/A
Transit	Provide additional services at main stop (2nd Street and Laurel Avenue) in Tillamook. Includes restrooms, customer service kiosk and bike racks.	TCTD and Field Work	2nd Street	N/A	N/A
Transit	Expand services to Oceanside and Pacific City and increase ridership to POTB area	TCTD		N/A	N/A
Transit	Provide better multimodal connections with other transportation providers in the area	TCTD		N/A	N/A
Transit	Provide transit shelters at high ridership locations	TCTD		N/A	N/A
Rail	Upgrade Railline to Class II facility	POTB	POTB Rail		
Rail	Improve crossing at 12th Street (new asphalt and base)	POTB	POTB Rail		
Rail	Improve crossing at Latimer Road (new asphalt and base)	POTB	POTB Rail		
Rail	Passenger loading area for POTB excursion train	City Staff	POTB Rail		

APPENDIX C

Large Vehicle Alternate Route Memorandum

Large Vehicle Alternate Routes Evaluation: City of Tillamook and Tillamook County TSPs

PREPARED FOR: Tillamook County TSP Technical Advisory Committee (TAC)
City of Tillamook TSP Project Advisory Committee (PAC)
ODOT Region 2

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DATE: REVISED: June 10, 2003

Study Purpose

The purposes of this study are as follows:

- To clearly document the nature of the problem facing the City and the County relating to conflicts between trucks and other uses,
- To identify and evaluate proposed solutions, and
- To initiate discussion among the City of Tillamook, Tillamook County, ODOT, and other stakeholders regarding a preferred solution or solutions.

This evaluation of large vehicle alternate routes in the City of Tillamook and Tillamook County is intended to supplement previous studies and plans, including the Alternate Truck Route Section Conceptual Design report (OTAK, October 5, 2001), the City of Tillamook Town Center Plan (Pacific Rim Resources, 2001), and the Oregon Downtown Development Association Resource Team Report (ODDA, March 19-21, 2002). The results of this study will be incorporated into the City of Tillamook and Tillamook County Transportation System Plans (TSPs), which are currently being prepared.

Problem Statement

The City of Tillamook and Tillamook County have identified the need and desire to minimize the impacts of local and through freight truck traffic and large recreational vehicles in the downtown commercial area and in residential neighborhoods in the city.

The forestry and dairy industries are a significant part of the local economy and life in the city and the county. Large trucks are used to deliver raw materials to and distribute intermediate or finished products from the dairy and forestry industries in particular. Large trucks and recreational vehicles also pass through Tillamook on highways US 101 and OR 6 moving between origins and destinations outside of the immediate area.

Despite the economic benefits they bring, trucks and their presence on the constrained roadways of downtown Tillamook result in noise and dust, safety hazards, and wear and tear on the roadways. The log truck traffic in particular through the downtown area has

negative impacts on the safety and economic vitality of the City's downtown business core, while reducing traffic capacity for other vehicles. Log trucks on the adjacent residential streets present safety concerns for other users and a nuisance to residents and visitors due to noise and dust.

Numerous trucks pass through the downtown commercial area on US 101 and through the residential area bordered by US 101, OR 6, 12th Street and Marolf Loop. The locations of at least two large truck-traffic generators—the Tillamook Lumber Company (TLC) mill in downtown Tillamook and the Tillamook Cheese Factory just north of the City limits—in relation to highways US 101 and OR 6 and the competing needs of the residential, commercial, and industrial areas of the city exacerbate the problems.

The vast majority of log trucks today travel through the downtown area and to the TLC mill (OTAK, 2001). Of these, an estimated 70% are traveling to the TLC mill from U.S. 101 north of Tillamook, 20% come from OR 6 to the east, and 10% come from U.S. 101 to the south of the city. Trucks accessing the mill pass first through the city's downtown commercial area on U.S. 101 and then through a residential area on 10th Street. Finished lumber is generally transported from the TLC mill to the east on OR 6 to Portland by truck or on rail. Chips are generally transported by trucks to the north of Tillamook or south toward Salem.

A major part of the truck problem is that any proposed solution must be attractive to users and must be cost-effective. Alternate routes that require trucks to travel out-of-direction and/or increase travel time are unlikely to be used, given the economies of the freight industry (which depend largely on travel time) and the lack of ability to enforce an alternate route.

Evaluation Process

The potential Roadway Alternatives developed for this study were evaluated using a number of criteria including impacts, feasibility, and cost. Key steps in the evaluation process are as follows.

1. Finalize Potential Route List – The list of potential routes will be finalized after discussion at the Large Vehicle Alternate Route meeting on May 29, 2003. The list of routes that have been identified to date will be presented at this meeting.

2. Finalize Evaluation Criteria - At the Large Vehicle Alternate Route meeting on May 29, 2003, evaluation criteria will be presented. The evaluation criteria proposed for this study are intended to identify impacts and feasibility of each potential route.

3. Evaluate Solutions - Potential solutions will be evaluated using a qualitative rating system (+, 0, -) to document how well each potential route meets each criteria . In addition to the rating system, the constraints of each potential route will be presented. A preliminary, planning-level cost estimate also will be prepared for each potential solution or route.

   To simplify the development and evaluation of solutions, potential roadway improvements were evaluated in three segments: north of OR 6, south of OR 6, and TLC mill access. In addition, the different connection options between the north and south routes and the advantages and disadvantages of each were identified.

Based upon discussion at the May 29th meeting, routes that are not feasible or have significant impacts will be removed from the potential route list. For the routes that are determined to be feasible, potential connections between north and south routes will be explored. In addition, potential connections between the north-south routes and the mill will be further explored.

4. Document Results - The Large Vehicle Alternate Route Study will document constraints of each potential route. The Tillamook County and City of Tillamook Transportation System Plans, which will be adopted by the respective jurisdictions, will incorporate the results of this study.

Evaluation Criteria

Table 1 describes the evaluation criteria that were used in the analysis of each potential route.

TABLE 1
Evaluation Criteria

Goal	Rating	Project Criterion
Distance (Out of Direction Travel)	+	The potential route requires little out-of-direction travel for vehicles bypassing downtown Tillamook compared with other alternatives (i.e. shortest distance)
	0	The potential route requires minor out-of-direction travel for vehicles bypassing downtown Tillamook compared with other alternatives (i.e. medium distance)
	-	The potential route requires significant out-of-direction travel for vehicles bypassing downtown Tillamook compared with other alternatives (i.e. longest distance)
Commercial Use	+	The potential route does not impact commercial properties or uses, or impact economic viability of the downtown area. The potential route may increase economic viability and safety within the downtown area by re-routing trucks out of the commercial area.
	0	The potential route has minor impacts on commercial properties or uses (i.e., spot locations)
	-	The potential route significantly impacts commercial properties or uses, including economic viability and safety of the downtown area.
Residential Use	+	The potential route does not impact residential properties or uses.
	0	The potential route has negligible or minor impacts on residential properties or uses (i.e. spot locations)
	-	The potential route significantly impacts residential properties or uses (i.e. multiple locations, neighborhoods or clusters of homes). The potential route may lead to economic loss, decreases in property value, and/or safety concerns for neighborhoods or clusters of homes.
Public Use (i.e. schools, parks, fairgrounds)	++	The potential route does not impact public use facilities (e.g., schools, parks, downtown), leading to increased safety for the public.
	+	The potential route impacts 1 public use facility.
	0	The potential route impacts 2 public use facilities.

TABLE 1
Evaluation Criteria

Goal	Rating	Project Criterion
	-	The potential route impacts 3 public use facilities.
	- -	The potential route impacts 4 or more public use facilities.
Farmland Impacts (to include impacts on EFU lands)	+	The potential route does not impact farmland
	0	The potential route has negligible impacts on farmland
	-	The potential route has moderate impacts on farmland. The project might require a goal exception.
	- -	The potential route significantly impacts farmland, and would require major right-of-way takes or over significant lengths of the route or removal of at least one farm structure. The project might require a goal exception.
Wetland/Floodplain	+	The potential route does not impact wetlands or floodplain areas
	0	The potential route has minor impacts on wetlands or floodplain areas
	-	The potential route has moderate impacts on wetlands or floodplain areas. The project might require a goal exception.
	- -	The potential route significantly impacts existing wetlands or floodplain areas over significant lengths of the route and may require construction of new sections of roadway within wetland/floodplain areas. The project might require a goal exception.
Coordination/Policy	+	The potential route is consistent with all committed ODOT projects or policies.
	0	The potential route is consistent with some committed ODOT projects or policies
	-	The potential route is not consistent with committed ODOT projects or policies.
Existing Roadway Conditions	+	The potential route can be implemented without improvements to existing roadways along the route
	0	The potential route can be implemented with negligible improvements to existing roadways along the route (i.e. minor shoulder widening)
	-	The potential route would require moderate improvements to existing roadways (i.e. shoulder widening, bridge repair, short sections of new roadway, upgraded rail crossings)
	- -	The potential route would require significant construction (i.e. new bridges, major new sections of roadway, major widening, major intersection improvements)
Truck Traffic Origin/Destination	+	The potential route accommodates a major truck traffic origin/destinations identified for the particular segment (i.e. Tillamook Cheese Factory, Tillamook Lumber Company Mill, Port of Tillamook Bay Industrial Area).
	-	The potential route does not accommodate any truck traffic origin/destination locations identified for this segment.
Relative Cost	+	The cost of projects necessary for the route is in the bottom third of all potential routes included in the analysis

TABLE 1
Evaluation Criteria

Goal	Rating	Project Criterion
	0	The cost of projects necessary for a route is in the middle third of all potential routes included in the analysis
	-	The cost of projects necessary for a route is in the top third of all potential routes included in the analysis

Potential Solutions

Based on the problem statement above, the ideal solution or solutions to this problem would:

- Improve truck and other large vehicle movements through the City of Tillamook
- Improve access to the Tillamook Lumber Company Mill
- Be cost-effective
- Be attractive to users (e.g., minimize out-of-direction travel and/or trip time)
- Minimize adverse impacts of truck traffic on the commercial and residential areas of Tillamook to ensure the future economic vitality and livability of the city.

Potential solutions are divided into Roadway Alternatives (Existing Infrastructure, North Segment Alternatives, South Segment Alternatives, Mill Access Alternatives, and North-South Connections) and Other (Non-Roadway) Alternatives. The Roadway Alternatives are listed below and illustrated on Figure 1 (North Segment Alternatives), Figure 2 (South Segment Alternatives), and Figure 3 (Mill Access Alternatives), which are attached at the end of this memo. The projects that would likely be required for each alternative, the constraints, and the results of the Roadway Alternatives evaluation are described in Appendix A, also attached to this memo.

The Roadway Alternatives differ in their impacts to residential areas, public facilities, wetland/floodplain areas, or farmland areas. In addition, each alternative serves different truck origin/destinations and some result in greater out-of-direction travel. Because of the variation in impacts and existing roadway conditions, the estimated costs of the potential routes vary greatly.

Roadway Alternatives

Existing Infrastructure

The existing infrastructure alternatives assume that trucks will continue to use state highways in and around Tillamook to access truck origin/destinations. These alternatives would not require out of direction travel for trucks and would accommodate most of the truck origin/destinations. The alternatives would have no farmland or wetland impacts and would be consistent with ODOT committed projects and policies. The disadvantages of these alternatives is that they would have significant commercial and residential impacts,

and would not address (or only minimally address) safety and other concerns caused by large trucks travelling through the downtown area. Use of existing infrastructure by large vehicles within Tillamook would compound the operational deficiencies at the intersection of US 101 at OR 6.

Under the No-Build Alternative, which assumes existing conditions, trucks would continue to pass through the constrained downtown area. Under the Modified No-Build Alternative, a number of improvements would be made to address deficiencies associated with the constrained geometry in the downtown area.

- NB-1 (No-Build): Maintain existing roadway system and truck routing.
- NB-2 (Modified No-Build): Construct improvements along existing segments of US 101 and OR 6 to accommodate large vehicles on state highways in Tillamook. The following improvements or segment modifications could be considered, as suggested at the Large Vehicle Alternate Route meeting on May 29, 2003:

    1. Improvements at the intersection of OR 6 with US 101. This intersection does not meet Oregon Highway Plan (OHP) mobility standards. As specified in the City of Tillamook TSP, major improvements will be necessary at this intersection. Possible solutions include additional capacity (i.e., channelized westbound right turn lane and downstream receiving lane) or an interchange. The historic bridge along US 101 over the Hoquarten Slough would likely need to be widened to accommodate additional northbound traffic on U.S. 101. Improvements at this intersection would likely have impacts on surrounding properties, require right-of-way acquisition, and possibly require removal of existing structures.

    2. To better accommodate trucks, parking could be eliminated in selected locations where necessary along the US 101 couplet (Main/Pacific). By removing parking on at least one side of the road, wider travel lanes, sidewalks and/or bike lanes could possibly be provided. The wider travel lanes would facilitate truck turning. Safety would likely be improved in the downtown area, as parking removal would reduce distractions and conflicts between modes. Parking removal could be considered at intersections to accommodate truck turn movements.

    3. Two-way traffic could be reestablished along both segments of the US 101 Couplet in downtown Tillamook (Main Avenue and Pacific Avenue). Large vehicles could then be restricted to one side of the couplet, reducing conflicts between trucks and automobiles. This modification would require improvements at the southern merge point of the couplet. Improvements would also be required at the north end of the couplet (including the intersections of Main and Pacific with 1st Street) to allow two-way traffic on 1st Street. A major constraint to this option is that vehicle capacity on the state highway would be significantly reduced. This option could work only if capacity meets OHP requirements.

    4. Turn movements could be restricted along 3rd Street at US 101. To implement this modification, two-way traffic would need to be reestablished on 1st Street (OR 6). This would mean vehicles traveling on U.S. 101 heading east on OR 6 would make this turn at 1st Street instead of 3rd. This would reduce the turning conflicts at 3rd Street and the need for geometric changes at that location and remove some truck

traffic from this two-block stretch of the highway. It would also mean that parking on 1st Street would need to be reduced or eliminated.

5. The Modified No-Build could also include changes to the TLC Mill access, such as improved access to the north and improved geometric conditions at the west side access.

Other improvements also may be possible or recommended for a Modified No Build option. A comprehensive review of this option should be conducted as part of subsequent study.

North of OR 6 (see Figure 1)

The north segment alternatives assume that trucks will use an alternate route to US 101 (north of OR 6) and OR 6 in and around Tillamook. These alternatives would require significant out of direction travel for trucks, but most would provide access to the Tillamook Cheese Factory on Latimer Road. Most of the north segment alternatives would have farmland and wetland impacts, and would require right-of-way acquisition. The advantages of these alternatives is that they would have very little commercial and residential impacts, and would address safety concerns caused by large trucks travelling through the downtown area. Construction of an alternate route would minimize truck movements at the intersection of US 101 at OR 6, which experiences operational deficiencies under existing conditions.

- N-1: Latimer Road/Wilson River Loop
- N-2: Latimer Road/New Section of Roadway Connecting Latimer Road and OR 6 (e.g., located somewhere between POTB railroad and existing Wilson River Loop)
- N-3: Latimer Road/Sollie Smith Road/Schild Road
- N-4: Latimer Road/Sollie Smith Road/Olsen Road

The following alternative was considered in the evaluation, but is not recommended for further study due to a fatal flaw:

- N-5: Wilson River Loop from US 101 to OR 6. The East-West section of Wilson River Loop floods and is therefore not considered a feasible alternative.

South of OR 6 (see Figure 2)

The south segment alternatives assume that trucks will use an alternate route to US 101 (south of OR 6) and OR 6 within the vicinity of Tillamook. These alternatives would require significant out of direction travel for trucks and generally would not provide direct access to all the identified truck origin/destination points south of OR 6. Most of the south segment alternatives would have farmland and wetland impacts, and would require right-of-way acquisition. Also, several of the alternatives have potentially large impacts on public use sites such as schools. The advantages of these alternatives is that they would have only minor commercial and residential impacts, and some alternatives would address safety concerns caused by large trucks travelling through the downtown area. Construction of an alternate route would minimize truck movements at the intersection of US 101 at OR 6, which experiences operational deficiencies under existing conditions.

- S-1: McCormick Loop/Schild Road
- S-2: Long Prairie Road/Trask River Road/Olsen Road
- S-3: Long Prairie Road/Connection between Long Prairie Road and McCormick Loop /McCormick Loop/Schild Road
- S-4: Connection between 12th Street and US 101/12th Street/Marolf Loop/3rd Street/Wilson River Loop*
- S-5: Connection between 12th Street and US 101/12th Street/Connection between 12th Street and McCormick Loop/McCormick Loop/Schild Road*
- S-6: Connection between 12th Street and US 101/12th Street/Connection between 12th Street and Trask River Road/ Trask River Road/Olsen Road*
- S-7: Connection between 12th Street and US 101/12th Street/Marolf Loop/Marolf Loop Extension*
- S-8: McCormick Loop/Connection between McCormick Loop and Trask River Road/Trask River Road/Olsen Road
- S-9: Long Prairie Road/Connection between McCormick Loop and Long Prairie Road/McCormick Loop/Connection between McCormick Loop and Trask River Road/Trask River Road/Olsen Road
- S-10: McCormick Loop/Connection between McCormick Loop and Marolf Loop/Marolf Loop/Connection between 3rd Street and OR 6. This alternative could also connect with Long Prairie Road to the south.

*For the connection between US 101 and 12th Street, two options are possible. The first option is a new east-west section of roadway from Miller Avenue to US 101. The second option is a new north-south section of roadway from 12th Street to US 101. For the purposes of this study, no attempt is made to distinguish between these two options.

Tillamook Lumber Company Mill Access (see Figure 3)

The primary truck access to the TLC mill is on 10th Street east of US 101. The possibility of moving the mill access point to Evergreen Drive or 3rd Street has been discussed in previous studies. The basic alternatives for truck access to the TLC mill are as follows:

- No-Build (existing condition). Trucks access the mill from U.S. 101 via 10th Street and exit the mill using 3rd Street and Delmonte. Although it is discouraged, other local streets also are sometimes used to reach the 10th Street entrance to the mill.
- M1-A (North/East Access via Existing Local Streets). Relocate the mill access to 3rd Street and construct improvements from new entrance to the large vehicle alternate route to the east. This alternative would likely require internal reconfiguration of the mill. (Evergreen Drive, a residential street, was not considered a feasible route and is therefore not considered here.)

- M1-B (South Access via Existing Local Streets). Relocate the mill access to 12th Street and construct improvements from new entrance to the large vehicle alternate route to the east. This alternative would likely require internal reconfiguration of the mill.
- M1-C (North Access to OR 6 via 3rd Street). As described in the Truck Route Section Conceptual Design Report (OTAK, 2001), the access point could be relocated to 3rd Street. Access from OR 6 could be provided by extending Evergreen Drive from OR 6 to 3rd Street. This access could be provided via a ramp from OR 6 or as an at-grade connection.
- M2 (North Access via Dedicated Route). Construct a new section of road from the mill to North US 101 along the Port of Tillamook Bay Railroad tracks.
- M3 (South Access via Local Streets or Dedicated Route). Construct a new section of road from the mill to South US 101. This alternative could be constructed as an extension of 12th Street west to US 101, as a new section of roadway directly south of mill to US 101, or as a new section of roadway along the Port of Tillamook Bay Railroad tracks.

North-South Connections

As described above, the alternative routes north and south of OR 6 were evaluated independently. However, in order for the large vehicle alternate route to function smoothly, the north and south segments must connect to each other. This section of the study addresses connectivity issues between the potential north and south segments, including the potential interchange at OR 6 and Wilson River Loop. This analysis makes the following two assumptions:

- A route with no 90-degree turns will function more smoothly than a route that requires large trucks to make turn movements at intersections.
- A continuous route without an at-grade crossing on OR 6 will function more smoothly than a route that requires large trucks to stop at an at-grade intersection (signalized or unsignalized) along OR 6.

Given the roadway segment improvements identified above, the connection options can be divided into two basic types:

- **Direct Connection**. The north and south routes can be connected through a single intersection (signalized, unsignalized) or a single interchange. If the preferred north and south routes do not connect under existing conditions, the possibility of connecting them at a single point could be considered (i.e. realigning the roadway segments near OR 6 to a single point).
- **Indirect Connection**. The north and south routes can be connected through a combination of intersections, interchanges, overpasses, or frontage roads.

Tables 2 and 3 summarize the advantages and disadvantages of the various connection options.

TABLE 2
Direct Connecton Options

Opton	Advantages	Disadvantages	Feasibility/Notes

Unsignalized Intersection	Low cost Low wetland, environmental, and farmland impacts Improved mobility over indirect connection	Safety issues associated with at-grade intersection Capacity issues (i.e. the intersection may not meet OHP mobility standards)	An unsignalized intersection may result in high crash rates (e.g., at Wilson River Loop at OR 6) The intersection improvements may require right-of-way acquisition and improvements on OR 6 and the minor approaches (i.e. addition of turn lanes)
Signalized Intersection	Low cost in comparison to interchange Low wetland, environmental, and farmland impacts Improved mobility over indirect connection	Safety issues associated with signal in rural area Safety issues associated with at-grade intersection	The intersection would need to meet signal warrants The intersection improvements may require right-of-way acquisition and improvements on OR 6 and the minor approaches (i.e. addition of turn lanes)
Interchange	Improved safety Improved capacity Improved mobility over indirect connection	High cost High wetland, environmental, and farmland impacts	Construction of an interchange would require right-of-way acquisition An interchange is already funded through the STIP at the intersection of OR 6 and Wilson River Loop
Realign sections of the north and south routes to create a single connection point	Improved safety over an indirect connection. Improved mobility over an indirect connection	High cost through road realignments High wetland, environmental, and farmland impacts	The intersection type for this option could include an unsignalized or signalized intersection, or an interchange. The realignments would require right-of-way acquisition. Access management and opportunities to reduce access points on OR 6 should be considered with this option.

TABLE 3
Indirect Connection Options

Option	Advantages	Disadvantages	Feasibility/Notes
Two Interchanges	Improved safety Improved capacity and mobility Interchanges could be connected using 3rd Street or OR 6, which would decrease wetland, environmental, and farmland impacts associated with frontage road construction	High cost High wetland, environmental, and farmland impacts due to interchange construction and frontage road construction Decreased mobility over direct connection Safety would be impacted if interchanges are connected with 3rd Street due to public use and residential	Construction of an interchange would require right-of-way acquisition An interchange is already funded through the STIP at the intersection of OR 6 and Wilson River Loop Connection of the two interchanges could be provided using OR 6, frontage roads along OR 6, or 3rd Street. Interchange spacing standards on Regional Highways as specified in OHP (Rural = 3 miles, Urban = 1.9 miles)

		impacts	
Two Signalized Intersections	Low cost in comparison to interchange options Low wetland, environmental, and farmland impacts	Safety issues associated with signals in rural area Safety issues associated with at-grade intersections Decreased mobility over direct connection	The intersections would need to meet signal warrants The intersection improvements may require right-of-way acquisition and improvements on OR 6 and the minor approaches (i.e. addition of turn lanes) Signal spacing standards (0.5 mile minimum)
Two Unsignalized Intersections	Low cost Low wetland, environmental, and farmland impacts	Safety issues associated with at-grade intersections Capacity Issues (i.e., the intersections may not meet OHP mobility standards) Decreased mobility over direct connection	Unsignalized intersections may result in high crash rates (e.g., Wilson River Loop at OR 6) The intersection improvements may require right-of-way acquisition and improvements on OR 6 and the minor approaches (i.e. addition of turn lanes)
Combine Interchange with Overpass or At-grade Intersection. The intersections could be connected using OR 6, 3rd Street, or frontage roads along OR 6.	Improved safety over at-grade intersections Interchanges could be connected using 3rd Street or OR 6, which would decrease wetland, environmental, and farmland impacts associated with frontage road construction	Decreased safety over interchanges Decreased mobility over direct connection High cost High wetland, environmental, and farmland impacts Safety would be impacted if interchanges are connected with 3rd Street due to public use and residential impacts	Construction of an interchange, overpass, or new frontage roads would require right-of-way acquisition An interchange is already funded through the STIP at the intersection of OR 6 and Wilson River Loop Connection of the two intersections could be provided along OR 6, with frontage roads along OR 6, or 3rd Street

As summarized in Tables 2 and 3, there are advantages and disadvantages of each connection type. The feasibility of the connection types identified above differs depending on which north and south routes that are considered.

However, in terms of safety, mobility and cost, a direct connection is recommended over an indirect connection. Of the direct connection types identified above, an interchange would provide improved mobility and function more smoothly than a signalized or unsignalized intersection. A signalized intersection along the rural section of OR 6 east of Tillamook would not meet driver expectations and therefore is not recommended. An unsignalized intersection also is not recommended due to safety and operational concerns.

If an indirect connection is required to link a north and south route, a single interchange with frontage roads and a potential overpass or at-grade intersection would be recommended. Two interchanges are unlikely to be feasible due to ODOT spacing standards. Two signals would not meet driver expectations due to the rural nature of OR 6

east of Tillamook. Two unsignalized intersections would not be recommended due to safety and operational concerns.

Other (Non-Roadway) Alternatives

The following non-roadway alternatives can be considered in conjunction with the roadway options.

Land Use

- Relocate TLC mill to the POTB industrial area. Assuming the roadway alternative improves access to the POTB area, this alternative would substantially reduce adverse impacts from mill truck in downtown and the residential neighborhoods. However, truck traffic would still need to travel to and from the POTB area; without an alternate route, trucks would still pass through downtown on U.S. 101. The existing TLC mill site could be redeveloped with a mix of residential and commercial uses, expanding the city's supply of new area for development that is within the urban growth boundary and outside the floodplain. Constraints include high cost and potential environmental clean-up at mill site. FEMA and/or federal economic development grant funding possibilities should explored.

Inter-Modal

- Work to shift a portion of local and regional truck traffic to other modes (e.g., rail and barge). This option would make use of existing infrastructure that is currently underused. Because the railroad tracks are generally located away from residential and commercial sites, this option would have fewer adverse impacts to adjacent land uses.

Education and Enforcement (can be combined with any other alternative)

- Enforce existing traffic speeds on US 101. Target truck traffic if possible.
- Work with truck origin and destination businesses to educate truck drivers about alternate routes and encourage them to use the routes.
- In the long-term, identify strategies to make the alternate routes mandatory for trucks over a certain size or weight.

Next Steps

As described above, the purpose of this study is to identify and evaluate potential alternate routes and solutions to truck conflicts in the vicinity of Tillamook. This study was reviewed by the City of Tillamook, Tillamook County, ODOT, and other interested stakeholders to initiate discussion regarding a preferred solution. However, to develop the potential solutions to the level of detail needed to arrive at a preferred alternative, a refinement study is recommended. At a minimum, the study (or studies) would include the following components:

- Stakeholder Involvement and Agency Coordination - Develop a public involvement process that includes all interested stakeholders throughout the community, including the trucking industry, the Tillamook Lumber Company, the Port of Tillamook Bay, the Tillamook County Creamery Association, residents, business owners, and affected public agencies (e.g., City of Tillamook, Tillamook County, ODOT, TCTD). The process

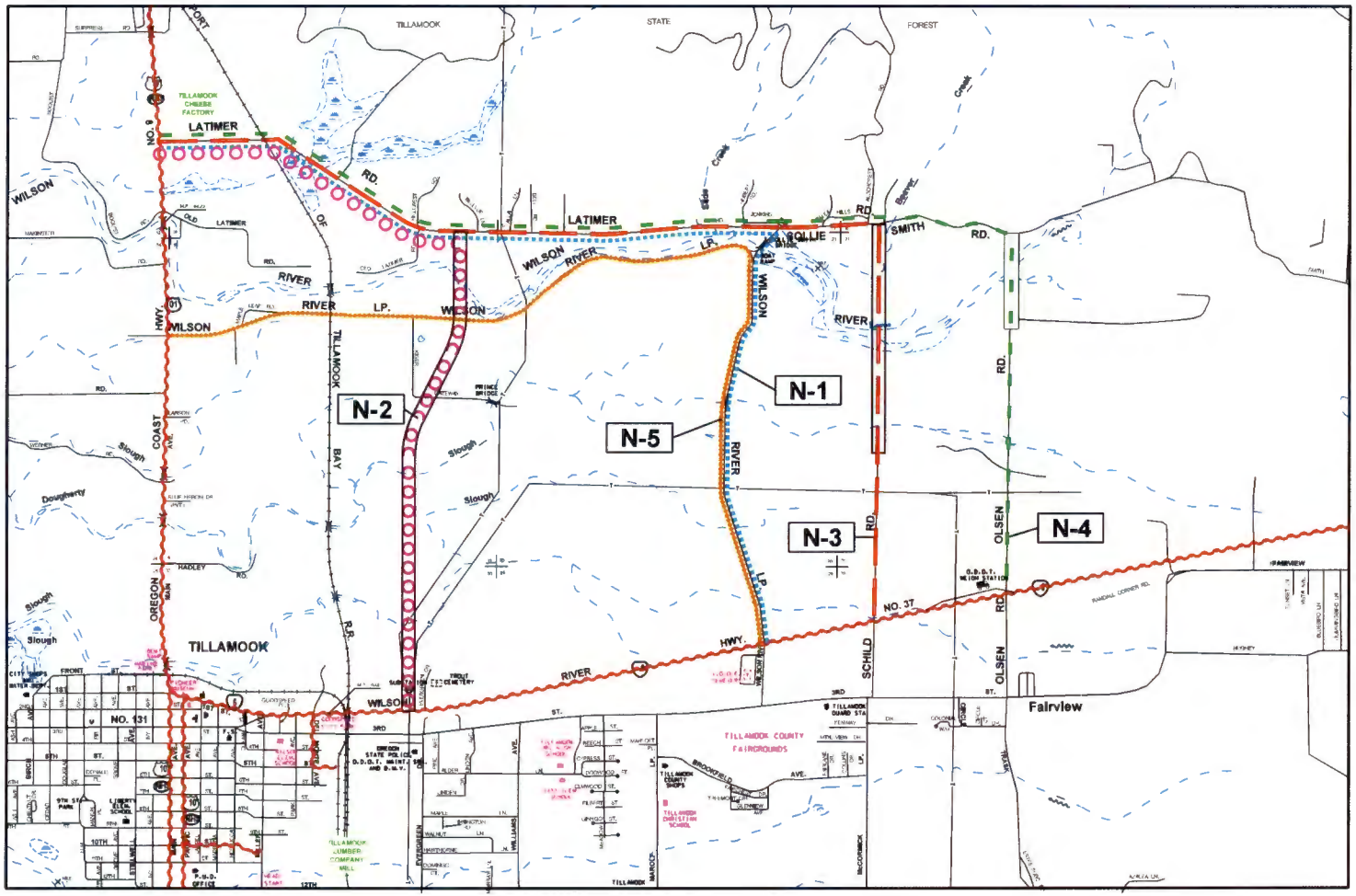
would include regular meetings of an advisory committee that includes these stakeholders.

- Weighted Evaluation Process - As documented in this study, each potential route or solution has different impacts (i.e. wetland/floodplain, farmland, residential, commercial, public use). Therefore, selection of one alternative over another results in tradeoffs in community values. The refinement plan should also include a weighting exercise to determine the most important community values (for example, are residential impacts more or less important than business impacts or environmental impacts or cost?). The results of this process should be used to determine the preferred alternative.

- Additional Alternatives - A number of alternatives were developed and evaluated as part of this study. However, additional routes also might be feasible. The refinement study should review the proposed alternatives with stakeholders to determine whether any additional alternatives should be proposed

- Detailed Alternatives/Impacts Analysis - For each potential route identified in this study, general constraints and impacts were documented. The refinement plan should include a more detailed analysis, including determining the number of structures that will be impacted, the amount and cost right-of-way acquisition, and wetland/floodplain impacts. The refinement plan should also include a more detailed cost estimate for the preferred alternative. Based on the discussion at the May 29, 2003, Large Vehicle Alternate Route Evaluation meeting, priorities for future study include alternatives that minimize out-of-direction travel and that are cost-effective.

- Internal Truck Traffic Study at the Tillamook Lumber Company Mill – This study should be conducted to determine the feasibility of internal reconfiguration at the existing mill site, including entry and exit point modifications. This study should include projected truck volumes travelling to and from the mill, circulation needs, and truck origin/destinations. The City of Tillamook should coordinate with the Tillamook Lumber Company Mill to secure funding for this study.



LARGE VEHICLE ALTERNATE ROUTE STUDY

NORTH SEGMENTS
Figure 1

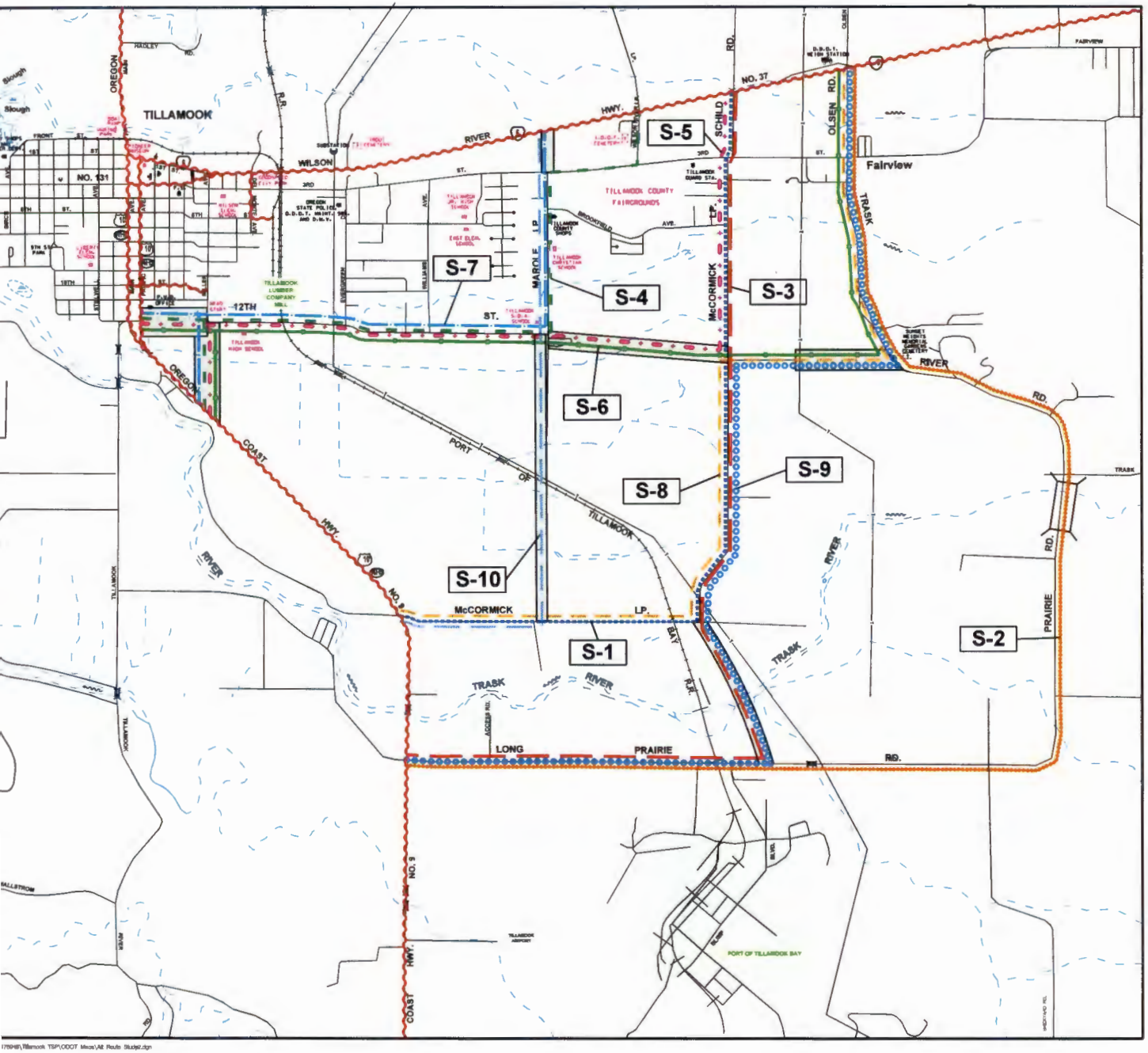
N

1000 0 1000 2000

Scale In Feet

LEGEND

- N-1
- N-2
- N-3
- N-4
- N-5
- NO BUILD
- NEW SECTION OF ROADWAY
- SIGNIFICANT TRUCK ORIGIN / DESTINATIO
- PUBLIC USE FEATURE



LARGE VEHICLE ALTERNATE ROUTE STUDY

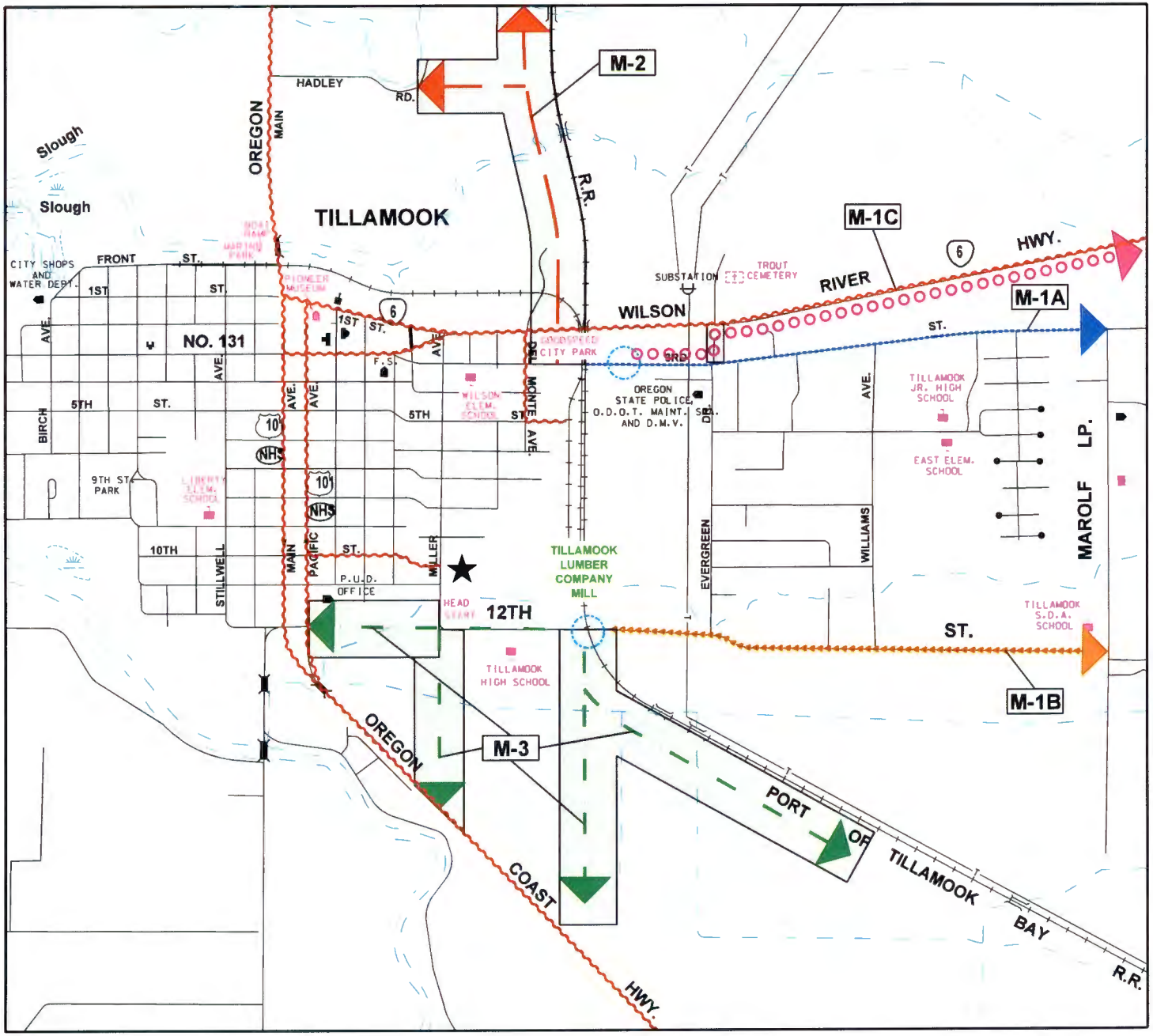
SOUTH SEGMENTS
Figure 2

N

1000 0 1000 2000
Scale In Feet

LEGEND

- S-1
- S-2
- S-3
- S-4
- S-5
- S-6
- S-7
- S-8
- S-9
- S-10
- NO BUILD
- NEW SECTION OF ROADWAY
- SIGNIFICANT TRUCK ORIGIN / DESTINATION
- PUBLIC USE FEATURE



LARGE VEHICLE ALTERNATE ROUTE STUDY

MILL ACCESS
Figure 3

N

1000 0 1000 2000
Scale in Feet

LEGEND

- M-1A
- M-1B
- M-1C
- M-2
- M-3
- NO BUILD
- NEW SECTION OF ROADWAY
- SIGNIFICANT TRUCK ORIGIN / DESTINATION
- PUBLIC USE FEATURE
- EXISTING ACCESS POINT
- POTENTIAL NEW ACCESS POINT

Tillamook County Transportation System Plan:
DRAFT Large Vehicle Alternate Route Study

#	Roadway Segment Alternatives	Improvements	Constraints	Evaluation Criteria															Rating										
				Distance (Out of Direction Travel)	Commercial Impacts	Residential Impacts	Public Use Impacts	Farmland Impacts	Wetland/Floodplain Impacts	Coordination/Policy	Existing Roadway Conditions	Truck Traffic Origin/Destination	Cost	Total Cost ($)	Cost($) Without Committed Projects	Total Length	Total Public Use Impacts	Truck Traffic Origin/Destination	Distance (Out of Direction Travel)	Commercial Impacts	Residential Impacts	Public Use Impacts	Farmland Impacts	Wetland/Floodplain Impacts	Coordination/Policy	Existing Roadway Conditions	Truck Traffic Origin/Destination	Cost	Total
NB-1	No-Build	None	Commercial and residential impacts. Congestion in downtown. Safety issues associated with public use impacts	+	-	-	Varies - to --	+	+	+	--	+	N/A	N/A	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
NB-2	Modified No-Build	Make improvements to existing infrastructure (i.e. intersection of US 101 and OR 6, US 101 in downtown Tillamook) to better accommodate trucks.	Commercial and residential impacts. Safety issues associated with public use impacts	+	-	-	Varies - to --	+	+	+	--	+	Not Estimated	N/A	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
N-1	Latimer Road/Wilson River Loop	Shoulder widening on Latimer Road, Shoulder widening on Wilson River Loop, Bridge improvements on Wilson River Loop Road, improvements at rail crossing on Latimer Road, improvements at Latimer Road/Wilson River Loop intersection, improvements at Tillamook Cheese Factory Entrance on Latimer Road, improvements at OR 6/Wilson River Loop intersection, improvements at US 101/Latimer Road intersection	Minor residential impacts on Latimer Road, Bridges on Wilson River Loop, Existing Roadway Conditions, Minor Wetland Impacts, Minor Farmland Impacts, railroad crossing	0	Does not differentiate potential routes (+)	Does not differentiate potential routes (0)	Does not differentiate potential routes (++)	-	-	+	-	+	+	$2,500,000	$2,200,000	3.2 miles	0	1	2	4	0	4	1.33	1.33	4	1.33	4	4	25.99
N-2	Latimer Road/New Section of Road between Latimer Road and OR 6	Shoulder widening on Latimer Road, new section of roadway connecting Latimer Road and OR 6 (including 3 new bridges), improvements at rail crossing on Latimer Road, new intersection with OR 6, improvements at US 101/Latimer Road intersection	Minor residential impacts on Latimer Road, Existing Roadway Conditions, Major Wetland and Farmland Impacts, railroad crossing, right-of-way acquisition	+	Does not differentiate potential routes (+)	Does not differentiate potential routes (0)	Does not differentiate potential routes (++)	--	--	-	--	+	-	$5,400,000	$5,000,000	2.5 miles	0	0	4	4	0	4	0	0	0	0	4	0	16
N-3	Latimer Road/Sollie Smith Road/Schild Road	Shoulder widening on Latimer Road, Shoulder widening on Sollie Smith Road, Major widening on Schild Road, new section of roadway connecting Sollie Smith Road with Schild Road (including 2 new bridges), improvements at rail crossing on Latimer Road, improvements at Latimer Road/Wilson River Loop intersection, improvements at Tillamook Cheese Factory Entrance on Latimer Road, improvements at Schild Road/OR 6 intersection, improvements at US 101/Latimer Road intersection	Minor residential impacts on Latimer Road and Sollie Smith Road, Existing Roadway Conditions, Major Wetland and Farmland Impacts, Would require removal of at least one structure on Schild Road, railroad crossing	0	Does not differentiate potential routes (+)	Does not differentiate potential routes (0)	Does not differentiate potential routes (++)	--	--	0	--	+	-	$4,500,000	$4,200,000	3.4 miles	0	1	2	4	0	4	0	0	2	0	4	0	16

Tillamook County Transportation System Plan:
DRAFT Large Vehicle Alternate Route Study

#	Roadway Segment Alternatives	Improvements	Constraints	Evaluation Criteria														Rating										
				Distance (Out of Direction Travel)	Commercial Impacts	Residential Impacts	Public Use Impacts	Farmland Impacts	Wetland/Floodplain Impacts	Coordination/Policy	Existing Roadway Conditions	Truck Traffic Origin/Destination	Cost	Total Cost ($)	Cost($) Without Committed Projects	Total Length	Total Public Use Impacts	Truck Traffic Origin/Destination	Distance (Out of Direction Travel)	Commercial Impacts	Residential Impacts	Public Use Impacts	Farmland Impacts	Wetland/Floodplain Impacts	Coordination/Policy	Existing Roadway Conditions	Truck Traffic Origin/Destination	Cost	Total
N-4	Latimer Road/Sollie Smith Road/Olsen Road	Shoulder widening on Latimer Road, Shoulder widening on Sollie Smith Road, Major widening on Olsen Road, new section of roadway connecting Olsen Road with Sollie Smith Road (including at least 1 new bridge), improvements at rail crossing on Latimer Road, improvements at Latimer Road/Wilson River Loop intersection, improvements at Tillamook Cheese Factory Entrance on Latimer Road, improvements at Olsen Road/OR 6 intersection, improvements at US 101/Latimer Road intersection	Minor residential impacts (Latimer Road, Sollie Smith Road, and Olsen Road), Existing Roadway Conditions, Major Wetland and Farmland Impacts, railroad crossing	-	Does not differentiate potential routes (+)	Does not differentiate potential routes (0)	Does not differentiate potential routes (++)	- -	--	0	--	+	0	$3,500,000	$3,200,000	3.7 miles	0	1	0	4	0	4	0	0	2	0	4	2	16
S-1	McCormick Loop/Schild Road	Shoulder widening on McCormick Loop, Shoulder widening on Schild Road, improvements at US 101/McCormick Loop intersection, improvements at 3rd Street/McCormick Loop/Schild Road intersection, improvements at OR 6/Schild Road intersection, improvements at rail crossing on McCormick Loop	Minor Residential Impacts (McCormick Loop and Schild Road), Minor wetland and farmland impacts, Might require removal of farm structures, Existing Roadway Conditions, railroad crossing	0	Does not differentiate alternatives (+)	0	++	-	-	-	-	-	+	$2,000,000	$2,000,000	2.6 miles	0	0	2	4	2	0	1.33	1.33	0	1.33	0	4	15.99
S-2	Long Prairie Road/Trask River Road/Olsen Road	Shoulder widening on Long Prairie Road, Shoulder widening on Trask River Road, Shoulder widening on Olsen Road, Bridge improvements on Long Prairie Road, improvements at US 101/Long Prairie Road intersection, improvements at 3rd Street/Olsen Road/Trask River Road intersection, improvements at OR 6/Olsen Road intersection	Minor Residential Impacts (Long Prairie Road, Trask River Road, and Olsen Road), Minor farmland and wetland impacts, Existing Roadway Conditions	-	Does not differentiate alternatives (+)	0	++	-	-	0	-	+	-	$4,800,000	$3,600,000	4.6 miles	0	1	0	4	2	0	1.33	1.33	2	1.33	4	0	15.99
S-3	Long Prairie Road/Connection between Long Prairie Road and McCormick Loop /McCormick Loop/Schild Road	Shoulder widening on Long Prairie Road, new section of road between Long Prairie Road and McCormick Loop (including new bridge), Shoulder widening on McCormick Loop, Shoulder widening on Schild Road, improvements at US 101/Long Prairie Road intersection, Improvements at 3rd Street/McCormick Loop/Schild Road intersection, improvements at OR 6/Schild Road intersection	Minor Residential Impacts (Long Prairie Road, McCormick Road, Schild Road), Major farmland and wetland impacts, Existing Roadway Conditions, Might require removal of farm structures	0	Does not differentiate alternatives (+)	0	++	--	--	0	--	+	-	$4,200,000	$3,300,000	3.5 miles	0	1	2	4	2	0	0	0	2	0	4	0	14
S-4	Connection between 12th Street and US 101/12th Street/Maroff Loop/3rd Street/Wilson River Loop	New section of roadway between 12th Street and US 101, Shoulder widening on 12th Street, Shoulder widening on Maroff Loop, Shoulder widening on 3rd Street, shoulder widening on Wilson River Loop, improvements at new US 101 intersection, improvements at 3rd Street/Maroff Loop intersection, improvements at 3rd Street/Wilson River Loop intersection, improvements at OR 6/Wilson River Loop intersection, improvements at rail crossing on 12th Street	Major Residential Impacts (12th Street, Maroff Loop), Existing Roadway Conditions, Public Use impacts, rail crossing, Major wetland impacts, Minor farmland impacts	+	Does not differentiate alternatives (+)	-	--	Varies - to --	--	0	-	+	0	$2,800,000	$2,800,000	2.6 miles	5	1	4	4	0	0	0	0	2	1.33	4	2	17.33

Tillamook County Transportation System Plan:
DRAFT Large Vehicle Alternate Route Study

#	Roadway Segment Alternatives	Improvements	Constraints	Evaluation Criteria														Rating										
				Distance (Out of Direction Travel)	Commercial Impacts	Residential Impacts	Public Use Impacts	Farmland Impacts	Wetland/Floodplain Impacts	Coordination/Policy	Existing Roadway Conditions	Truck Traffic Origin/Destination	Cost	Total Cost ($)	Cost($) Without Committed Projects	Total Length	Total Public Use Impacts	Truck Traffic Origin/Destination	Distance (Out of Direction Travel)	Commercial Impacts	Residential Impacts	Public Use Impacts	Farmland Impacts	Wetland/Floodplain Impacts	Coordination/Policy	Existing Roadway Conditions	Truck Traffic Origin/Destination	Cost	Total
S-5	Connection between 12th Street and US 101/12th Street/Connection between 12th Street and McCormick Loop/McCormick Loop/Schild Road	New section of roadway between 12th Street and US 101, Shoulder widening on 12th Street, new section of road between 12th Street and McCormick Loop, Shoulder widening on McCormick Loop, Shoulder widening on Schild Road, improvements at new US 101 intersection, improvements at 3rd Street/McCormick Loop/Schild Road intersection, improvements at OR 6/Schild Road intersection, improvements at rail crossing on 12th Street	Major Residential Impacts (12th Street), Existing Roadway Conditions, Public Use Impacts, rail crossing, Major farmland and wetland impacts	0	Does not differentiate alternatives (+)	-	0	--	--	-	--	+	0	$3,000,000	$3,000,000	2.9 miles	2	1	2	4	0	2	0	0	0	0	4	2	14
S-6	Connection between 12th Street and US 101/12th Street/Connection between 12th Street and Trask River Road/ Trask River Road/Olsen Road	New section of roadway between 12th Street and US 101, Shoulder widening on 12th Street, new section of roadway between 12th Street and Trask River Road, Shoulder widening on Trask River Road, Shoulder widening on Olsen Road, improvements at 3rd Street/Olsen Road/Trask River Road intersection, improvements at OR 6/Olsen Road intersection, improvements at 12th Street rail crossing	Major Residential Impacts (12th Street), Existing Roadway Conditions, Public Use Impacts, rail crossing, Major farmland and wetland impacts	0	Does not differentiate alternatives (+)	-	0	--	--	-	--	+	0	$3,600,000	$3,600,000	3.5 miles	2	1	2	4	0	2	0	0	0	0	4	2	14
S-7	Connection between 12th Street and US 101/12th Street/Maroff Loop/Maroff Loop Extension	New section of roadway between 12th Street and US 101, Shoulder widening on 12th Street, Shoulder widening on Maroff Loop, new section of roadway for Maroff Loop Extension, improvements at new US 101 intersection, improvements at 3rd Street/Maroff Loop intersection, improvements at OR 6/Maroff Loop intersection, improvements at rail crossing on 12th Street	Major Residential Impacts (12th Street, Maroff Loop), Existing Roadway Conditions, Public Use Impacts, rail crossing, Major wetland impacts, Minor farmland Impacts	+	Does not differentiate alternatives (+)	-	-	Varies - to -	--	-	--	+	+	$2,500,000	$2,500,000	2.2 miles	3	1	4	4	0	1	0	0	0	0	4	4	17
S-8	McCormick Loop/Connection between McCormick Loop and Trask River Road/Trask River Road/Olsen Road	Shoulder widening on McCormick Loop, new section of roadway between McCormick Loop and Trask River Road, Shoulder widening on Trask River Road, Shoulder widening on Olsen Road, improvements at US 101/McCormick Loop intersection, improvements at 3rd Street/Olsen Road/Trask River Road intersection, improvements at OR 6/Olsen Road intersection, improvements at McCormick Loop rail crossing	Minor Residential Impacts (McCormick Loop and Trask River Road), Major wetland and farmland impacts, Might require removal of farm structures, Existing Roadway Conditions, railroad crossing	-	Does not differentiate alternatives (+)	0	++	--	--	-	--	-	+	$2,500,000	$2,500,000	4.5 miles	0	0	0	4	2	0	0	0	0	0	4	10
S-9	Long Prairie Road/Connection between McCormick Loop and Long Prairie Road/McCormick Loop/Connection between McCormick Loop and Trask River Road/Trask River Road/Olsen Road	Shoulder widening on Long Prairie Road, new section of roadway between Long Prairie Road and McCormick Loop (including new bridge). Shoulder widening on McCormick Loop, new section of roadway between McCormick Loop and Trask River Road, Shoulder widening on Trask River Road, Shoulder widening on Olsen Road, improvements at US 101/Long Prairie Road intersection, improvements at 3rd Street/Olsen Road/Trask River Road intersection, improvements at OR 6/Olsen Road intersection	Minor Residential Impacts (McCormick Road and Trask River Road), Major wetland and farmland impacts, Might require removal of farm structures, Existing Roadway Conditions	-	Does not differentiate alternatives (+)	0	++	--	--	0	--	+	-	$4,700,000	$3,800,000	5.3 miles	0	1	0	4	2	0	0	0	2	0	4	0	12
S-10	McCormick Loop/Connection between McCormick Loop and Maroff Loop/Maroff Loop/Connection between 3rd Street and OR 6	Shoulder widening on McCormick Loop, new section of roadway between McCormick Loop and Maroff Road, shoulder widening on Maroff Loop, new section of road between Maroff Loop and OR 6	Major Residential Impacts (Maroff Loop), Existing Roadway Conditions, Public Use Impacts, new rail crossing, Major wetland impacts, Major farmland Impacts, right of way acquisition	+	Does not differentiate alternatives (+)	-	-	--	--	-	--	-	-	$4,200,000	$4,200,000	2.3 miles												

Tillamook County Transportation System Plan:
DRAFT Large Vehicle Alternate Route Study

				Evaluation Criteria														Rating									
#	Roadway Segment Alternatives	Improvements	Constraints	Distance (Out of Direction Travel)	Commercial Impacts	Residential Impacts	Public Use Impacts	Farmland Impacts	Wetland/Floodplain Impacts	Coordination/Policy	Existing Roadway Conditions	Truck Traffic Orig/n/Destination	Cost	Total Cost ($)	Cost($) Without Committed Projects	Total Length	Total Public Use Impacts	Truck Traffic Origin/Destination	Distance (Out of Direction Travel)	Commercial Impacts	Residential Impacts	Public Use Impacts	Farmland Impacts	Wetland/Floodplain Impacts	Coordination/Policy	Existing Roadway Conditions	Truck Traffic Origin/Destination	Cost	Total
M-1A	Relocate Access to 3rd Street. Construct improvements from the new mill entrance to the large vehicle alternate route to the east	New Access to the mill, possible internal reconfiguration of the mill, Improvements on 3rd Street, improvements on other local streets to connect with truck route	Residential impacts, public use impacts, existing roadway conditions, right-of-way	-	0	-	--	+	+	-	-	N/A	+	Not Estimated	N/A	N/A	N/A	N/A	0	2	0	0	4	4	0	1.33	0	4	15.33
M-1B	Relocate Access to 12th Street Construct improvements from the new mill entrance to the large vehicle alternate route to the east	New Access to the mill, possible internal reconfiguration of the mill, improvements on 12th Street, improvements on other local streets to connect with truck route	Residential impacts, public use impacts, existing roadway conditions, right-of-way		+		Varies 0 to --	+	+			N/A	+	Not Estimated	N/A	N/A	N/A	N/A	0	4	0	0	4	4	0	1.33	0	4	17.33
M-2	New section of road from mill to North US 101 along Port of Tillamook Bay Railroad tracks	New Access to the mill, possible internal reconfiguration of the mill, new section of roadway from US 101 to the mill along railroad right-of-way	right-of-way, major farmland impacts, major wetland impacts, ODOT approval	+	+	+	+	--	--			N/A	0	$3,000,000	$3,000,000	0.8 miles minimum	N/A	N/A	4	4	4	3	0	0	0	0	0	2	17
M-3	New section of road from mill to South US 101 (Note: this improvement could be constructed as an extension of 12th Street to the west to US 101 or as a new section of roadway directly south of mill to US 101)	New Access to the mill, possible internal reconfiguration of the mill, new section of roadway from US 101 to the mill along railroad right-of-way	right-of-way, major farmland impacts, minor wetland impacts, ODOT approval	+	+	+	Varies ++ to +	Varies - to --	--	-	--	N/A	0	$1,400,000	$1,400,000	0.4 miles minimum	N/A	N/A	4	4	4	0	0	0	0	0	0	2	14
M-4	Relocate the mill to Port of Tillamook Bay Industrial area	N/A	Port of Tillamook Bay	N/A	+	+	++	+	+	N/A	--	N/A	-	Not Estimated	N/A	N/A	N/A	N/A	0	4	4	0	4	4	0	0	0	0	16

APPENDIX D

Cost Estimates

Tillamook TSP

Cost Estimates

Project Description

L-Mi = Lane-Mile
SF= Square Foot
All costs are in (K).

Project	40% Contg	1 Curb, SW, Storm Unit: Mile Cost: 650 QTY	COST	2 Bike Path Unit: Mile Cost: 110 QTY	COST	3 New Rdwy Unit: L-Mi Cost: 230 QTY	COST	4 Overlay Rdwy Unit: L-Mi Cost: 40 QTY	COST	5 Recon Rdwy Unit: L-Mi Cost: 330 QTY	COST	6 Restripe Unit: L-Mi Cost: 6.0 QTY	COST	7 Intrcon Signl Unit: Each Cost: 35 QTY	COST	8 New Signl Unit: Each Cost: 145 QTY	COST	9 Signl Mod Unit: Each Cost: 75 QTY	COST	10 Street Lights Unit: Mile Cost: 110 QTY	COST	11 Landscaping Unit: Mile Cost: 200 QTY	COST	12 MOB, TC, and EC Unit: LS Cost: 0.2 QTY	COST	13 Building Unit: Each Cost: 250 QTY	COST	14 Bridges Unit: SF Cost: 0.100 QTY	COST	COMMENTS
Construct a road along the Port of Tillamook Bay railroad tracks from the Mill to Latimer Road within the railroad right-of-way	3232	0.00		0.00		4.00		0.00		0.00		4.00		0.00		0.00		0.00		0.00		0.00		0.00		0		9800		Assume new roadway from Latimer to 3 Rail-road tracks = 2 miles long. Assume 2-12' lanes = 4 lane-miles (shoulder only, no bike lanes, sidewalk, or piped drainage system). Assumes 3 bridges: 350' in length total = 350*28 (includes 2' shy on both sides) = 9800 SF
Extend Evergreen Drive to Highway 6.	508	0.10		0.00		0.30		0.00		0.00		0.30		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume new roadway from OR 6 to 3rd (425 feet = 0.1 miles). Assume 2-12' lanes plus 2-6' bike lanes = 0.3 lane-miles. Assume sidewalks and drainage on both sides (0.1 miles). Additional $200 K added for intersection improvements at Evergreen and OR 6.
Construct a new southern roadway from the Mill property to connect with US 101. One proposed location would be along the railroad tracks to the US 101/Long Prarie Road intersetion.	4102	0.00		0.00		5.60		0.00		0.00		5.60		0.00		0.00		0.00		0.00		0.00		0.00		0		11200		Assume new roadway from 3 Rail-road tracks to Long Prairie= 2.8 miles long. Assume 2-12' lanes = 5.6 lane-miles (shoulder only, no bike lanes, sidewalk, or piped drainage system). Assumes 4 bridges: 400' in length total = 400*28 (includes 2' shy on both sides) = 11200 SF
Construct a new southern roadway from the Mill property to connect with US 101. Another possible US 101 connection would be to have the road not follow the railroad tracks and connect immediately south of the City limits.	1385	0.00		0.00		1.60		0.00		0.00		1.60		0.00		0.00		0.00		0.00		0.00		0.00		0		2800		Assume new roadway from 3 Rail-road tracks straight to US 101 = 0.8 miles long. Assume 2-12' lanes = 1.6 lane-miles (shoulder only, no bike lanes, sidewalk, or piped drainage system). Assumes 2 bridges: 100' in length total = 100*28 (includes 2' shy on both sides) = 2800 SF. Included 200K for improvements at the US 101 intersection (turn lanes, decel lanes, etc.)
Extend Marolf Loop to Highway 6.	622	0.15		0.00		0.45		0.00		0.00		0.45		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume new roadway from OR 6 to 3rd (745 feet = 0.15 miles). Assume 2-12' lanes plus 2-6' bike lanes = 0.45 lane-miles. Assume sidewalks and drainage on both sides (0.15 miles). Additional $200 K added for intersection improvements at Marolf and OR 6.
Extend Meadow to 12th Street	1156	0.20		0.00		0.60		0.00		0.00		0.60		0.00		0.00		0.00		0.00		0.00		0.00		2		0		Assume new roadway from dead-end to 12th (1060 feet = 0.2 miles). Assume 2-12' lanes plus 2-6' bike lanes = 0.6 lane-miles. Assume sidewalks and drainage on both sides (0.2 miles). Assumes 2 Buildings
Trout Street, between 3rd and Highway 6	578	0.10		0.00		0.30		0.00		0.00		0.30		0.00		0.00		0.00		0.00		0.00		0.00		1		0		Assume new roadway from OR 6 to 3rd (425 feet = 0.1 miles). Assume 2-12' lanes plus 2-6' bike lanes = 0.3 lane-miles. Assume sidewalks and drainage on both sides (0.1 miles).
Extend 12th Street from Miller Avenue to Pacific Avenue (US 101 Northbound)	548	0.24		0.00		0.72		0.00		0.00		0.72		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume new roadway from US 101 to Miller (1270 feet = 0.24 miles). Assume 2-12' lanes plus 2-6' bike lanes = 0.72 lane-miles. Assume sidewalks and drainage on both sides (0.24 miles).

06/26/03

Tillamook TSP
Cost Estimates

Project Description

L-Mi = Lane-Mile
SF= Square Foot
All costs are in (K).

		1		2		3		4		5		6		7		8		9		10		11		12		13		14		
		Curb, SW, Storm		Bike Path		New Rdwy		Overlay Rdwy		Recon Rdwy		Restripe		Intrcon Signl		New Signl		Signl Mod		Street Lights		Landscaping		MQB, TC, and EC		Building		Bridges		
		Unit: Mile		Unit: Mile		Unit: L-Mi		Unit: L-Mi		Unit: L-Mi		Unit: L-Mi		Unit: Each		Unit: Each		Unit: Each		Unit: Mile		Unit: Mile		Unit: LS		Unit: Each		Unit: SF		
		Cost: 650		Cost: 110		Cost: 230		Cost: 40		Cost: 330		Cost: 6.0		Cost: 35		Cost: 145		Cost: 75		Cost: 110		Cost: 200		Cost: 0.2		Cost: 250		Cost: 0.100		
Project	40% Contg.	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	COMMENTS
Filbert Street extension to Marolf Loop	207	0.11	[illegible]	0.00	[illegible]	0.22	[illegible]	0.00	[illegible]	0.00	[illegible]	0.22	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assume new roadway from Dead End to Marolf (575 feet = 0.11 miles). Assume 2 12' lanes plus 2-6' bike lanes = 0.22 lane-miles. Assume sidewalks and drainage on both sides (0.11 miles).
Extension between Meadow and Williams Avenue (Maple or Hawthorne Lane)	1104	0.40	[illegible]	0.00	[illegible]	0.80	[illegible]	0.00	[illegible]	0.00	[illegible]	0.80	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	1	[illegible]	0	[illegible]	Assume new roadway for entire length (2120 feet = 0.40 miles). Assume 2-12' lanes plus 2-6' bike lanes = 0.8 lane-miles. Assume sidewalks and drainage on both sides (0.40 miles). Assume 1 building take.
Extend Linden Drive to the west and east to connect with Evergreen Drive and Williams Avenue	467	0.21	[illegible]	0.00	[illegible]	0.60	[illegible]	0.00	[illegible]	0.00	[illegible]	0.60	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assume new roadway from Dead End to Evergreen (210 feet = 0.05 miles) and from Dead End to Williams (850 feet = 0.16 miles). Assume 2-12' lanes plus 2-6' bike lanes = 0.60 lane-miles. Assume sidewalks and drainage on both sides (0.21 miles).
Extend 12th Street to McCormick Loop (if development occurs in area)	1472	0.64	[illegible]	0.00	[illegible]	1.95	[illegible]	0.00	[illegible]	0.00	[illegible]	1.95	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assume new roadway entire length (3390 feet = 0.64 miles). Assume 2-12' lanes plus 2-6' bike lanes = 1.95 lane-miles. Assume sidewalks and drainage on both sides (0.64 miles).
Install traffic signal at 3rd and Stillwell	244	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	1.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	0
Construct sidewalk and bike lanes on Evergreen Drive. Repave road with asphalt	789	0.48	[illegible]	0.00	[illegible]	0.48	[illegible]	0.96	[illegible]	0.00	[illegible]	1.44	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assume bike lanes along entire length from 3rd to 12th (2540 feet = 0.48 miles). Assume overlay of 2-12' lanes (0.96 lane-miles) plus new roadway 2-6' bike lanes (0.48 lane-miles) plus sidewalk/drainage (0.48 miles)
Construct sidewalk on 12th Street, east of high school to Marolf Loop, repave from Miller Avenue to Marolf Loop. Provide adequate width along 12th Street from high school to Marolf Loop for shared roadway designation.	1400	1.00	[illegible]	0.00	[illegible]	0.33	[illegible]	2.33	[illegible]	0.00	[illegible]	2.33	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assumes sidewalk/drainage on both sides of road from high school to Marolf (5400 feet = 1.0 miles). Overlay entire length from Miller to Marolf (6150 feet = 1.16 miles). Assume 2-12' lanes = 2.33 lane-miles of overlay. Assume roadway width widened from 12' to 14' from high school to Marolf (5400 feet = 1.0 miles) = 0.33 lane-miles of new roadway
Provide sidewalk on north side of 11th Street between Stillwell and US 101, retrofit south side sidewalk, overlay roadway between Stillwell and Miller	113	0.05	[illegible]	0.00	[illegible]	0.00	[illegible]	0.76	[illegible]	0.00	[illegible]	0.76	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assume sidewalk on one side of roadway only (530 feet = 0.1 miles) = 0.05 miles. Assume additional 10K to retrofit south sidewalk. Overlay (2015 feet = 0.38 miles) assumes 2-12' lanes = 0.76 lane-miles
Construct sidewalk along US 101 between Hoquarten Slough and First Street	44	0.04	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assume sidewalk on one side of roadway only (425 feet = 0.08 miles) = 0.04 miles
Construct sidewalk along 4th Street from Nestucca to Miller Avenues.	55	0.05	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assume sidewalk on one side of roadway only (530 feet = 0.10 miles) = 0.05 miles.
Provide adequate shoulder on Marolf Loop for shared roadway designation, repave	195	0.00	[illegible]	0.00	[illegible]	0.28	[illegible]	1.12	[illegible]	0.00	[illegible]	1.12	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assume widening on both sides (3' total per side) (3000 feet = 0.56 miles) = 0.28 lane-miles
Provide adequate shoulder on McCormick Loop for shared roadway designation, repave	250	0.00	[illegible]	0.00	[illegible]	0.36	[illegible]	1.44	[illegible]	0.00	[illegible]	1.44	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0.00	[illegible]	0	[illegible]	0	[illegible]	Assume widening on both sides (3' total per side) (3800 feet = 0.72 miles) = 0.36 lane-miles

Tillamook TSP
Cost Estimates

Project Description

L-Mi = Lane-Mile
SF= Square Foot
All costs are in (K).

Project	40% Contg	1 Curb, SW, Storm Unit: Mile Cost: 650 QTY	COST	2 Bike Path Unit: Mile Cost 110 QTY	COST	3 New Rdwy Unit: L-Mi Cost: 230 QTY	COST	4 Overlay Rdwy Unit: L-Mi Cost: 40 QTY	COST	5 Recon Rdwy Unit: L-Mi Cost: 330 QTY	COST	6 Restripe Unit: L-Mi Cost: 6.0 QTY	COST	7 Intrcon Signl Unit: Each Cost: 35 QTY	COST	8 New Signl Unit: Each Cost: 145 QTY	COST	9 Signl Mod Unit: Each Cost: 75 QTY	COST	10 Street Lights Unit: Mile Cost: 110 QTY	COST	11 Landscaping Unit: Mile Cost: 200 QTY	COST	12 MOB, TC, and EC Unit: LS Cost: 0.2 QTY	COST	13 Building Unit: Each Cost: 250 QTY	COST	14 Bridges Unit: SF Cost 0.100 QTY	COST	COMMENTS
Provide adequate shoulder on Brookfield Avenue	221	0.00		0.00		0.32		1.26		0.00		1.26		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume widening on both sides (3' total per side) (3350 feet = 0.63 miles) = 0.32 lane-miles. Overlay = 1.26 lane-miles
Provide adequate bike lane width and sidewalk on Alder and repave Alder Lane between Evergreen Drive and Cypress/Dogwood Intersection	738	0.49		0.00		0.33		0.98		0.00		0.98		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume 4' widening on both sides (2590 feet = 0.49 miles) = 0.33 lane-miles. Sidewalk for 0.49 miles. Overlay = 0.98 lane-miles
Complete sidewalk system on 3rd Street, west of Ash Avenue	66	0.06		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume sidewalk on one side of the road only for 2 blocks (650 feet = 0.12 miles) = 0.06 miles
Extend 1st Street to Netarts Highway	315	0.14		0.00		0.41		0.00		0.00		0.41		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume new roadway (715 feet = 0.14 miles). Assume 2-12' lanes plus 2-6' bike lanes = 0.41 lane-miles. Assume sidewalks and drainage on both sides (0.14 miles).
Construct bike lanes and sidewalk on 3rd Street, east of Evergreen Drive to Trask River Road, repave roadway from Nestucca Avenue to City UGB. Provide marked crosswalks near Tillamook Fairgrounds with pedestrian area warning signs. Restripe crosswalks near Wilson Elementary/Goodspeed Park area on 3rd Street. Retrofit ramps along 3rd Street to ADA compliance near Goodspeed Park and Wilson School	2857	1.70		0.00		1.70		4.00		0.00		4.00		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume widening (6' total) entire length between Trask River and Evergreen (9000 feet = 1.70 miles) = 1.70 lane miles. Sidewalk = 1.70 miles. Overlay (10580 feet = 2 miles) = 4 lane-miles Added 25K for ped improvements/striping, etc.
Complete sidewalk system on Stillwell Avenue, Front to 1st Streets and 11th to 12th Streets. Construct ADA ramps along Stillwell Avenue near Liberty Elementary School (7th and 8th Street crossings). Restripe crosswalks along Stillwell Avenue. Provide bike lane on Stillwell Avenue from Front Street to 12th Street	187	0.14		0.00		0.00		0.00		0.00		1.31		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume sidewalk on both sides of roadway from Front to 1st and from 11th to 12th (750 feet = 0.14 miles). Assume parking removed from one side of road, so no widening. Stripe bike lanes both sides (0.65 miles total) = 1.31 lane-miles Added 15K for ped improvements
Extend Beech Street to Maroff Loof	113	0.06		0.00		0.12		0.00		0.00		0.12		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume new roadway from Dead End to Maroff (320 feet = 0.06 miles). Assume 2-12' lanes = 0.12 lane-miles. Assume sidewalks and drainage on both sides (0.06 miles).
Extend Williams Avenue south to 12th Street	264	0.14		0.00		0.28		0.00		0.00		0.28		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume new roadway from Hawthorne to 12th (745 feet = 0.14 miles). Assume 2-12' lanes = 0.28 lane-miles. Assume sidewalks and drainage on both sides (0.14 miles).
Complete sidewalk and provide bike lanes on 3rd Street, west of Ash Avenue. Removal of parking on one side.	55	0.05		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume sidewalk for 250' both sides
Trail, Phase 1 Hoquarten Slough	37	0.00		0.20		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume bike boulevard for 1000'
Trail, Phase 2 Hoquarten Slough	554	0.00		3.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume bike boulevard for 3 miles
Reconstruct Spruce Avenue between Cypress and Beech	143	0.06		0.00		0.00		0.00		0.14		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0		0		Assume 300' of reconstruct = 0.06 miles long (SW and curb). Assume reconstruct 28' width = 0.14 lane-miles

Note: the cost estimates do not include right-of-way, engineering, wetland, or utility relocation costs.

Tillamook TSP

All Unit Costs are in 2002 Dollars

Item	Notes	Unit Cost (K) or Percentage
Mobilization, Traffic Control, Removal of Structures and Obstructions, and Erosion Control	Includes 20% for mobilization, traffic control, removal of structures and obstructions, and erosion control	20%
Curb, gutter, sidewalk, w/ storm system	Includes .5' curb, 1.5' gutter pan and 6' wide sidewalk on both sides of the roadway. A 18-inch concrete pipe storm system w/ 2' of cover over the top of pipe. Trenching and backfill are included. Assume a storm manhole every 500 lf and one standard catch basin every 250 lf (one on each side of the roadway). The Unit Cost is per mile.	650
Bike Boulevard	A separated bike facility. Assume 10' wide, 2-inches of asphalt over 12-inches of aggregate base. Clearing and grubbing is included. 20-foot long culverts every 400 lf. The unit of cost is per mile.	110
New Roadway	Includes clearing and grubbing, excavation or embankment, 18" culverts every 500 lf. subgrade preparation, 14-inches aggregate base, and 6-inches asphalt concrete. The unit cost is per lane-mile.	230
Overlay Existing Roadway	Includes 2-inches of asphalt concrete. Grinding 25% of existing surface. The unit of cost is per lane-mile.	40
Reconstruct Existing Roadway	Includes removing the existing roadway and rebuilding a new facility. This cost is a removal cost plus the "New Roadway" cost listed above. Assume the existing facility to be removed is 4-inches AC over 14-inches aggregate base. The unit of cost is per lane-mile.	330
Intersection Improvements	Costs of STIP projects were used to determine intersection improvement costs: $10K to $25K used for minor striping/signing modifications (right-in, right-out only) $200K to $1,000K used for realignments (depends upon difficulty)	Varies
Restriping Existing Roadway	Includes removing existing striping and restriping the facility. The unit of cost is per lane-mile.	6
Interconnect Signal	Includes the cost to interconnect signal system. The unit of cost is lump sum.	35
New Signal	Includes the signal and all appurtenances. (pole, wiring, detection devices...) The unit of cost is each.	145
Signal Modifications	Includes all evaluations and modifications. The unit of cost is each.	75
Street Lights	Includes the luminaire, pole, wiring, and all other appurtenances. Assume a light pole on each side of the roadway, every 200 lf. The unit of cost is per mile.	110
Landscaping	Includes all plantings, topsoil, irrigation requirements, and trees. The unit of cost is per mile.	200
Bridges	Based on estimated square footage of bridge. The unit of cost is square feet.	0.100
Building Impacts	Assumes $250K for each building that will be significantly impacted by the project. The unit of cost is each.	250
Contingency Factor	Includes 40% Contingency	40%

Note: the cost estimates do not include right-of-way, engineering, wetland, or utility relocation costs.







PREPARED FOR

ODOT Region 2
City of Tillamook
Tillamook County

PREPARED BY

CH2MHILL

Jeanne Lawson Associates, Inc.

Tillamook
Transportation Refinement Plan

April 2006

Report

Tillamook Transportation Refinement Plan

Prepared for

ODOT Region 2
City of Tillamook
Tillamook County

April 2006

Prepared by

CH2MHILL
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Printed on Recycled and Recyclable Paper

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Memo #3: Existing and Future Traffic Operations and Safety
Memo #4: Downtown Speed Study Results
Memo #5: Parking Study – Existing Conditions
Memo #6: Truck Travel Data Collection and Analysis
Memo #7A: Downtown Traffic Alternatives Analysis
Memo #7B: Preliminary List of Downtown Parking and Safety Alternatives

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Memo #9: Sidewalk Structural Review
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3 Truck Route Recommendations
4 Tillamook Lumber Mill: Recommended Site Circulation Changes
5 Main and Pacific Design Recommendations
6 Off-set Curb Extensions
6A Off-set Curb Extensions (Option 2)
7 Downtown Traffic Recommendations for Further Study
8 Downtown Parking Recommendations
9 2nd and Ivy Diagonal Parking (Option 1: With Curb Extensions)
10 2nd and Ivy Diagonal Parking (Option 2: No Curb Extensions)

Introduction

The Tillamook Transportation Refinement Plan was undertaken to develop solutions to three interrelated transportation issues in downtown Tillamook, Oregon (Figure 1):

- Transportation safety, with an emphasis on pedestrians
- Adverse impacts of truck traffic (volume, speed, noise, safety)
- Parking utilization and supply

To address these issues, the plan recommends changes to the Tillamook transportation system in the following areas:

- Improvements to truck routes outside of downtown, in particular minor improvements to county roads to support existing levels of truck traffic on those facilities
- Tillamook Lumber Mill circulation, in particular how trucks enter and exit the mill and the related effect on truck traffic in downtown Tillamook
- Design of Main and Pacific Avenues downtown (US 101 Couplet), in particular issues of pedestrian safety, circulation, and aesthetics
- Downtown traffic circulation, in particular congestion and safety at the intersection of US 101 and OR 6
- Downtown parking, in particular improving the management and use of existing spaces and identifying options for creating additional spaces

Background

The City of Tillamook and Tillamook County Transportation System Plans (TSPs) prepared in recent years identified several issues related to the adverse impacts of traffic, in particular truck traffic, on the state highways (US 101 and OR 6) that pass through the commercial core of downtown Tillamook. These issues are summarized as follows:

- **Truck Transportation Issues:** As part of the TSP process in 2002 and 2003, Tillamook County and City of Tillamook staff members identified the need and desire to minimize the impacts of local and through freight truck traffic in the City of Tillamook downtown commercial area and in residential neighborhoods in the city. These issues were studied at an introductory level in the Large Vehicle Alternative Route Study included in the city and county TSPs. Because of the complex nature of this problem, specific solutions were not recommended in the TSPs and additional study was recommended.
- **Downtown Safety and Parking Issues:** The 2003 City of Tillamook TSP identified a number of improvements to improve pedestrian, bicycle, and vehicle safety in the downtown area, including changes to intersections on US 101 and a recommendation for consideration as a Special Transportation Area (STA), which the Oregon Department of Transportation (ODOT) has subsequently conferred. The TSP also recommended a downtown parking study be conducted as a first step to identifying specific parking issues and solutions.

The city and county asked ODOT for assistance in resolving these issues, in the form of a refinement plan to the TSP. A "refinement plan" is defined in the state Transportation Planning Rule as:

> ...[A]n amendment to the transportation system plan, which resolves, at a systems level, determinations on function, mode or general location which were deferred during transportation system planning because detailed information needed to make those determinations could not reasonably be obtained during that process.

Study Area

This refinement plan includes three overlapping study areas centered on downtown Tillamook (Figure 1[1]):

- Safety: Main and Pacific Avenues from Front Street to 10th Street (for downtown safety)
- Parking: The city's designated Town Center area and designated Parking District (for parking)
- Truck Travel: US 101 from South Prairie Road on the south to Juno Hill on the north and from the Whiskey Creek Road intersection of OR 131 on the west to the Fairview Road intersection on OR 6 on the east

Technical Documentation

The discussion in this plan is supported by a number of detailed technical memorandums, which are included in the Appendix:

- Memo #1: Plan and Policy Review
- Memo #2: Goals and Evaluation Criteria
- Memo #3: Existing and Future Traffic Operations and Safety
- Memo #4: Downtown Speed Study Results
- Memo #5: Parking Study – Existing Conditions
- Memo #6: Truck Travel Data Collection and Analysis
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- Memo #15: Cost Estimates
- Memo #16: Funding Options
- Memo #17: Adoption Recommendations

[1] All figures appear at the end of this document (before the Appendix).

Planning Process

Project Management

A project management team (PMT) consisting of the consultant team and staff members from ODOT, the City of Tillamook, Tillamook County, the Tillamook Downtown Association, and the Department of Land Conservation and Development provided guidance and policy direction for this plan. The PMT met monthly by telephone throughout the refinement plan process.

Public Involvement

A multi-faceted public involvement approach was taken on this project to ensure the effective involvement of members of the Tillamook community and other interested stakeholders. The approach included the following:

- Refinement Plan Advisory Committee (RPAC)—The RPAC was a 22-member committee of Tillamook-area residents, elected officials, business people, and public agency staff members. It was designed to represent a range of interests in Tillamook transportation issues, including downtown business people and truck-based businesses outside of downtown. The RPAC met six times between September 2004 and November 2005.
- Public Workshops—Two hands-on public workshops were conducted, in January and February 2005, to solicit involvement of the broader community in the identification of problems and brainstorming of solutions.
- Public Open Houses—Two public open houses were conducted during the project, one to present preliminary alternatives (July 2005 at the Tillamook farmers' market) and one to present the draft plan (November 2005 at the Tillamook Forestry Center). Open house materials also were displayed at City Hall after the July 2005 event.
- Mailings, Media, and Advertisements—Public events were publicized through the use of mailings to interested parties, as well as to downtown businesses and those with a potential interest in truck transportation issues. This refinement plan and public events were described in notices, articles, and advertisements in the Tillamook *Headlight Herald* and announced on the local radio station.

Further documentation of the public involvement process is included in the Appendix (Memo #14).

Plan and Policy Review

At the beginning of the planning process, the consultant team reviewed city, county, and state plans and policies for the jurisdictions that own, regulate, or provide public services on the public roadways and adjacent lands in the study area. The purpose of this review was to help ensure that proposed changes were consistent with these documents, and to aid in the development of implementing ordinances for the plan. Results of the plan and policy review are included in the Appendix (Memo #1).

Goals and Evaluation Criteria

Starting from the statement of work for the project and a discussion at the first RPAC meeting, the consultant team developed draft goals and evaluation criteria for the project that the RPAC reviewed and approved at its second meeting. The goals and evaluation criteria (see Table 1) create a framework to ensure that the plan responds to the goals and desires of the community. The draft alternatives were evaluated using these criteria.

TABLE 1
Goals and Evaluation Criteria

Goals	Evaluation Criteria
1 Improve US 101 Downtown Safety and Comfort	Pedestrian safety
	Vehicle safety
	Bicycle safety
	Pedestrian crossings within the Town Center area
	Vehicle speeds
	Traffic congestion
	Aesthetics and streetscape amenities
2 Address Downtown Parking Deficiencies	Parking safety and comfort on US 101
	Parking supply on US 101
	Public parking supply downtown
	Employee parking supply downtown
	Recreational vehicle (RV) parking supply downtown
	Parking regulations (time limits)
	Directional signage to public parking
3 Address Adverse Impacts of Trucks on US 101 Downtown	Reduces number of through truck trips
	Slows truck speeds
	Improves truck turning
	Provides a buffer between trucks and on-street parking
	Supports downtown businesses and economy
4 Develop Alternate Truck Routes	Minimizes impacts on residential land uses
	Truck trip efficiency (likelihood route will be used)
	Provides linkage to industrially zoned land, including underdeveloped industrial parcels
	Supports local and regional businesses and economy
	Minimizes impacts on natural resources and resource lands
	Minimizes impact on flood hazard/rating
	Amount of new road outside the Urban Growth Boundary
	Efficient use of existing highway capacity
	Compatibility with future interchange in the vicinity of OR 6 and Wilson River Loop
5 Address Other Identified Issues	Cost-effectiveness of transportation investments
	Consistency with applicable standards (city, county, ODOT)
	Consensus among affected jurisdictions on implementing the alternative
	Implementable within a 20-year timeframe
	Provides a year-round solution

Existing and Future Conditions Review

After the first RPAC meeting, the consultant team reviewed and documented existing and anticipated future transportation conditions in the project area. The review was based on existing documents, traffic operations and impacts analysis, field reviews, and traffic and safety data collection.

Results of the existing conditions review are provided in the Appendix in the corresponding memos identified below. The key types of data collected and analyzed were:

- Traffic operations (volumes, congestion, etc.) (Memo #3)
- Crash and safety conditions and data for all modes (Memo #3)
- Pedestrian infrastructure deficiencies (Memo #3)
- Vehicle speeds (Memo #4)
- Parking supply and utilization (Memo #5)
- Truck counts and travel routes around and through downtown (Memo #6)
- Pedestrian crossing behavior (Memo #11)
- Signage and illumination (Memo #13)

Development and Evaluation of Alternatives

Following the review of plans and policies, development of goals and evaluation criteria, and review of existing and future conditions, the consultant team developed alternatives to respond to the project purpose and goals. The following were key steps in the alternatives development process:

1. Using a public workshop format, brainstorm with the RPAC and interested stakeholders the nature of the problems and identify a wide range of potential solutions (January–March 2005).

2. From the list of brainstorm ideas, develop a range of alternatives that seek to meet project goals and evaluation criteria (March–April 2005).

3. Present draft alternatives to the PMT and ODOT for preliminary review and comparison against applicable policies and standards (April 2005).

4. Revise initial draft alternatives as necessary in response to PMT and ODOT comments and present to RPAC (May–June 2005).

5. Present alternatives to the general public and solicit comments in an open house format (July 2005).

6. Through an iterative process with the PMT, RPAC, and affected stakeholders, modify and further develop the alternatives (August–September 2005).

7. Evaluate the alternatives using the evaluation criteria, present results to the RPAC, and select preferred alternatives (September–October 2005).

8. Prepare Draft Refinement Plan and present results to ODOT for review, to the general public at an open house, and to the RPAC at final meeting (November 2005).

9. Based on input from ODOT, the general public, and the RPAC, prepare Revised Draft Refinement Plan, including any final modifications to preferred alternatives and draft plan (December 2005–January 2006).

Further documentation of the alternatives development and evaluation process is included in the Appendix (Memo #12).

Recommendations

As data were collected and potential solutions developed, it became apparent that no single solution would be adequate to address the interrelated issues of safety, parking, and truck traffic. This was due in part to the fact that the potential for a partial or full truck bypass of downtown Tillamook was not feasible. Thus, to address the issues identified in the plan, five groups of alternatives were developed:

- Alternate Truck Route Options (Outside of Downtown)
- Tillamook Lumber Mill Options
- Main and Pacific Avenue Design Alternatives (US 101 Couplet)
- Downtown Traffic Alternatives (Intersection of US 101 and OR 6)
- Downtown Parking Options

As illustrated in Figure 2, the preferred alternatives from the five groups combine to form the total solution to the identified transportation issues. The recommended options are discussed below according to each of the five groups. For cross reference to detailed information on the various options, the original option or alternative number codes are included in the descriptions.

Alternate Truck Route Options (Outside of Downtown)

Figure 3 illustrates recommendations for making changes to truck routes outside of downtown Tillamook. As documented in Memo #12, of all the possible alternate route options studied, the vast majority were determined to be infeasible because of cost, physical constraints, policy constraints, or a combination of these factors. As a result, the recommendations described in this section are typically smaller scale projects, with generally incremental benefits but relatively fewer costs or impacts.

Recommendations

Implement improvements on selected county roads that will support the continued use of these facilities for a moderate amount of truck traffic:

- US 101 and Latimer Road—install signal and related improvements (project currently under design) (Option C1)
- Wilson River Highway (OR 6) and Wilson River Loop—construct new interchange (project currently under design) (Option C2)
- US 101 and Front Street—improve signage to encourage trucks to use this existing alternate route (Option C9)

- US 101 and Long Prairie Road – construct intersection improvements, including left-turn lane (project currently under design) (Option D1)
- Trask River Road and Johnson Creek Bridge – replace bridge to remove weight restrictions (project under design) (Option D8)

Tillamook Lumber Mill Options

Figure 4 illustrates recommendations for changes to the Tillamook Lumber Mill site. As shown in the evaluation results in Memo #12 (see Appendix), a number of options were considered for routing traffic to and from the mill. The evaluation results suggested that the existing accesses and routes to and from the mill were in the best locations but that changes on the mill site itself had a significant potential to reduce truck trips in downtown Tillamook.

Recommendations

Work with the Tillamook Lumber Mill on the following changes that are intended to reduce the number of truck trips in downtown Tillamook (Option B1):

- In cooperation with ODOT, develop a new 3rd Street access that can be used for all trucks, both entering and exiting (requires relocation of ODOT maintenance building/ site).
- Make site and circulation changes (for example, improve roads, rearrange log stacks) to allow the existing 10th Street access and proposed 3rd Street access to be used as either entrance or exit for all trucks.
- Redesign rail spur onsite and/or work with Port of Tillamook Bay (POTB) rail to minimize traffic stoppage on 3rd Street due to rail switching.
- Once the above improvements are complete, encourage drivers to use the mill entrance/exit that minimizes truck travel through downtown Tillamook.
- In cooperation with Averill Trucking, develop a satellite location for Averill Trucking operations on or near the Tillamook Lumber Mill site to reduce the number of trips through downtown (Option C8).

Phasing

Relocating the ODOT site is critical to the feasibility of creating a new 3rd Street access. This option should be pursued first. The primary constraints appear to be funding and the availability of a suitable site for relocation. However, because the intent of this option is to improve conditions on the state highway, potential financial and logistical support from ODOT should be explored further.

Main and Pacific Avenue Design Alternatives

Figure 5 illustrates recommendations for making changes to the design of Main and Pacific Avenues. As documented in Memo #12 (see Appendix), the alternatives development process included a variety of options intended to improve the function of Main and Pacific Avenues for all travel modes. The options that would have removed existing features (for

example, on-street parking) to allow space to widen travel lanes generally did not fare well against the goals and evaluation criteria. In short, because of the constrained space and the large number of functions provided (that is, business storefronts, pedestrian circulation, motor vehicle circulation, and parking), the functions are in a delicate balance with each other and a change to one affects the others. Thus, the recommendations that fared the best against the evaluation criteria would result in only minor to moderate changes, albeit positive ones, to the existing system.

Recommendations

Short-term (0-5 years). From 1st Street to 5th Street, implement streetscape and related improvements to slow traffic and better delineate pedestrian space and movements (Options D and E):

- Add continental-style crosswalks at all intersections.
- Add advance stop bars and signage before pedestrian crossings.
- Restrict parking on upstream side of key corners (for example, 2nd and Main) to improve driver-pedestrian visibility.
- Improve lighting at intersections where it is potentially deficient (for example, 5th and Main).
- Add new landscaping where space allows (combination of street trees, sidewalk planter boxes, etc.).
- Add pedestrian-scale lighting to improve pedestrian safety and downtown aesthetics. Include options for hanging banners, planters, etc.
- Reconstruct/repair existing sidewalks to make them compatible with the Americans with Disabilities Act (curb ramps), improve aesthetics, and allow for new landscaping opportunities.
- Reduce sign clutter by consolidating existing public signs (highway signs, local street signs, information signs).
- Work with property owners to improve storefronts and business signage to enhance aesthetics, create a coordinated image, and reduce the tunnel effect of existing signage. Improve visual appeal to drivers and encourage them to slow down (improve safety) and stop (support businesses) in Tillamook.

Medium-term (5-10 years)

- Implement Options D and E (described above) from 6th to 12th Streets.

Long-term (if short- and medium-term measures are not adequate)

- Add combination of traditional and off-set curb extensions to slow traffic (Figures 6 and 6A), improve pedestrian visibility, and provide opportunities for aesthetic enhancements (such as landscaping).
- Implement Option B: Narrow the sidewalks on Main and Pacific Avenues by 2 feet on each side, widen travel lanes to 12 feet each, maintain 8-foot parking lanes on both sides,

and add combination of traditional and off-set curb extensions. Option B would be implemented only in combination with Options D and E, described above.

Downtown Traffic Alternatives

ODOT intends to begin a highway design project at the intersection of US 101 and OR 6 in early 2006 (Oregon Statewide Transportation Improvement Program [STIP] project #14313). This project will include additional study of solutions at this location before a preferred alterative is selected and engineered for future construction when funding is identified. For this reason, this refinement plan does not recommend a single preferred alternative for this location. Instead, the following alternatives are recommended for further study as part of the upcoming design project. The alternatives are illustrated in Figure 7 and documented in detail in Memo #7A (see Appendix).

Recommendations for Further Study

- Implement two-way traffic on 1st and 3rd Streets to reduce congestion and reduce truck trips downtown (Alternative 1). This would require a new traffic signal or other form of intersection control at OR 6 and Miller Street.
- Add an additional northbound travel lane over Hoquarten Slough (Alternative 4).
- Implement a combination of Alternatives 1 and 4.
- Consider other traffic solutions at 1st Street and Main/Pacific Avenues, either alone or in combination with one of the above options.

Downtown Parking Options

Following the study of existing parking conditions (documented in Memo #5 in the Appendix), a menu of options to increase both parking supply and utilization was developed. These recommendations are summarized in Table 2 and illustrated in Figure 8. An illustration of diagonal parking on 2nd Avenue is provided in Figures 9 and 10. A detailed discussion of parking recommendations is provided in Memo #10 in the Appendix.

If additional RV parking is desired in addition to the specific recommendations below, the City could consider dedicating any of the other on- or off-street parking areas for RV-priority or RV-only parking.

TABLE 2
Parking Recommendations

No.	Concept Name	Concept Description	Timeframe
1	Recreational Vehicle (RV) Parking	Set aside more on-street parking area reserved for RVs	Short-term
2	Potential RV Overnight Parking	Possibly allow RVs to park overnight in the (new) Safeway parking lot	Medium-term
3	Employee Parking (Surface)	Allow employees to park in city parking lots on east and west sides of Ivy, just south of 2nd Street	Short-term
4	Future Employee or Public Parking	Possible acquisition of property immediately east of Stillwell Avenue to expand employee and visitor parking	Long-term

TABLE 2
Parking Recommendations

No.	Concept Name	Concept Description	Timeframe
5	Future Parking Structure	Options include building a deck or larger parking structure on current city parking lots, and building a structured parking area on south side of 1st street west of Ivy Avenue, looking for opportunities to team with others as property is redeveloped.	Long-term
6	Angle Parking	Change parallel parking to angle parking along 2nd Street, Ivy Avenue, and Laurel Avenue. There are several ways this concept could be designed, depending on the roadway width. Two of these are described below:	Short-term
		Angle parking on one side, parallel parking on the other side, two-way traffic	
		Angle parking on one side, parallel parking on the other side, one-way traffic	
7	Resident Permit Parking	Allow residents to park overnight and/or for longer periods during the day along Laurel Avenue between 3rd Street and 5th Street	Short-term
8	Shared Parking for Employee Use	Explore opportunities to share parking with businesses that (a) use their parking areas more in the evening or on weekends, or (b) have surplus parking areas	Short-term
9	New lots for visitor and/or employee use	Construction of one or more surface parking areas on parcels currently vacant, for use by visitors and/or employees	Long-term
10	Main and Pacific	Option 1 removes parking from one side of the highway, using width to construct a bicycle lane or landscaping and slightly increasing travel lane width	Medium-term
		Option 2 keeps parking on both sides of the highway but reduces sidewalk width to construct bicycle lane and slightly increase roadway width	
11	On-street Parking Regulation	Option 1 simplifies parking regulations to mainly a 2-hour time limit throughout town	Short-term
		Option 2 reintroduces parking meters	Long-term
12	Signage	Adds signage to guide visitors to parking areas off the state highway	Short-term

Adoption and Implementation

This section of the plan describes roles and responsibilities for project implementation, cost estimates and potential funding sources, and information on plan adoption.

Jurisdictional Roles

Responsibility for implementing this refinement plan falls to three primary jurisdictions: the City of Tillamook, Tillamook County, and ODOT. Their respective roles and the roles of other entities are suggested in Table 3.

TABLE 3
Suggested Implementation Roles: City of Tillamook, Tillamook County, and ODOT

Alternatives	Lead Implementation Responsibility	Secondary Implementation Responsibility
Alternate Truck Route Options (Outside of Downtown)	Tillamook County	City of Tillamook ODOT
Tillamook Lumber Mill Concepts	City of Tillamook (working with Tillamook Lumber Mill)	Port of Tillamook Bay (Rail) ODOT Tillamook County
Main and Pacific Avenue Design Alternatives (US 101 Couplet)	ODOT	City of Tillamook
Downtown Traffic Alternatives (Intersection of US 101 and OR 6)	ODOT	City of Tillamook Tillamook County
Downtown Parking Recommendations	City of Tillamook	ODOT (for Main and Pacific)

Cost Estimates

Costs to design and construct the recommended alternatives on the state highways (US 101 and OR 6) were estimated at a planning level. Based on the conceptual design of each element, a 40 percent contingency was included in the construction cost estimate to account for potential unknowns typically identified during preliminary and final design. The estimates include engineering design fees and right-of-way costs but do not include potential environmental permitting or utility relocation costs. These cost estimates are documented in the Appendix (Memo #15).

Funding

A variety of federal, state, and local funding sources could be used to improve the transportation system in Tillamook. A detailed discussion of potential funding options is provided in the Appendix (Memo #16).

Federal and State Sources

Most federal and state funding programs are competitive and involve clear documentation of the project need, costs, and benefits. The STIP is the primary programming document that identifies transportation priorities for federal and state funding in Oregon. The STIP provides a schedule and identifies funding for projects throughout the state. It also lists projects that are planned for construction during a 4-year period. Projects that are included in the STIP are regionally significant and have been given a high priority through planning efforts. The STIP has five categories – modernization, safety, bridge, pavement preservation, and operations. All federally funded transportation projects, as well as all state and locally funded projects that are deemed "regionally significant," must be included in the STIP.

Local Sources

Local funding for the projects in this transportation plan typically would come from the City or County and potential future bond or other local revenues. Other local funding sources might include grants and private funds.

Table 4 is a qualitative assessment (low, medium, and high) of the revenue potential, implementation feasibility, and voter approval requirements for a number of potential local revenue and funding sources.

TABLE 4
Local Funding Options: Potential Revenue Potential and Implementation Feasibility

Potential Funding/ Revenue Source	Revenue Potential[a]	Feasibility of Implementing[b]	Voter Approval Required?
Urban Renewal District	Medium to High	High	Yes
Local Improvement District	Low to Medium	High	No
Revenue and General Obligation Bonds	Medium to High	Medium	Yes
System Development Charges	Low to High	Medium	No
Transportation Utility/ Impact Fees	Low to Medium	Medium	No
General Fund	N/A[c]	Medium	No
County Vehicle Registration Fee	Low to Medium	Medium	Yes
Road User Fee/ Toll	Low to High	Low	No
Traffic Impact Fee	Low to Medium	Medium	No
Parking Tax	Low to Medium	Low	Yes
Gas Tax	Low to High	Medium	Yes
Parking Meters and Fines	Low	Medium	No
Hotel Tax	Low to Medium	Medium	Yes
Sales Tax	Medium to High	Low	Yes
ODOT Bicycle and Pedestrian Program	Low to Medium	High	No

[a] Revenue potential for many of the funding sources would vary and depend on the extent of implementation (for example, tax rate, fee, toll) and extent of new development (for system development charges and traffic impact fees).

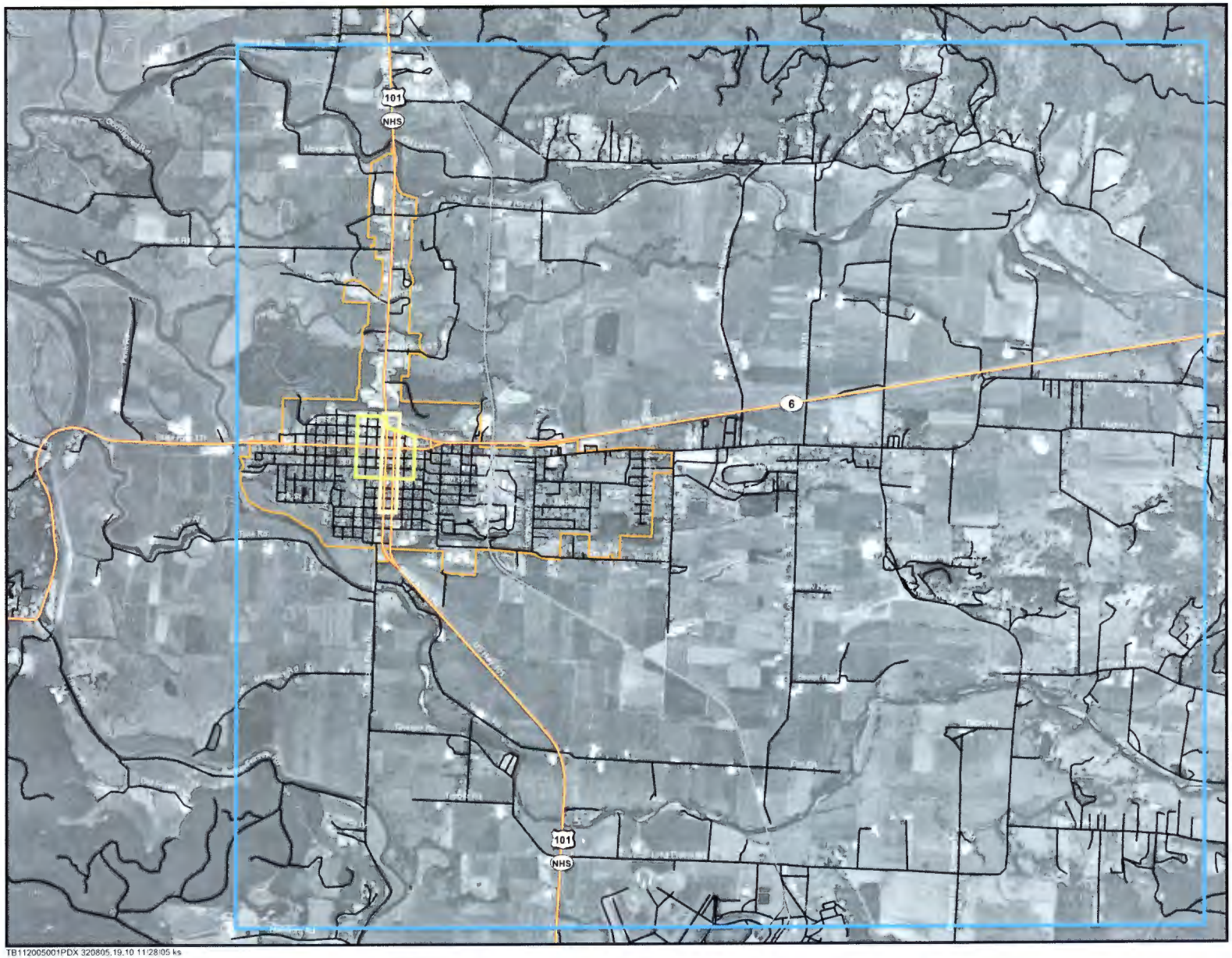
[b] Considers legal feasibility, potential public perception/approval, and administrative costs.

[c] This is not a new revenue source; money is redistributed from the general fund to transportation.

Plan Adoption

It is recommended that the City of Tillamook adopt this refinement plan as an amendment to the City TSP and that Tillamook County acknowledge it as an appendix to their TSP. Detailed recommendations for the city and county regarding plan adoption are provided in the Appendix (Memo #17).

Figures



Tillamook Transportation Refinement Plan

Study Area

Tillamook, OR

Figure 1

Legend

- Highways
- Local Roads
- Railroads
- City Limits

STUDY AREAS

- Truck Route
- Downtown Safety
- Downtown Parking

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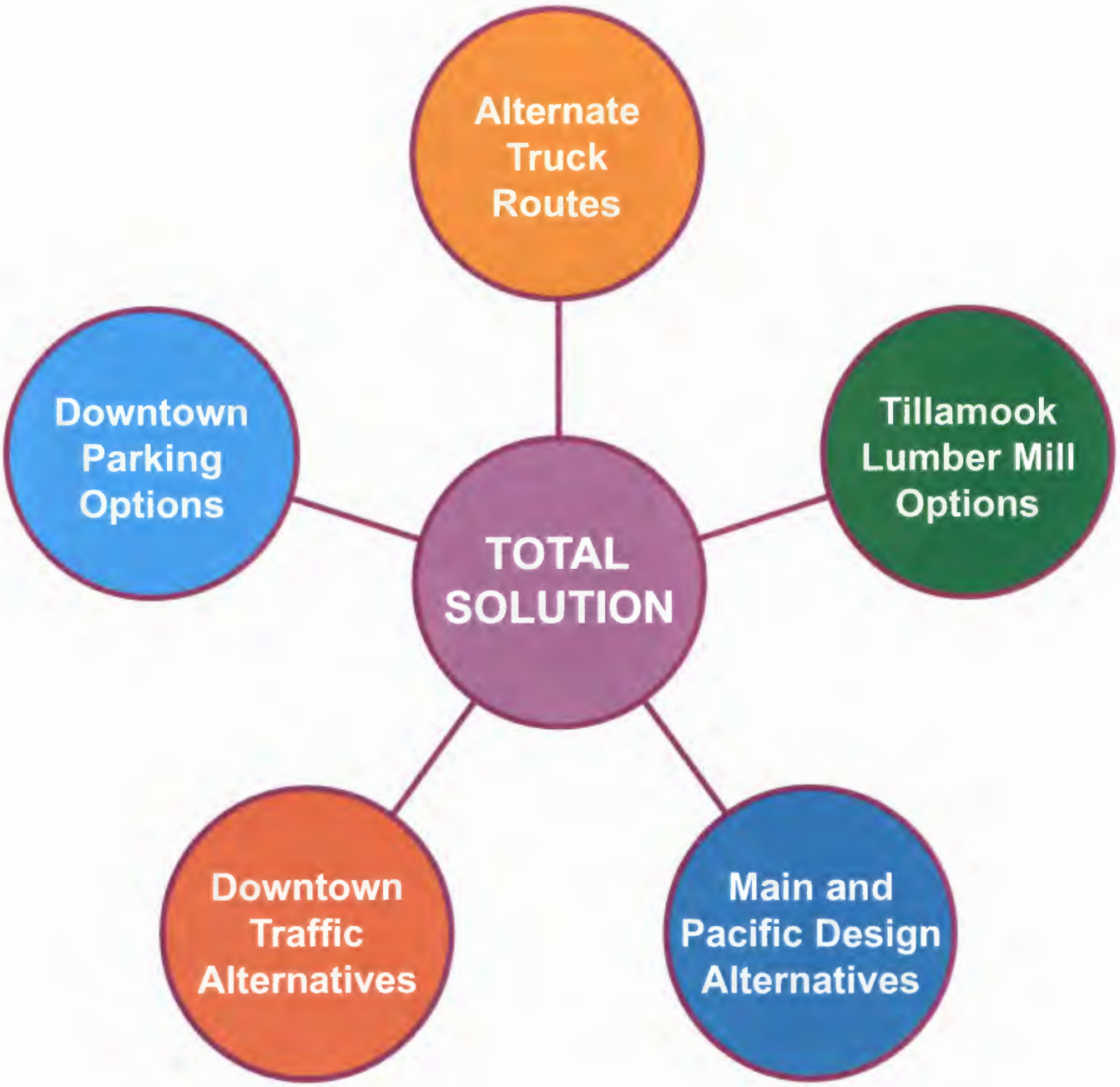
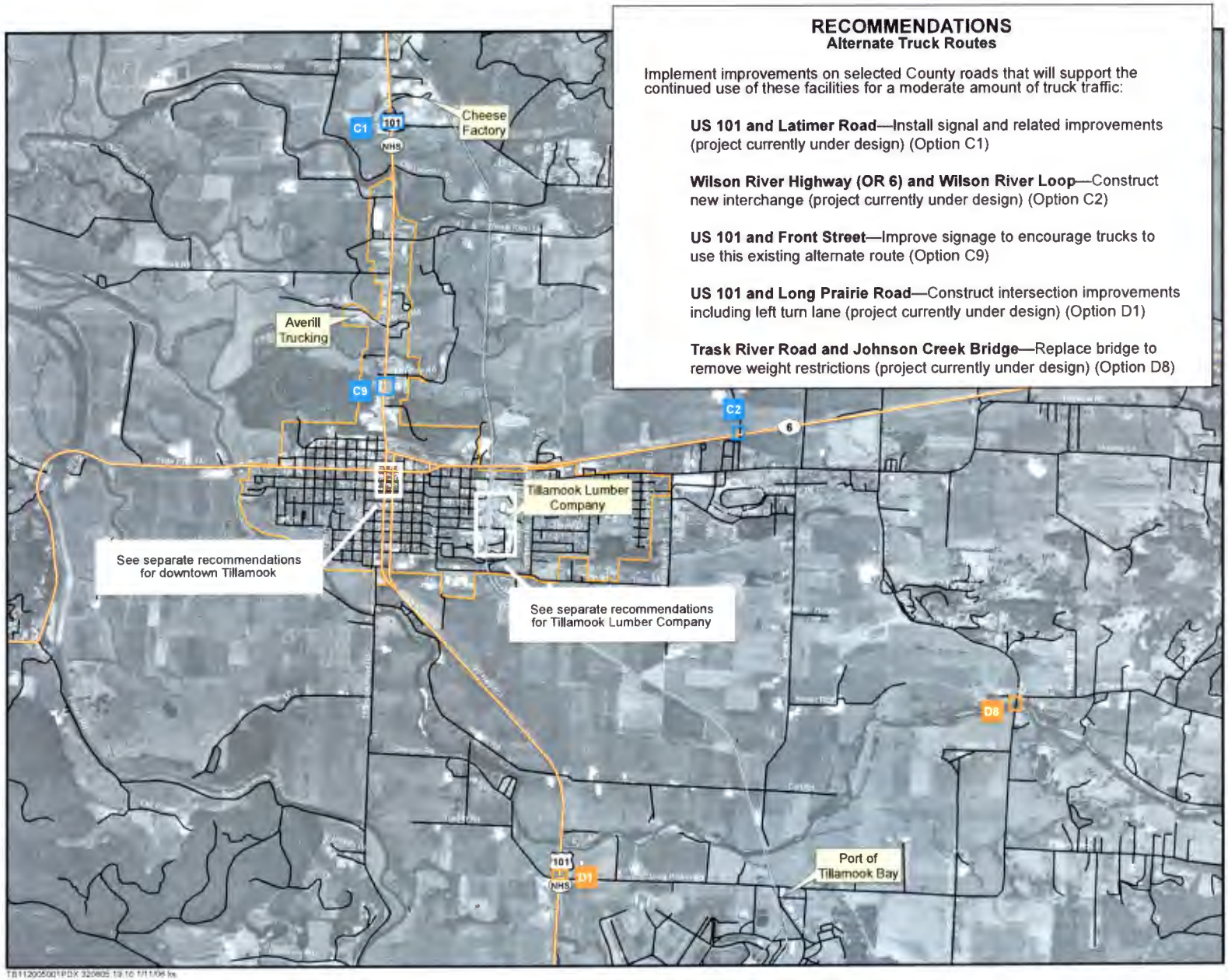


FIGURE 2
Total Transportation Solution for Downtown Tillamook
TILLAMOOK TRANSPORTATION REFINEMENT PLAN



Tillamook Transportation Refinement Plan

Truck Route Recommendations

Tillamook, OR

Figure 3

Legend

- Highways
- Local Roads
- Railroads
- City Limits

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RECOMMENDATIONS
Tillamook Lumber Mill

Work with the Tillamook Lumber Mill on the following changes that are intended to reduce the number of truck trips in downtown Tillamook (Option B1):

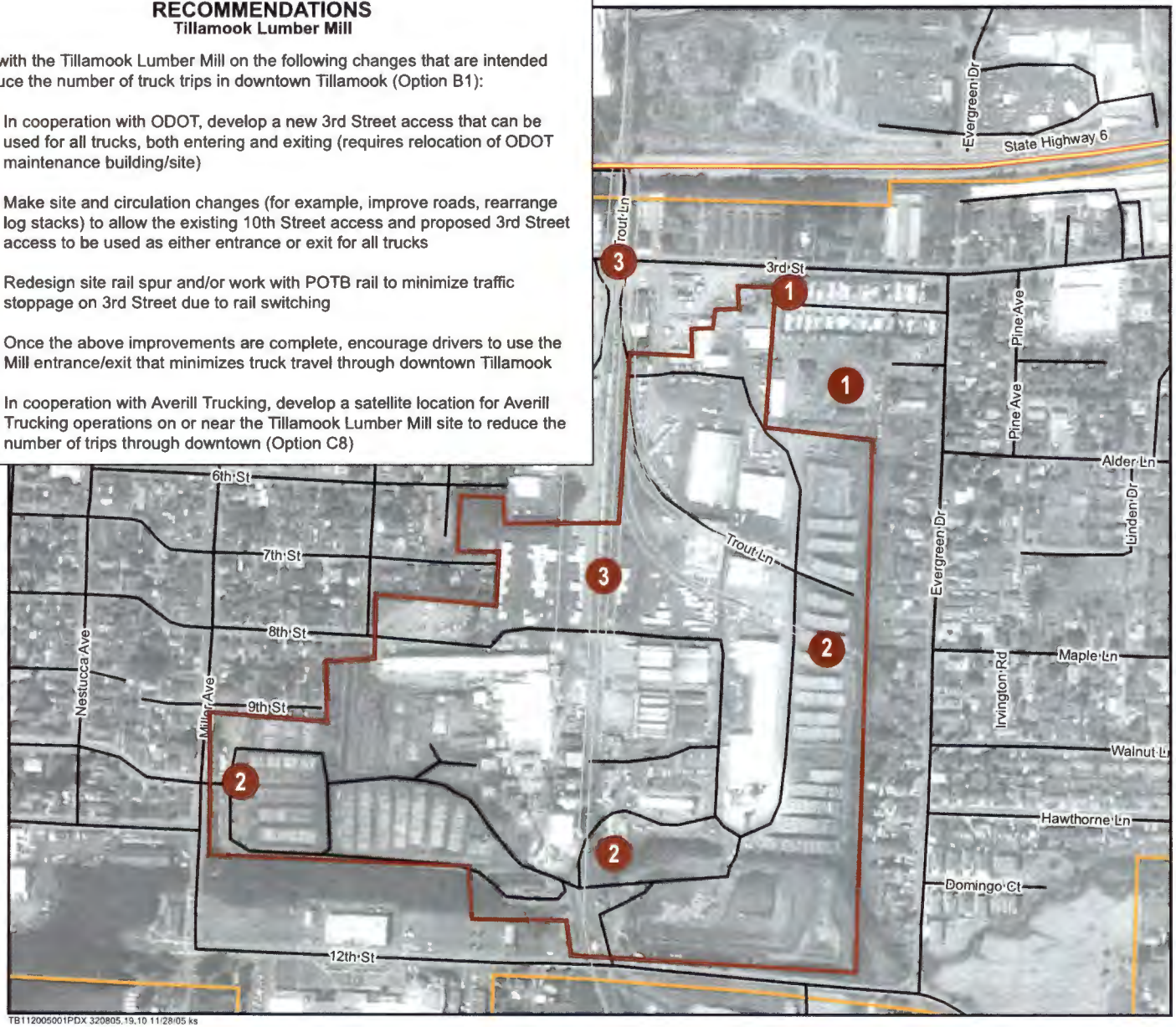
1. In cooperation with ODOT, develop a new 3rd Street access that can be used for all trucks, both entering and exiting (requires relocation of ODOT maintenance building/site)

2. Make site and circulation changes (for example, improve roads, rearrange log stacks) to allow the existing 10th Street access and proposed 3rd Street access to be used as either entrance or exit for all trucks

3. Redesign site rail spur and/or work with POTB rail to minimize traffic stoppage on 3rd Street due to rail switching

Once the above improvements are complete, encourage drivers to use the Mill entrance/exit that minimizes truck travel through downtown Tillamook

In cooperation with Averill Trucking, develop a satellite location for Averill Trucking operations on or near the Tillamook Lumber Mill site to reduce the number of trips through downtown (Option C8)



Tillamook Transportation Refinement Plan

Tillamook Lumber Mill: Recommended Site Circulation Changes

Tillamook, OR

Figure 4

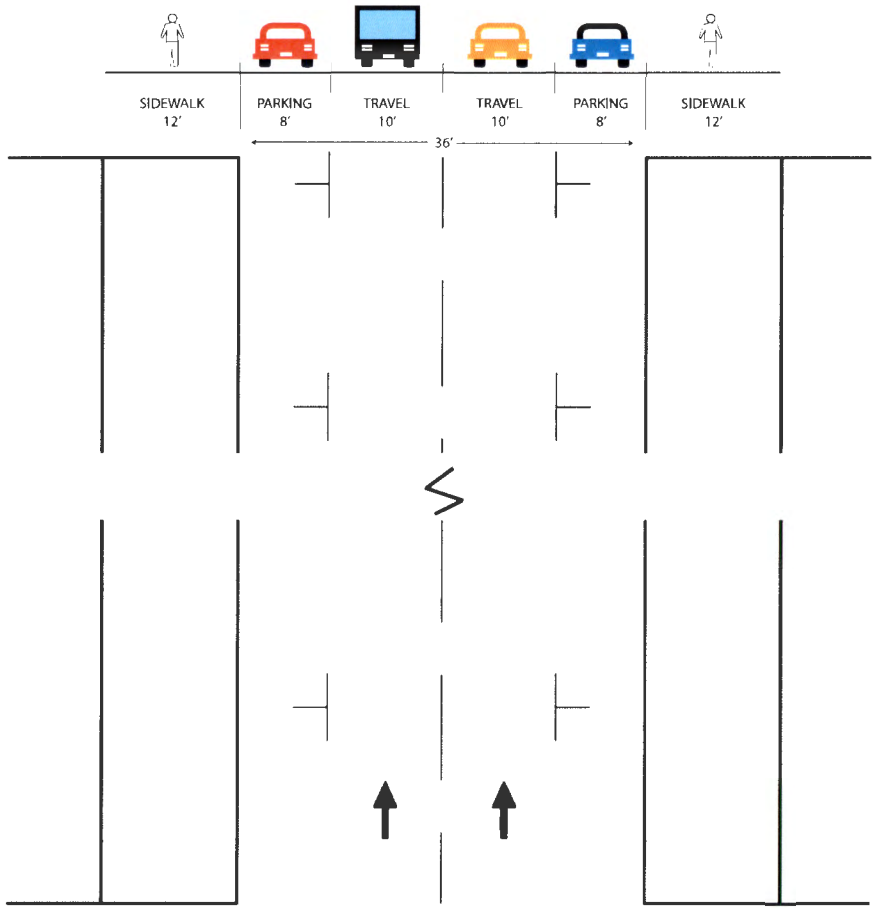
Legend

- Highways
- Local Roads
- Railroads
- City Limits
- Approximate Property Boundary

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RECOMMENDATIONS

Main and Pacific Design

Short-term (0-5 years)

From 1st Street to 5th Street, implement streetscape and related improvements to slow traffic and better delineate pedestrian space and movements (Options D and E):

- Add continental-style crosswalks at all intersections
- Add advance stop bars and signage before pedestrian crossings
- Restrict parking on upstream side of key corners (for example, 2nd and Main) to improve driver-pedestrian visibility
- Improve lighting at intersections where it is potentially deficient (for example, 5th and Main)
- Add new landscaping where space allows (combination of street trees, sidewalk planter boxes, etc.)
- Add pedestrian-scale lighting to improve pedestrian safety and downtown aesthetics. Include options for hanging banners, planters, etc.
- Reconstruct/repair existing sidewalks to make them ADA compatible (curb ramps), improve aesthetics, and allow for new landscaping opportunities
- Reduce sign clutter by consolidating existing public signs (highway signs, local street signs, information signs)
- Work with property owners to improve storefronts and business signage to improve aesthetics, create coordinated image, and reduce tunnel effect of existing signage. Improve visual appeal to drivers and encourage them to slow down (improve safety) and stop (support businesses) in Tillamook.

Medium-term (5-10 years)

- Implement Options D and E (described above) from 6th to 12th Streets

Long-term (if short- and medium-term measures are not adequate)

- Add a combination of traditional and off-set curb extensions to slow traffic, improve pedestrian visibility, and provide opportunities for aesthetic enhancements (for example, landscaping)
- Implement Option B: Narrow the sidewalks on Main and Pacific Avenues by 2 feet on each side, widen travel lanes to 12 feet each, maintain 8-foot parking lanes on both sides, and add a combination of traditional and off-set curb extensions. Option B would only be implemented if in combination with Options D and E described above.

FIGURE 5
Main and Pacific Design Recommendations
TILLAMOOK TRANSPORTATION REFINEMENT PLAN

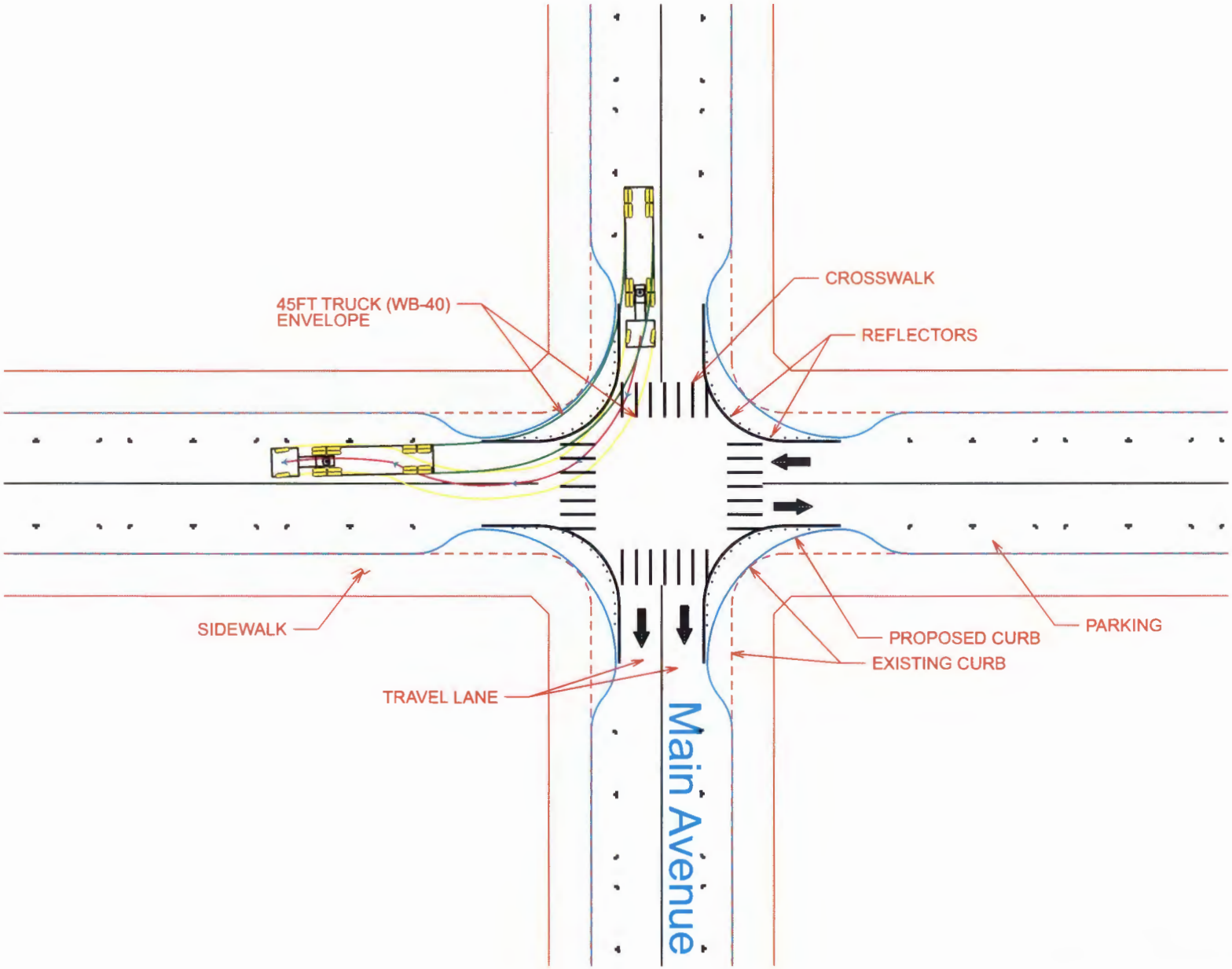


FIGURE 6
Off-set Curb Extensions
TILLAMOOK TRANSPORTATION REFINEMENT PLAN

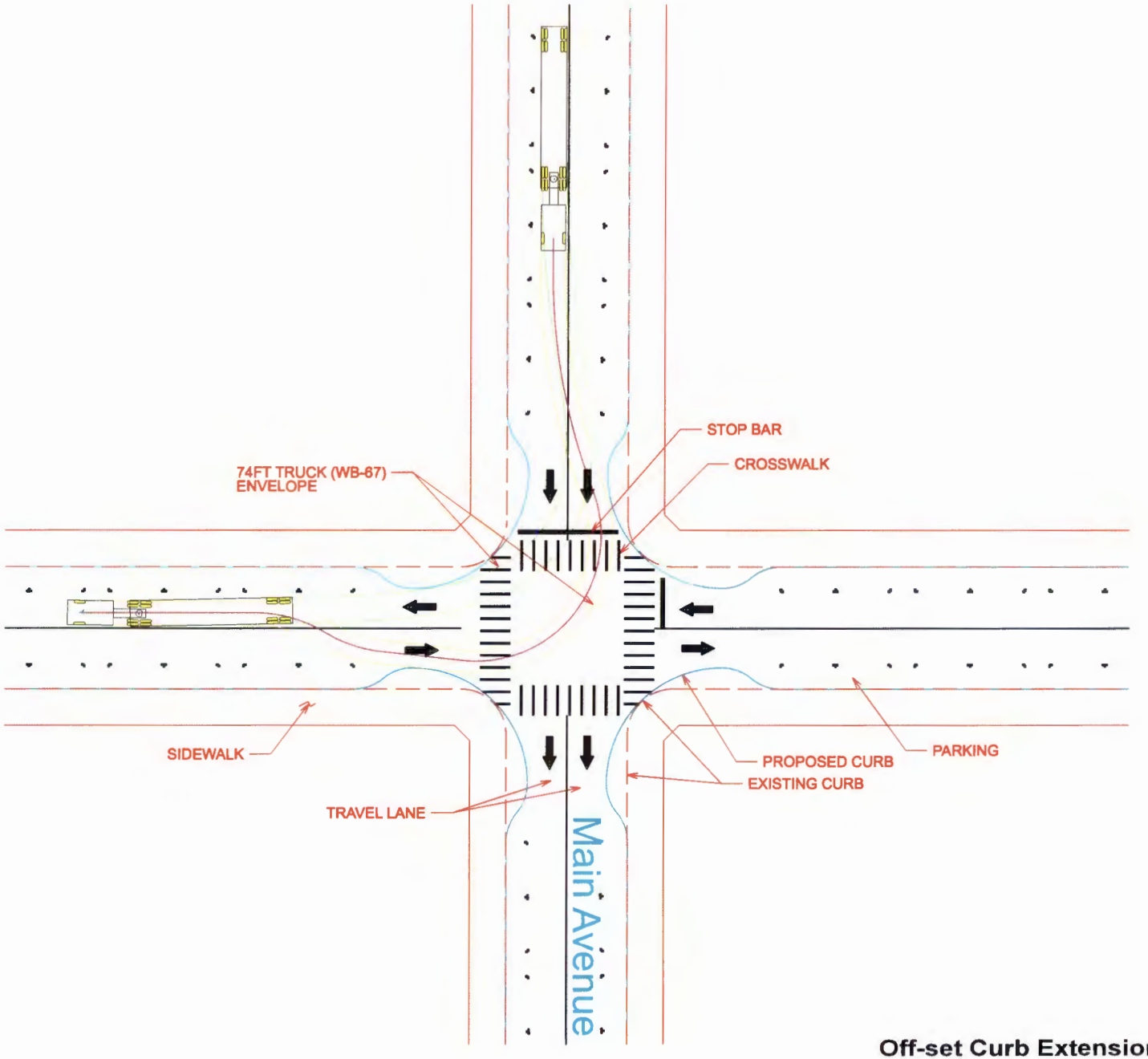
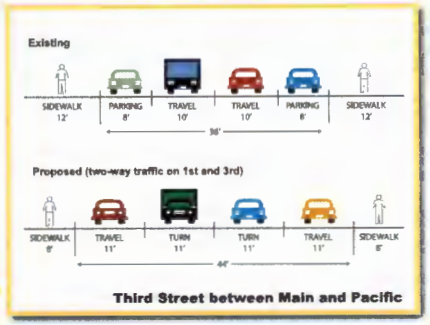


FIGURE 6A
Off-set Curb Extensions (Option 2)
TILLAMOOK TRANSPORTATION REFINEMENT PLAN













RECOMMENDATIONS FOR FURTHER STUDY

Downtown Traffic

- Implement two-way traffic on 1st and 3rd Streets to reduce congestion and reduce truck trips downtown (Alternative 1). This would require a new traffic signal or roundabout at OR 6 and Miller Street.
- Add an additional northbound travel lane over Hoquarten Slough (Alternative 4)
- Implement a combination of Alternative 1 and Alternative 4
- Construct a roundabout in the vicinity of 1st Street and Main/Pacific Avenues either alone or in combination with one of the options above

FIGURE 7
Downtown Traffic Recommendations for Further Study

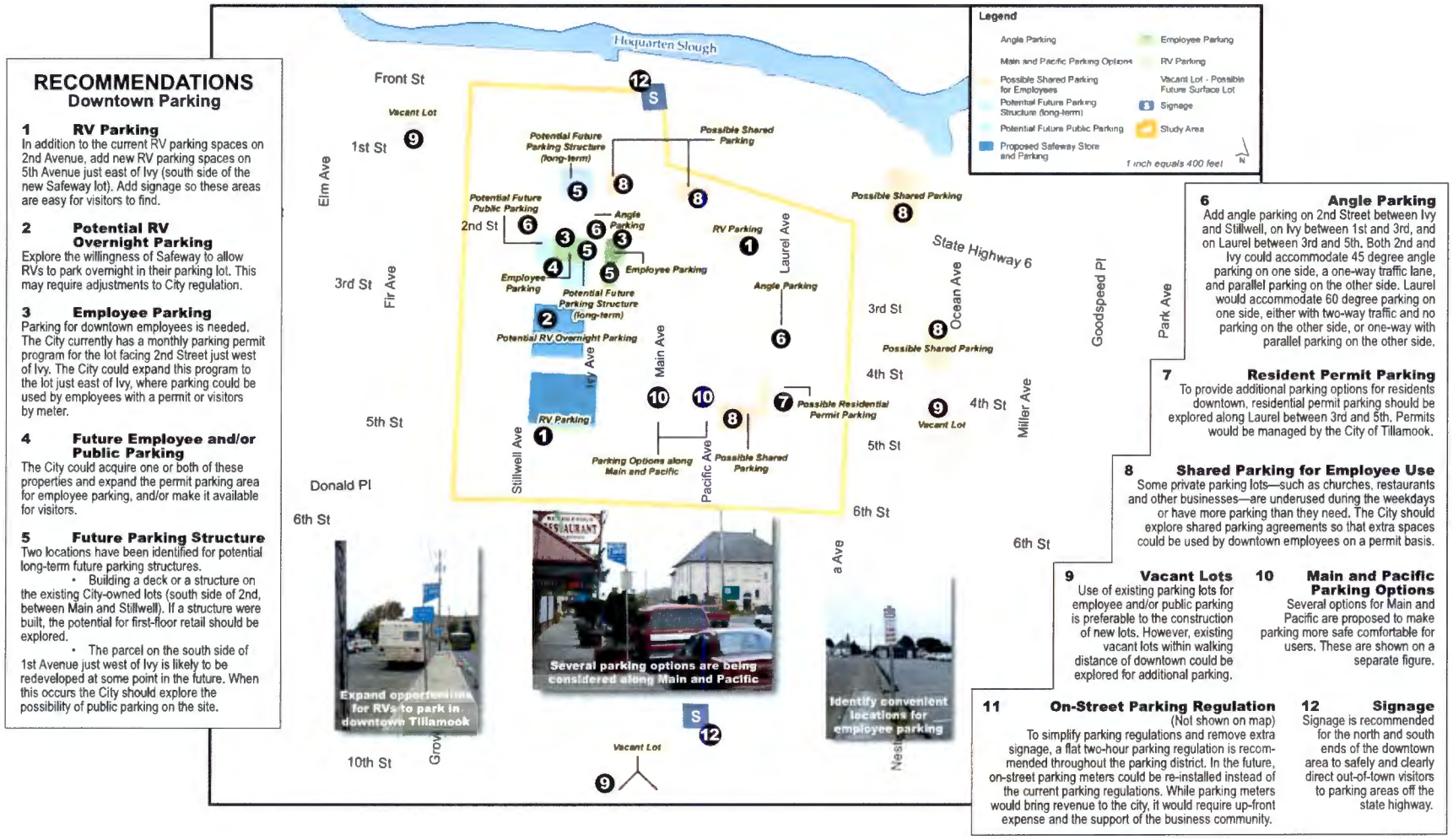


FIGURE 8
Downtown Parking Recommendations
TILLAMOOK TRANSPORTATION REFINEMENT PLAN

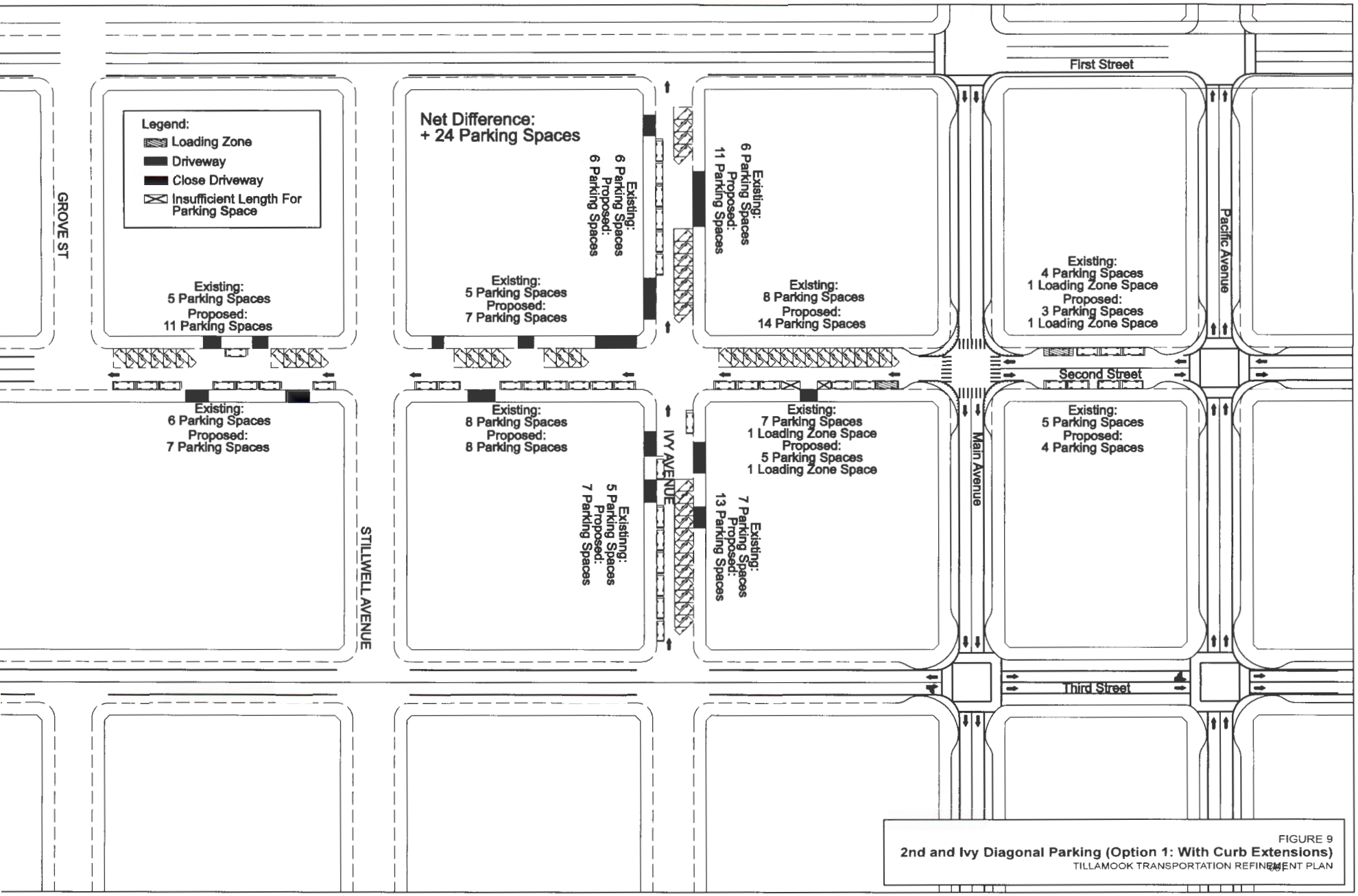


FIGURE 9
2nd and Ivy Diagonal Parking (Option 1: With Curb Extensions)
TILLAMOOK TRANSPORTATION REFINEMENT PLAN

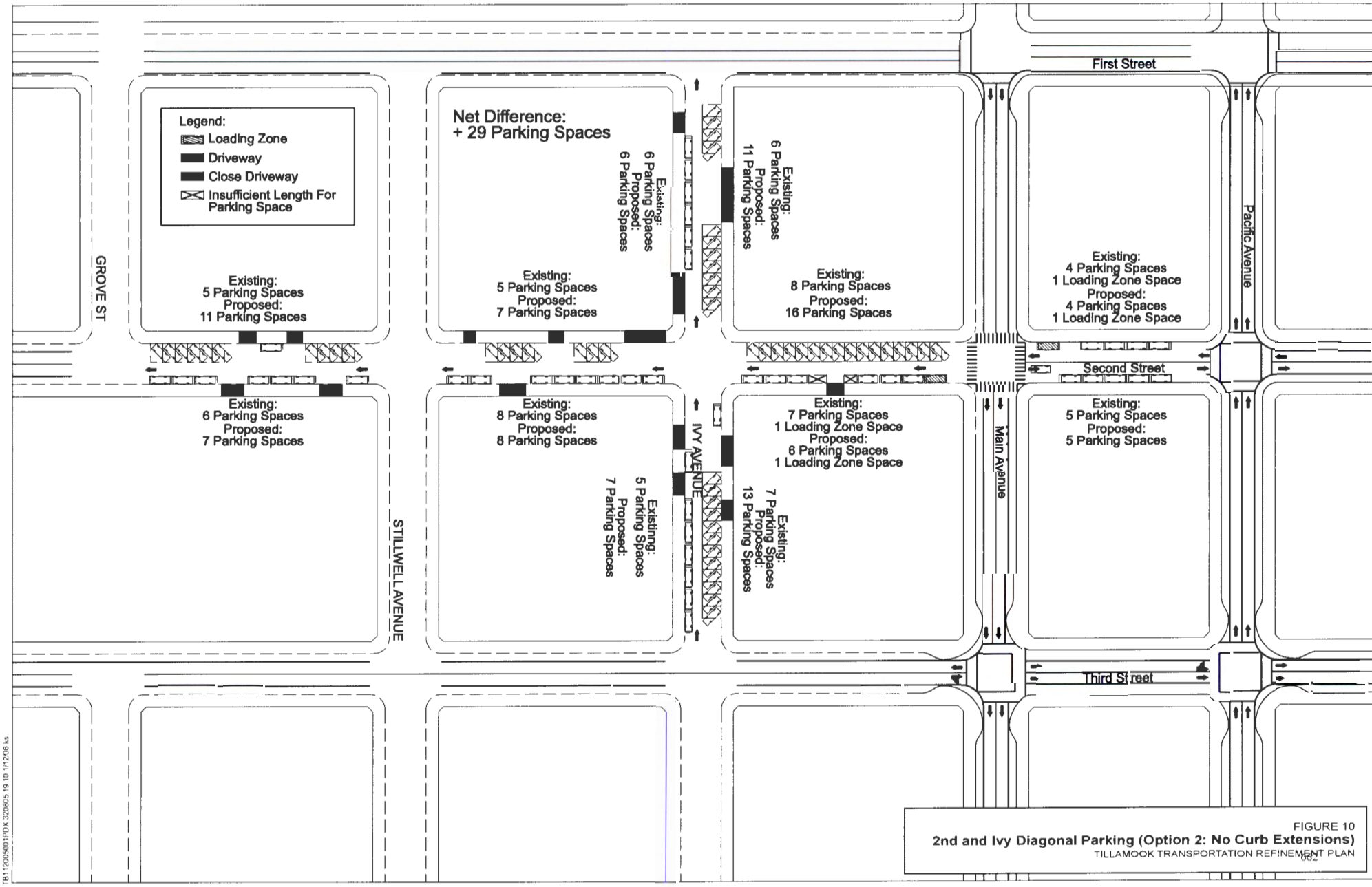


FIGURE 10
2nd and Ivy Diagonal Parking (Option 2: No Curb Extensions)
TILLAMOOK TRANSPORTATION REFINEMENT PLAN

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Appendix XXIII - Tillamook City 2020 Vision Statement

TILLAMOOK CITY 2020: VISION STATEMENT TILLAMOOK CITY VISION STATEMENT

TILLAMOOK CITY 2020 VISION STATEMENT EXECUTIVE SUMMARY- AUG. 1998

Over the past twelve months the Tillamook City Visioning Task Force, established by the Tillamook City Council, embarked on a community endeavor vital to the future of the city. The City Council is especially thankful for the commitment and stewardship exhibited by the Tillamook Visioning 97/98 Task Force. Busy individuals in all walks of community life ambitiously undertook the difficult task of crafting the Tillamook City Vision Statement.

The Statement encompasses ten Vision Scenarios addressing consensus on vital community future directions. These futures include City Downtown Revitalization, Land Development, Education, Health, Quality Natural Resources, City Gateways, Community Values, as well as Community Character and Livability.

The Tillamook City 2020 Vision Statement details key attributes of ten Scenarios as well as spelling out Action Plan Strategies for achieving the City Future Vision.

ACKNOWLEDGMENTS

The City wishes to specially thank the Task Force Membership and Guest Participants for their conscientious leadership in forging the Tillamook City 2020 Vision. It is a distinct pleasure to acknowledge the committed involvement of broad community leadership. The unflagging commitment and intelligence exhibited in achieving this challenging task is gratefully appreciated.

VISION STATEMENT COMMUNITY SUPPORT

The City of Tillamook has obtained effective support, in the form of grant awards, which are aimed at furthering smart development practices, wise community growth policies, and downtown revitalization. The City anticipates and encourages the continued volunteer spirit and participation in the form of Action Plan Implementation Committees. In this light, the City is coordinating resources needed to further the efforts of future implementing committees.

VISIONING TASK FORCE PARTICIPANT RECOGNITION

The following individuals distinguished themselves in this important endeavor:

VISIONING 97/98 TASK FORCE

Mr. Vic Affolter
Mr. Ed Armstrong
Ms. Tilda Chadwick Jones
Mr. Jack Collekon
Mr. Rudy Fenk

Ms. Val Folkema
Mr. Mark Gervasi
Mr. Herman Gonzales
Mr. Bob McPheeters
Ms. Eileem Miller
Mr. Brad Pierce
Ms. Linda Shaffer
Mr. Gary Smith
Ms. Jan Stewart-Wells

GUEST PARTICIPANTS

Ms. Helen Bonsall
Mr. Jay Charland
Mr. Tom Connaugton
Mr. Mike Ellis
Ms. Julie Fletcher
Mr. Jerry Halberg
Mr. Wendell Hesseltine
Ms. Elaine Hopson
Ms. Pan-Russel Hurliman
Mr. Ray Jacobs
Ms. Jo Jenkins
Mr. Jerry Jones
Mr. Steven Kershaw
Mr. Jeff King
Dr. Bob Moore
Mr. Ken Phillips
Mr. John Putman
Ms. Bonnie Reed
Mr. John Sandusky
Mr. Robert Spittles
Mr. Mark Trentholm

TILLAMOOK CITY 2020: VISION STATEMENT

In 2020, we envision a community of 6,000 to 8,000 people. The growth of our community has occurred in a livable and sensitive manner, which respects our heritage and provides quality of life for all socio-economic groups in our community. Our city center invites residents and visitors to a revitalized diversity of services. New development provides a variety of affordable living options with reliable urban services. Visionary land use and public facilities planning have guided growth and provided for a sustainable quality of life that reflects deliberate choices made from within the community.

In 2020 Tillamook City enjoys an enhanced livability with traditional character themes recognized and respected. The Schools and Education programs in the community have evolved to provide vital adaptive opportunities for all its citizens. Community Health Services have kept pace and anticipated the needs of residents in a proactive manner. Leadership has kept a keen eye on the highest and best use for lands within their jurisdiction so that compatible living, smart development and clean industry serve all community residents. The residents have come to realize and enjoy healthy environmental amenities and sustainable natural resource practices in the City.

The City has a vital and recognizable identity highlighted by Tillamook City Gateways, which establishes Community Identity and welcomes visitors and residents alike.

The following ten scenarios best depict the preferred future envisioned by the Tillamook City Task Force in their exercise in communication unity for the year 2020.

TILLAMOOK CITY 2020
VISIONING 97/98: A NEW SENSE OF COMMUNITY

COMMUNICATION IN UNITY

AD HOC ENTERPRISE IN SEEKING COMMON GROUND, COMMON PERCEPTIONS, & COMMON IDEAS ABOUT COMMUNITY FUTURE

The Tillamook City Task Force with guest participants forged the following preferred scenarios to comprise the City's Vision Statement. The statement serves as a catalyst for community residents, business owners and governments in crafting the future of Tillamook City.

SCENARIO 1: Compact Residential Development

Attributes

-Implement quality elements of compact residential development.

-Housing types are varied in size and price to facilitate the kind of mix of people found in the City of Tillamook - the mix also means grown children won't have to move so far away to start a home.

-Neighborhood densities and housing square footages are prescribed in a manner, which encourages affordable options for all.

-Houses occupy small lots clustered around public spaces such as parks or playgrounds.

-Walking is encouraged by side-walks, street trees, front porches, narrow roads that slow down cars, and most importantly, commercial and recreational areas are located a short walk from most houses.

-Street grids replace isolated cul-de-sacs and the broader roads that connect them.

-Garages retreat to the rear of lot or alley.

SCENARIO 2: A Revitalized Tillamook City Downtown

Attributes

- *The Downtown Vision is a revitalized City Center that serves as: A Gateway of Commerce supporting residents and tourists in a viable economic and cultural manner.*
- *A downtown development plan with implementation strategy is to guide the creation of a viable business organization, a restructured economic market mix of commerce in the City Center and a design initiative, which refreshes and underscores the pedestrian-friendly, livable aspects of the City Center.*
- *The leadership focusing on the downtown development will place ongoing emphasis on restoration and remodeling, where appropriate.*
- *A set of design review standards (to be incorporated in the updated Tillamook City Land Development Code) may compliment early efforts and provide continuity of purpose in terms of color schemes, architectural and design elements and public open space.*

SCENARIO 3: Community Growth & Development

Attributes

- Adequate serviceable lands for Tillamook0 City's Urban Growth Boundary.

Sub-Attributes

-Coordinated water service provision for UGB.
-Planned sewer distribution for entire UGB.
-City Plan for sewer & water service outside current City limits.
-Provision of Annexation Plan for Tillamook City.
-Provision of Sewer Master Plan for Tillamook City.
-Coordinated Sewer & Water Plan in Tillamook City Public Facility Plan.
-Coordinated Capital Improvement Projects List.

- Adopt Urban Services Agreement.

SCENARIO 4: Community Character & Livability

Attributes

- Community cultural celebrations focusing on History and traditions -- fairs, festivals, heritage events.

- Safe, involved neighborhoods.

Sub-Attributes

Family life-based neighborhoods; Pedestrian walkways, bikeways; Activity involved schools; Caring neighbors on watch; Special events, including school, church, and cultural programs engaging families and neighbors, interacting in community minded ways

- Family Based Community

Sub-Attributes

Family-waged jobs; Affordable housing; Excellent schools; Strong religious institutions; Efficient government services; Family-oriented activities and events; Healthy and high quality natural environments.

- Viable Business Communities

Sub-Attributes

Effective tourism / resident market mix plan in place and applied; Integrated downtown / north, west and south business market sectors; Stable watershed environment; Effective Watershed Flood Control Plan creation and implementation; Effective business market diversity in place.

SCENARIO 5: Schools & Education

Attributes:

- *Develop community connections / promote community service interaction and involvement in schools.*
- *Become a community that supports education.*
- *Enhance life skills of all community members.*
- *Ensure that School Facility Planning is incorporated in Land Use Planning.*
- *Enhance the living environment of the community.*
- *Make the community a living classroom by encouraging school-to-work opportunities for our students.*
- *Encourage understanding and appreciation of the natural environment.*
- *Provide leadership in the economic, cultural, and intellectual evolution of our community.*
- *Establish personal / community development and growth.*
- *Foster collaborative effort in the educational community, north, central, south.*
- *Foster improved educational facilities.*
- *Provide an environment for innovation and intellectual pursuits.*
- *Foster educational and cultural diversity.*
- *Focus on educational goals (statewide), knowledge and information to shape a rapidly changing society.*
- *Foster life long learning to acquire knowledge and life skills to effectively participate in the workforce, community and society at large.*
- *Educate people for anticipated jobs.*

SCENARIO 6: Community Health & Well Being

Attributes

- *Safe and secure community.*
- *Prevention and control of crime.*
- *High quality, accessible, affordable physical health care.*
- *Encourage healthy lifestyles.*
- *Active older adults.*
- *Adequate housing and care for special-need citizens.*
- *Focus on prevention and wellness in the community.*
- *Support healthy families.*
- *Quality Social Services.*
- *Zero tolerance for domestic violence with Action Strategies guided by - Prevention -- Prosecution -- Intervention*
- *Primary service center for the County.*
- *High quality, accessible, affordable mental health care.*
- *Preventive healthcare for children and adults.*
- *Drug-free community.*
- *Foster a low teen pregnancy rate.*

- *Foster coordinated teen programs.*
- *Ensure the water quality in Tillamook City.*

SCENARIO 7: Community Valuing -- Cultural Assignments

Attributes

- *Maintain a small town atmosphere.*
- *Develop and preserve City Center to retain a small, friendly, relaxed, and welcoming environment.*
- *Encourage pride in general appearance of community - neighborhood and park programs to maintain a clean and litter-free community; landscaping, lighting, and signage programs to beautify; enhance community security.*
- *Provide a diverse set of community programs, activities and facilities that enhance community values -- pride, family values, traditional enterprise.*
- *Recognize and preserve community heritage: historic buildings and other features preserved and renovated; conduct a touring program to visit sites of community heritage.*

Valuing Checklist
Tillamook City honors and values.....

Small town-atmosphere; Rural, agricultural heritage and traditions; Pride in community public image; Well-kept homes strong family units; Spirit of community volunteerism; Fiscal accountability; Strong educational programs; Strong spiritual values; Encourage social and cultural diversity; Balanced and managed growth; Responsible stewardship of the environment; Physically safe community; Promote cultural appreciation of the arts; Leadership role in the county; Ensure the water quality in Tillamook City

SCENARIO 8: Highest and Best Use for the Future of Tillamook City

Attributes

- *Emphasize long-term allocation of uses within Tillamook City and its Urban Growth Boundary.*
- *Seek and preserve use compatibility objectives, which recognize livability as the highest goal.*
- *Support the long-term distribution of compatible uses for efficient and effective infrastructure provision.*
- *Coordinate and support Tillamook County land use policy directing wise allocation of uses near and within Tillamook City's Urban Growth Boundary.*
- *Support the efficient use of lands within residential zones.*

SCENARIO 9: Environment & Natural Resources

Attributes

- *Healthy city water supply.*
- *Respect for the natural environment as the basis for all life and livelihood.*
- *Careful stewardship of the natural environment.*
- *Protect and enhance the major natural areas and open spaces.*
- *Ensure air quality in Tillamook City.*
- *Ensure that open space and recreational opportunities are available in residential areas.*
- *Preserve and enhance significant waterways and wetlands in and around Tillamook City.*
- *Preserve riparian lands as natural areas in Tillamook City's Urban Growth Boundary.*
- *Emphasize alternative links which connect the City parks, waterways and wetlands with small town residential development.*
- *Implement a vegetation community plan for the City business district neighborhoods, streets and roadways.*
- *Continue to support a comprehensive residential, retail and commercial waste reduction and recycling program.*
- *Emphasize and implement a Clean Industry program in Tillamook City to minimize pollution, conserve energy, and reduce waste.*
- *Encourage industry priorities, which recognize ecologically sensitive attitudes and practices.*
- *Disaster resistant community (flooding, earthquakes, volcanoes).*

SCENARIO 10: Tillamook City Gateways

- Trask River Bridge
- Wilson River Bridge
- Port of Tillamook Bay RR Bridge on Highway 6
- South Highway 101 Divider Island at Main & Pacific

Attributes

- *Focus on gateway identities to enhance Tillamook City Entrances.*
- *Enhance Gateways image by distinctive signage, lighting & landscaping.*
- *Update City entry signage for each Gateway.*
- *Coordinate with Tillamook City service clubs to acquire restroom site and develop facilities on Highway 6 (at County line or at the falls and place porta-potties in pull-off fountain area) (Approach ODOT to put restrooms at County line (Highway 6) storage site at crest.*
- *Update and include current population signs for each Gateway.*
- *Coordinate with Tillamook City service clubs to acquire restroom site and develop facilities on Highway 6 (at County line) or at the falls and place temporary porta-potties in pull off fountain area -Update and include welcome signage for each Gateway.*
- *Develop and include appropriate commerce signage for each Gateway that ID's downtown commercial district.*

- *Tillamook City has a distinctive identity heralded by its well-recognized four gateways.*

TILLAMOOK CITY VISION STATEMENT ACTION PLAN 2020

APPENDIX A

The City Volunteer Action Plan Committees comprised of Task Force, Guest Participates, and City Staff defined action strategies for each future scenario. By participating on chosen committees in the crafting of action strategies a broad representation of public and private activists furthered their commitment to a unified private and public effort to Tillamook's future.

The following action plans are presented as points of unity forged in consensus. These action plan strategies provide a focused agenda for future action committees in their effort to identify actions and associated resources, which are achievable by community initiative.

SCENARIO 1: Compact Residential Development Action Plan

Attributes

--Implement quality elements of compact residential development

Action Strategy 1: Develop ordinance provisions to facilitate redevelopment in the residential zones immediately west of the downtown commercial zone.

--Housing types are varied in size and price to facilitate the kind of mix of people found in the City of Tillamook -- the mix also means grown children won't have to move so far away to start a home.

Action Strategy 1: Create Compact Residential Development Overlay in a manner that provides for multiple housing types (square footages) available for different markets (e.g., low-income).

--Neighborhood densities and housing square footages are prescribed in a manner, which encourages affordable options for all

Action Strategy 1: Establish Land Use Zone to permit higher densities and smaller square foot ratios (smaller houses).

Action Strategy 2: Establish ordinance provisions to limit on-street parking.

Action Strategy 3: Establish development standards to encourage interior block parking (alley-ways behind houses).

--Houses occupy small lots clustered around public spaces such as parks or playgrounds

Action Strategy 1: Zone for compact development near parks and playgrounds.

--Walking is encouraged by side-walks, street trees, front porches, narrow roads that slow down cars, and most importantly, commercial and recreational areas are located a short walk from most houses

Action Strategy 1: Create development standards, which includes the following requirements: maintain home owners association, sidewalks, street trees, front porches, narrow roads and open space.

--Street grids replace isolated cul-de-sacs and the broader roads that connect them

Action Strategy 1: Development standards to require alternate through streets in development with cul-de-sacs.

--Garages retreat to the rear of lot or alley

Action Strategy 1: Create development standard requiring off street, interior lot, parking for narrow streets.

SCENARIO 2: A Revitalized Tillamook City Downtown Action Plan

Attributes

--The Downtown Vision is a revitalized City Center that serves as: A Gateway of Commerce supporting residents and tourists in a viable economic and cultural manner.

Action Strategy 1: Downtown stakeholders shall strive to build a better revitalization network. Stakeholders include, but are not limited to: the Resident Shopper, the Resident Non-Shopper, City Service Organizations, Tillamook Chamber of Commerce, Tillamook City Council, Tillamook City Administration, Tillamook County Commissioners, Tillamook County Administration, Tillamook Downtown Association, utility providers, and others.

Action Strategy 2: The Downtown (Central Commercial Core) business mix should effectively support residential markets first and tourism markets second and be the backbone as a business and service center for the City and the area.

Action Strategy 3: Blend and coordinate stakeholders involvement for the Downtown's future. Stakeholders include, but are not limited to: the Resident Shopper, the Resident Non-Shopper, City Service Organizations, Tillamook Chamber of Commerce, Tillamook City Council, Tillamook City Administration, Tillamook County Commissioners, Tillamook County Administration, Tillamook Downtown Association, utility providers, and others.

--A downtown development plan with implementation strategy is to guide the creation of a viable business organization, a structured economic market mix of commerce in the City Center and a design initiative which refreshes and underscores the pedestrian-friendly, livable aspects of the City Center.

Action Strategy 1: The City government and utility providers shall actively support and participate in the creation of a viable business mix and a pedestrian-friendly and livable City Center (to include underground power lines).

Action Strategy 2: The City government shall encourage economic diversity through business recruitment that is specific and value-driven by quality and service.

--The leadership focusing on the downtown development will place emphasis on restoration and then remodeling, where appropriate.

Action Strategy 1: The Downtown Master Plan for the built environment will include a staging plan for restoring key structures and a remodeling plan for upgrading structures by defined development standards.

Action Strategy 2: The Downtown Development Plan will include the creation of restoration and remodeling standards to guide a staging plan.

Action Strategy 3: The Downtown Development Plan for the built environment will include the development of an era design program to provide guidance during the restorative and remodeling effort.

Action Strategy 4: This Downtown Development Plan will have periodic review.

--A set of design review standards (to be incorporated in the updated Tillamook City Land Development Code) may compliment early efforts and provide continuity of purpose in terms of color schemes, architectural and design elements and public open space.

Action Strategy 1: Institute a design review committee in Tillamook City. The Design Review Committee shall be determined by the downtown stakeholders.

Action Strategy 2: There shall be design consistency (standards) in design review of the Commercial District.

Action Strategy 3: Develop an incentive program for meeting standards (Tillamook City Economic Development Loan Fund).

SCENARIO 3: Community Growth & Development Action Plan

Attributes

-Adequate serviceable lands for Tillamook City's Urban Growth Boundary

Sub Attributes

- *Coordinated water service provision for UGB*
- *Planned sewer distribution for entire UGB*
- *City Plan for sewer & water service outside current City limits*
- *Provision of Annexation Plan for Tillamook City*
- *Provision of Sewer Master Plan for Tillamook City*
- *Coordinated Sewer & Water Plan in Tillamook City Public Facility Plan*
- *Coordinated Capital Improvement Projects List*

Action Strategy 1: Identify alternative opportunities and means to finance public facilities projects and public improvement projects within Tillamook and the Urban Growth Boundary area; Identify stakeholders involved; Prepare a definition of terms, e.g., serviceable lands, LID, UGB.

Action Strategy 2: Present the product of Action Strategy 1 to the Tillamook City Council and to the stakeholders.

Action Strategy 3: Develop a Water and Sewer Master Plan for public facilities planning to be in place by year 2000 / 2004.

Utilize the guide: ***S*** *pecific*
M *easurable*
A *ttainable*
R *easonable*
T *imely*

-Adopt Urban Services Agreement

Action Strategy 1: Develop a Coordinated Capital Improvements Projects list.

Action Strategy 2: Improve the relationship between the City and County of Tillamook to further the development of urban services.

Action Strategy 3: Provide for a provision of a coordinated agreement between the City and the County to achieve an Urban Services Agreement.

SCENARIO 4: Community Character & Livability Action Plan

Attributes

--Community cultural celebrations focusing on Heritage valuing and History/traditions -- fairs, festivals, heritage events

Action Strategy 1: Foster (recognize and promote) special events, including schools, churches, cultural and language programs as well as Dual Language Programs and American Indian Heritage (Wilson Elementary School) events, June Dairy, International Day and October Fest.

--Safe, involved neighborhoods

Sub Attributes

Family life-based neighborhoods; Pedestrian walkways, bikeways; Activity involved schools; Caring neighbors on watch; Special events, including school, church and cultural programs engaging families and neighbors, interacting in community minded ways

Action Strategy 1: Identify neighborhoods and identify / survey values held by the residents by defining what neighborhood means to them.

Action Strategy 2: Maintain housing mix and its diversity.

Action Strategy 3: Blend downtown with immediate residential mix. Develop and maintain service mix that reinforces family life. Implement neighborhood policing within the community, encouraging involvement of a community resource officer.

Action Strategy 4: Encourage upkeep of all residential areas by promoting and encouraging upkeep of residential property throughout the entire city through Recognition and Award Programs; promote and encourage enforcement of existing laws and ordinances.

--Family Based Community

Sub Attributes

Family-waged jobs; Affordable housing; Excellent schools; Strong religious institutions; Efficient government services; Family-oriented activities, events; Healthy and high quality natural environments; healthy recreational activities for youth.

Action Strategy 1: Locate adult entertainment away from downtown through zoning.

Action Strategy 2: Promote and support uses within residential areas which promote activities with adults and children.

Action Strategy 3: Promote and support downtown family focused events, such as festivals, Joy Nights, open concert nights, family reunions and intergenerational activities.

Action Strategy 4: Foster family based block party events with City

Action Strategy 5: Foster development of a skate board park

-Viable Business Communities

Sub Attributes

Effective resident / tourism market mix plan in place and applied; Integrated downtown / north/east/west business market sectors; Stable watershed environment; Effective Watershed Flood Control Plan creation and implementation; Effective business diversity in place.

Action Strategy 1: Identify an effective residential / tourism market mix plan that uses what we have now as a base and continues from there.

Action Strategy 2: Support diverse business mix through a City business licensing process and enhance that mix in various geographic districts.

Action Strategy 3: Create a viable business community within the downtown by promoting and encouraging upkeep of business property throughout the entire city, downtown, north and east. Promote and encourage enforcement of existing laws and ordinances.

Action Strategy 4: Foster an infill and development strategy for commercial (Central Commercial Area) uses (coordinated business districts) with diverse complimentary, solicited businesses.

SCENARIO 5: Schools & Education Action Plan

Attributes:

--Develop community connections / promote community service interaction and involvement.

Action Strategy 1: Establish outreach committee to create a Citywide volunteer network service organization.

Action Strategy 2: Coordinate the service organizations to achieve community interaction and involvement in education programs.

--Become a community that supports education.

Action Strategy 1: Foster community values that emphasize achievement in continuing education through city sponsored recognition programs.

Action Strategy 2: Develop and conduct cooperative (educational programs for young adults, senior citizens and business/government enterprises.

Action Strategy 3: foster and develop community involvement/service projects as part of classroom curricula.

--Enhance life skills of all community members.

Action Strategy 1: Improve community awareness and support programs and activities through workshops, brochures and other marketing and promotional strategies.

Action Strategy 2: Encourage through proactive coordination Tillamook City, Tillamook Bay Community College and School District #9 to work together to improve community awareness.

--Ensure that School Facility Planning is incorporated in Land Use Planning.

Action Strategy 1: Review existing Land Use Planning guidelines.

Action Strategy 2: Make available and ensure land to be set aside for schools and recreation.

Action Strategy 3: Request City Manager to be on District #9 Facility Committee.

--Enhance the living environment of the community.

Action Strategy 1: Improve community living environment through educational awareness and support programs, and quality of life through workshops, brochures and other marketing and promotional strategies.

Action Strategy 2: Enhance the life skills of community members for educational and personal interest.

--Make the community a living classroom by encouraging school-to-work opportunities for our students.

Action Strategy 1: Encourage businesses to provide more student placement opportunities.

Action Strategy 2: Encourage City to provide more student placement opportunities.

--Encourage understanding and appreciation of the natural environment.

Action Strategy 1: Maintain and expand the partnership with area agencies and educational programs to further awareness and valuing of the natural environment.

Action Strategy 2: Encourage and promote environmental science and technology (automated mapping and information acquisition) and programs and training.

--Provide leadership in the economic, cultural, and intellectual evolution of our community

Action Strategy 1: Develop and maintain a continuing needs assessment for college and high school curricula programs that interprets and leads community cultural growth.

Action Strategy 2: Develop and support city government sponsored lifelong learning/skills in conjunction with city educational programs.

--Establish personal / community development and growth.

Action Strategy 1: Foster and support through city government sponsored educational awareness opportunities personal/community government and growth.

Action Strategy 2: Foster continuing education programs, which enhance personal/ community development and growth.

--Foster collaborative effort in the educational community, north, central, south.

Action Strategy 1: Provide awareness opportunities such as Career Days, invite citizens to sit in on city government (youth participation), teen court.

Action Strategy 2: Promote existing programs, services, courses and the Tillamook Educational Consortium in a countywide collaboration.

--Foster improved educational facilities.

Action Strategy 1: Request City Manager to be on District #9 Facility Committee.

Action Strategy 2. Foster integrated services throughout the facility system.

--Provide an environment for innovation and intellectual pursuits.

Action Strategy 1: Sponsor recognition programs, which highlight innovation and intellectual accomplishment community-wide.

Action Strategy 2: Encourage a valuing system that includes recognition of education as a core value.

--Foster educational and cultural diversity.

Action Strategy 1: Continue to foster and promote existing multi cultural programs throughout all educational levels (e.g.; bilingual k-12, and ESL).

Action Strategy 2: Develop and promote multi-cultural history and other diverse cultural awareness opportunities.

--Focus on educational goals (statewide), knowledge and information to shape a rapidly changing society.

Action Strategy 1: Encourage and promote statewide educational goals that further acceptance of change and adaptation to change

Action Strategy 2: Encourage and promote educational goals, which highlight the role of technology in changing community.

--Foster life long learning to acquire knowledge and life skills to effectively participate in the workforce, community and society at large.

Action Strategy 1: Develop and foster programs that focus on current job needs and anticipate future growth.

Action Strategy 2: Coordinate with area agencies to provide skill pools to meet the changing program missions.

-Educate people for anticipated jobs.

Action Strategy 1: Develop future job market surveys program for continued opportunities for career choice.

Action Strategy 2: Develop evolving educational programs and course articulation to stay abreast of changing industry and technology.

SCENARIO 6: Community Health & Well Being Action Plan

Attributes

--Encourage healthy lifestyles.

Action Strategy 1: Channel wise choices in lifestyles by creating healthy lifestyle activities and educational components that show the benefits of these programs for all ages.

Action Strategy 2: Develop individual accountability and responsibility behavior programs.

--Active older adults.

Action Strategy 1: Promote and further existing programs in Tillamook County Health Department and Tillamook County General Hospital.

Action Strategy 2: Encourage groups to target older adults to get involved and recruit membership in exercise and cultural activities.

--Adequate housing and care for special-need citizens.

Action Strategy 1: Provide special housing needs involving medical treatment.

Action Strategy 2: Amend Comprehensive Plan Policy under Housing State Planning Goal and support these facilities.

Action Strategy 3: Amend Zoning Ordinance to allow for special-need housing and care and revise those ordinance provisions that block these uses. Do not implement ordinances that discriminate, by zoning, special-need citizens housing paying particular attention to the safety and security of the community.

Action Strategy 4: Inventory and redefine special-need housing for the next decade.

--Focus on prevention and wellness in the community.

Action Strategy 1: Encourage health groups and organizations to target older adults involvement and recruit membership in exercise and wellness cultural activities.

--Support healthy families

Action Strategy 1: Promote nurturing and caring by all community members by supporting and furthering the success of healthy family programs already in place such as, the Tillamook County General Hospital's Healthy Families and Head Start.

Action Strategy 2: Identify areas in the existing healthy family programs that are not already addressed, and develop programs actions to meet the new needs.

--Primary service center for the County.

Action Strategy 1: Provide continuing means for countywide access to health services.

--Safe and secure community.

Action Strategy 1: Develop and support volunteer and community police law enforcement programs.

Action Strategy 2: Encourage and support neighborhood watch and report programs community wide.

--Prevention and control of crime.

Action Strategy 1: Develop and support volunteer and community police law enforcement programs.

Action Strategy 2: Encourage and support neighborhood watch and report programs community wide.

--High quality, accessible, affordable physical health care.

Action Strategy 1: Develop and promote Health Care Program integration.

Action Strategy 2: Develop alternative means for diversifying service provision, which reaches all community sectors and financial means.

Action Strategy 3: Articulate and maintain high standards program for all patient population services in the community.

--High quality, accessible, affordable mental health care.

Action Strategy 1: Develop and promote Health care Program integration.

Action Strategy 2: Develop alternative means for diversifying service provision, which reaches all community sectors and financial means.

Action Strategy 3: Articulate and maintain high standards program for all patient populations services in the community.

--Preventive healthcare for children and adults.

Action Strategy 1: Develop and apply preventative health awareness programs for family practice counseling.

Action Strategy 2: Develop and apply community wide preventive health care awareness message program that is common to all age classes.

--Quality Social Services.

Action Strategy 1: Accept responsibility for planning, financing and implementing direction for social services programs.

Action Strategy 2: Inventory and redefine community social service needs for the next decade.

Action Strategy 3: Convene social services agencies in the needs assessment.

Action Strategy 4: Evaluate and where necessary redesign service delivery features of existing programs to update service program relevance.

Action Strategy 5: The City should exercise its role in social services.

--Zero tolerance for domestic violence.

Action Strategies guided by Prevention -- Prosecution -- Intervention

Action Strategy 1: Establish a coordinated response by a committed partnership of, but not limited to: CARE, Inc., private health care providers, Tillamook Bay Community College, Tillamook County Domestic Violence Council, Tillamook County General Hospital, Tillamook County Health Department, Tillamook Family Counseling Center, Women's Crisis Center.

> *The committed partnership will:*
> *Provide an educational strategy for the partnership to be successful and work within the community;*
> *Provide a safety net support system as a follow-up response to victims.*

Action Strategy 2: Encourage the City of Tillamook to issue a resolution for the City to be declared to have ***Zero Tolerance for: Domestic Violence.***

--Drug-free community

Action Strategy 1: Promote and support efforts towards a Drug-Free Workplace Program within the community.

Action Strategy 2: Develop alternatives to drug and alcohol use and abuse, such as drug-free social occasions and in-city drug-free recreation areas.

--Foster a low teen pregnancy rate.

Action Strategy 1: Diversify programs to effect rate.

Action Strategy 2: Promote abstinence based programs beginning in the sixth grade.

--Foster coordinated teen programs.

Action Strategy 1: Research and develop undefined areas that meet the needs of all youth in the City of Tillamook.

Action Strategy 2: Identify and articulate teen program needs.

--Ensure the water quality in Tillamook City.

Action Strategy 1: Form a consensus among jurisdictional interests and stakeholders on quality measures and standards.

Action Strategy 2: Formulate and adopt water standards that protect the community residents and businesses as well as jurisdictional priorities.

SCENARIO 7: Community Valuing -- Cultural Assignments Action Plan

Attributes

--Maintain a small town atmosphere

Action Strategy 1: Promote a zoning administration, which will maintain a small-town atmosphere no matter the population size.

Action Strategy 2: Encourage cultural events related to the rural, agricultural heritage and traditions of this community.

Action Strategy 3: Foster a climate, which promotes a physically safe environment, that is pedestrian-friendly.

--Develop and preserve City Center to retain a small, friendly, relaxed, and welcoming environment

Action Strategy 1: The City of Tillamook is to provide leadership and coordination in developing public use, focal-point areas within the City Center.

Action Strategy 2: Promote partnerships between civic local and business groups and local government that will enhance a welcoming environment and a more visual pleasing downtown through a recognition / reward program and nuisance ordinances.

--Encourage pride in general appearance of community -- neighborhood and park programs to maintain a clean and litter-free community; landscaping, lighting, and signage programs to beautify; enhance community security.

Action Strategy 1: Develop a Community Clean and Litter-Free promotional program.

--Provide a diverse set of community programs, activities and facilities that enhance community values -- pride, family values, traditional enterprise.

Action Strategy 1: Identify community programs and report in the local media and actively promote our town's activities and events.

Action Strategy 2: Develop community value demonstration program.

--Recognize and preserve community heritage: historic buildings and other features preserved and renovated; conduct a touring program to visit sites of community heritage.

Action Strategy 1: Support the downtown revitalization effort.

Action Strategy 2: Develop and conduct a touring program to visit sites of community heritage.

Action Strategy 3: Identify and inventory the community heritage sites.

Action Strategy 4: Inventory and develop Hoquarton Slough (wetland) interpretive boardwalk (i.e., Rosenberg Park).

Action Strategy 5: Creation of a nature park in Hoquarton Slough East.

Action Strategy 6: Encourage cultural events that are related to the rural, agricultural heritage and traditions of this community.

Action Strategy 7: Identify and preserve, with legal language, our historic buildings, e.g., grain silo/elevator.

Valuing Checklist
Tillamook City honors and values.....

Small town-atmosphere; Rural, agricultural heritage and traditions;
Pride in community public image; Well-kept homes and businesses; Respect for fellow community members; Strong work ethic for adults and youth; Independence of mind; Healthy and strong family units; Spirit of community volunteerism; Fiscal accountability; Strong educational programs; Strong spiritual values; Encourage cultural diversity; Balanced and managed growth; Responsible stewardship of the environment; Physically safe community; Promote cultural appreciation of the arts; Leadership role in the county ;Ensure the water quality in Tillamook City

SCENARIO 8: Highest and Best Use for the Future of Tillamook City Action Plan

Attributes

--Emphasize long-term allocation of uses within Tillamook City and its Urban Growth Boundary.

Action Strategy 1: Conduct twenty-year population projections and zoning build able lands study.

Action Strategy 2: Develop zoning plans to meet the twenty-year time frame.

Action Strategy 3: Develop zoning Comprehensive Plan Policy to account for cumulative effect on water shed.

Action Strategy 4: Conduct a Sewer Master (Facilities) Plan of Tillamook and the UGB.

--Seek and preserve use compatibility objectives which recognize livability as the highest goal.

Action Strategy 1: Support and promote zoning administration that incorporates clustering compatible uses.

--Support the long-term distribution of uses which clusters compatible uses for efficient and effective infrastructure provision.

Action Strategy 1: Conduct sewer and water master plan studies to efficiently allocate infrastructure.

Action Strategy 2: Develop and adopt Comprehensive Plan Policy which coordinates land use distribution for cost effective infrastructure provision.

--Coordinate and support Tillamook County land use policy directing wise allocation of uses near and within Tillamook City s Urban Growth Boundary.

Action Strategy 1: Tillamook City Management fosters a continuing coordinating role with Tillamook County.

Action Strategy 2: Promote, and support an urban services agreement between the City and County of Tillamook.

--Support the efficient use of lands within residential zones.

Action Strategy 1: Create and implement infill and redevelopment Comprehensive Plan policies for Tillamook City and UGB (fully utilize vacant, dilapidated housing stock).

Action Strategy 2: Develop compact development overlay zones.

SCENARIO 9: Environment & Natural Resources Action Plan

Attributes

--Ensure the safety of the city water supply.

Action Strategy 1: Develop and implement a Watershed Health Plan and well-head protection plan.

Action Strategy 2: Implement the highest standards to ensure the safety of the City water supply.

--Respect for the natural environment as the basis for all life and livelihood.

Action Strategy 1: Develop and implement awareness and education program for the natural environment for school aged children, K through 12th grades.

Action Strategy 2: Develop and implement awareness and education program for the natural environment for adults as a lifelong learning program.

--Careful stewardship of the natural environment.

Action Strategy 1. Develop a new subcommittee of the Watershed Council, which will address City issues.

Action Strategy 2: Implement Comprehensive Conservation Master Plan (CCMP) identified actions -- Comprehensive Policy and Ordinance . Prepare and implement storm water run-off ordinance.

--Protect and enhance the major natural areas and open spaces.

Action Strategy 1: Develop and implement an Open Space and Natural Areas policy of the Comprehensive Plan under Goal 5 Accommodations.

Action Strategy 2: Develop and Implement a Recreational Master Plan for significant waterways (Hoquarton Slough) in Tillamook City and UGB.

--Conserve open space lands.

Action Strategy 1: Update the inventory of Open Space and Park lands in Tillamook City.

Action Strategy 2: Rezone by overlay for conservation of designated lands.

--Ensure air quality in Tillamook City.

Action Strategy 1: Protect the air shed by maintaining National Standards.

Action Strategy 2: Support the Mead Project and the development of other waste processing.

--Ensure that open space and recreational opportunities are available in residential areas.

Action Strategy 1: Develop and Implement a Recreational Master Plan for significant waterways in Tillamook City and UGB.

--Preserve and enhance significant waterways and wetlands in and around Tillamook City.

Action Strategy 1: Develop and Implement a Recreational Master Plan for significant waterways (Dougherty, Hall, Hoquarton and Lower Trask watershed) in Tillamook City and UGB.

Action Strategy 2: Apply for and secure Healthy Streams Grant to support the development of Riparian Plan/Policy/ and Ordinances for Tillamook City UGB.

Action Strategy 3: Inventory and develop a Riparian Plan and Ordinance for Tillamook City and within the Urban Growth Boundary.

--Preserve riparian lands as natural areas in Tillamook City's Urban Growth Boundary.

Action Strategy 1: Inventory and develop a Riparian Plan and Ordinance for Tillamook City and within the Urban Growth Boundary.

--Emphasize alternative pedestrian links, which connect the City parks, waterways and wetlands with small town residential development.

Action Strategy 1: Inventory and develop a circulation plan connecting the City parks, waterways and wetlands.

--Implement a vegetation community plan for the City business district, residential neighborhoods, streets and roadways.

Action Strategy 1: Inventory and develop a community landscape plan for the City and the UGB.

Action Strategy 2: Prepare and implement a voluntary landscape plan for the community.

Action Strategy 3: Encourage development use of certain tree forms.

Action Strategy 4: Promote street trees in all developments, shoulder to shoulder (tree forms).

Action Strategy 5: Promote community services and school

Action Strategy 6: Coordinate with state, local and other agencies on species selection.

--Continue to support a comprehensive residential, retail and commercial waste reduction and recycling program.

Action Strategy 1: Develop a City Sanitary franchised recycling station.

Action Strategy 2: Support commercial and non-profit recycling.

Action Strategy 3: Coordinate the City recycling effort with service groups.

--Emphasize and implement a Clean Industry program in Tillamook City to minimize aesthetic and environmental pollution, conserve energy, and reduce waste.

Action Strategy 1: Establish a sub-committee to develop a Clean Industry Program.

Action Strategy 2: Designate a Clean Industry Awareness Day.

--Encourage industry priorities, which recognize ecologically sensitive attitudes and practices.

Action Strategy 1: Develop an ecology awareness program for Tillamook.

--Disaster resistant community (flooding, earthquakes, volcanoes).

Action Strategy 1: Create and plan for emergency response.

Action Strategy 2: Educate residents as to response practices.

Action Strategy 3: Institute Disaster Response Day for the community once a year.

SCENARIO 10: Tillamook City Gateways Action Plan

- ***Trask River Bridge***
- ***Wilson River Bridge***
- ***Port of Tillamook Bay RR Bridge on Highway 6***
- ***South Highway 101 Divider Island at Main & Pacific***

Attributes

--Focus on gateway identities to enhance Tillamook City Entrance.

Action Strategy 1: Place signage at City entrance features.

Action Strategy 2: Clean up landscaping on terrain around entrance features.

Action Strategy 3: Slow traffic down.

--Create a distinctive entrance identity to the City via its Gateways.

Action Strategy 1: Create a theme plan for the City Gateways.

Action Strategy 2: Focus on pride among residents, then tourism in a theme plan.

Action Strategy 3: Incorporate a coordinated colors scheme and planting specification in the entrance theme plan.

--Enhance Gateways image by distinctive signage, lighting & landscaping.

Action Strategy 1: A Gateways subcommittee will develop a theme image for distinctive signage, with theme signage, lighting, and landscaping.

--Update City entry signage for each Gateway.

Action Strategy 1: Coordinate entry signage with theme signage and lighting.

Action Strategy 2: Secure signage (Highway 26 and 6) at this intersection for Tillamook City.

Action Strategy 3: Select and install signage in other coastal communities for Tillamook City.

--Update and include current population signs for each Gateway.

Action Strategy 1: Update current population signs for each Gateway.

--Coordinate with Tillamook City service clubs to acquire restroom site and develop facilities on Highway 6 (at County line) or at the falls and place temporary porta-potties in pull off fountain area.

Action Strategy 1: Approach ODOT to put restrooms at County line (storage site at crest/county line).

Action Strategy 2: Request placement of temporary restroom site at Falls and in pull- off fountain area.

--Update and include welcome signage for each Gateway.

Action Strategy 1: Evaluate and select a welcome sign style/design to be included in a coordination plan.

Action Strategy 2: Gateway subcommittee to prepare a coordination plan for all themes, signage, landscaping and lighting.

--Develop and include appropriate commerce signage for each Gateway that identifies downtown Gateway commercial district.

Action Strategy 1: Develop a coordinated sign plan for City entrance Gateways and commercial district gateway.

--Tillamook City must have a distinctive identity heralded by its well-recognized four Gateways.

Action Strategy 1: Coordination of local government, County Government Service groups and business association, in the identity plan formulation.

Action Strategy 2: Prepare artist renderings (sketch) by Art Club, children, of alternative physical designs representing the coordinated Gateway identity.

Action Strategy 3: Closer coordination with ODOT on their maintenance of Highway 101 bridges.

Action Strategy 3: Look at funding for subcommittee coordination.

Appendix XXIV - CPAC, Citizen Advisory Boards, Committees, Commission Bylaws, Vision Committee Bylaws, & Planning Commission Bylaws, and programs

§ 220 COUNCIL COMMITTEES.

(A) The Mayor, at his or her discretion, may also convene special ad hoc committees of limited duration with the consent of a majority of the Council. These committees shall be charged with making recommendations regarding to the Council.

(B) Members of all standing committees shall be appointed by the Mayor, with the consent of a majority of the council, at the second council meeting in January of each year or as soon thereafter as convenient. Members of standing committees must reside or own a business within the City Limits of Tillamook.

(1) The Mayor shall also designate Council members to serve as chair, vice-chair, and liaison between the standing committees and the City Council. Each council member should expect to serve on not less than two standing committees.
(2) Each member of a committee shall hold office for two years and until a successor is appointed.
(3) If a vacancy occurs in a committee, the Mayor, at the next succeeding regular meeting of the council, with the consent of a majority of the council, shall appoint a member of the council to fill the vacancy. Any member so appointed shall hold office until January of the year following the appointment or as soon thereafter as convenient and until a successor is duly appointed.
(4) The committees, which are limited to a maximum of seven members (excluding staff), shall annually select a Chair and Vice Chair to serve for one year. The member limitation does not apply to the Associations Committee, whose purpose is to be inclusive. The Chair shall set the agenda in conference with staff.
(5) A majority of a quorum of a committee is sufficient to conduct committee business. Business shall be conducted in a manner similar to that proscribed in Sections 070 and 160 through 210 above.
(6) The City Staff will provide staff support and input and may make recommendations to committees but shall not have a vote on the committee.
(7) At the regular meeting of the council following a committee meeting, the committees shall make a report, written or oral, of their activities or as soon thereafter as convenient.

(C) The common council may establish or abolish standing committees by Resolution in order to: 1) report and make appropriate recommendations to the Council: and 2) recommend adoption of ordinances and/or resolutions that it considers necessary for the welfare of the City. At the time of the ratification of these rules, the following standing committees shall be considered in place:

(1) Committee on Personnel.

The Committee on personnel shall:

(a) Coordinate City Manager, City Recorder, and Municipal Judge annual evaluations.
(b) Coordinate and make recommendations for changes to the employee handbook.
(c) Periodically evaluate all Personal Service Contracts.

(2) Committee on Beautification/Parks/Open Space.

The Committee on city beautification, parks and open spaces shall:
Consider all matters relating to parks, open space, seasonal street decoration, and uses of city beautification funds, city beautification needs and holiday celebrations and matters that are referred to it by the Mayor.

(3) Committee on Finance.

The Committee on finance shall:
Consider all matters relating to city budget, city fiscal affairs, loans, grants, assessment impacts and government grants and matters that are referred to it by the Mayor.

(4) **Committee on Public Safety**.

The Committee on public safety shall:
Consider all matters relating to public health and safety, City Police, intergovernmental relations with the Fire District, 911, County Sheriff, State Police and out-reach, schools, youth and elderly.

(5) Committee on Public Works.

The committee on public works shall:

a. Consider all matters relating to streets, on-street parking, parking district, sewers, alleys, sidewalks, public ways, water

facilities and public buildings and matters that are referred to it by the Mayor.

b. Recommend rates to be charged for city water and sewer services.

c. Propose improvements to streets, on-street parking, parking district, sewer facilities, alleys, sidewalks, public ways, water facilities and public buildings.

(6) Committee on Associations.

The committee on associations shall:
Consider all matters relating to city visioning, downtown development, and city partnerships.

(D) Notwithstanding the above subsections A through C, the following commissions and committees shall require Council consent for membership and shall be guided by the requirements of State Law and any supplemental bylaws that they may adopt:

(1) Planning Commission;

(2) Budget Committee.

(E) City Councilors appointed to any committee or commission, which may from time to time request and/or require municipal funds, shall work with the committee in the formation of its budget and be prepared to support and explain the budget items presented to the City Council.

(F) All committees shall keep action minutes or shall electronically record the proceedings of their meetings. The committee chair or his or her designate shall be responsible for turning the record into City Hall.

BYLAWS FOR THE TILLAMOOK CITY PLANNING COMMISSION

I. Purpose

A. The purpose of these bylaws is for the establishment and maintenance of the City Planning Commission.

1) To provide for rules and regulations for the government and maintenance of said Planning Commission;
2) To prescribe the powers and duties of said Planning Commission;
3) To provide for the payment of the expenses of said Planning Commission;
4) To provide a penalty for the violation of these bylaws.

Membership, Duties and Terms

A. Members of the Tillamook City Planning Commission shall consist of seven (7) members appointed by the Mayor, with the consent of the Council; plus a liaison from City Council, who shall be an ex-officio member and who may not have a vote.
   1) Not more than two (2) members shall be nonresidents of the City;
   2) Not more than two (2) members of the Planning Commission may engage principally in the buying, selling or developing of real estate for profit as individuals or be members of any partnership, or officers or employees of any corporation, that engages principally in the buying, selling or developing of real estate for profit. No more than two (2) members shall be engaged in the same kind of occupation, business, trade or profession. (ORS 227.030)

B. Duties of all Commission Members shall be:
   1) To read and be familiar with the Tillamook City Zoning Ordinance;
   2) To read and be familiar with the Comprehensive Plan of Tillamook City;
   3) To be present at and participate in all Planning Commission meetings;

   It is further recommended that Commission Members continually educate themselves with planning issues and responsibilities.

C. Role of all Commission Members shall be:
   1) To reflect Community values;
   2) To interpret and apply City Ordinances;
   3) To recommend policies;
   4) To educate public and provide forum;
   5) To do homework;
   6) To make decisions;
   7) To communicate with Elected Officials;
   8) To be visioning long term;
   9) To follow ethics {as referenced by State law};
   10) To participate in other planning events and processes.

D. Appointed members' terms are for four (4) years or for the unexpired term of their predecessor. Terms shall begin on March 1 of the calendar year. The seven originally appointed members shall choose their terms of office by lot as follows: one (1) for one(1) year; two (2) for two (2) years; two (2) for three (3) years; and two (2) for four (4) years; and shall immediately thereafter shall notify the Mayor and City Council in writing of such allotment. Their successors shall hold office for four (4) years [or the remaining portion of the term]. Any vacancy shall be filled by the Mayor appointing a person for the unexpired portion of the term, subject to confirmation of the Council.

A member of the Planning Commission who is absent from three (3) consecutive regular monthly meetings without an excuse as approved by the Commission and fails to notify the City Planner or a member of the City staff during said absence period, is presumed to be in non-performance of duty and may be removed by the Mayor with the consent of the majority of the City Council. A member of the Planning Commission may also be removed by the Mayor with the consent of the majority of the City Council, after hearing, for misconduct or nonperformance of duty. The City Council shall declare the position vacant following the hearing. Any vacancy in such a commission shall be filled by appointment of the Mayor with the consent of the City Council for the unexpired term of the predecessor in the office.

Officers, Duties and Elections

A. The officers shall consist of the Chair, and the Vice-Chair.
   1) Chair. Except as otherwise provided herein, the Chair shall have the duties and powers to:
      a) Preside over all deliberations and meetings of the Commission;
      b) Only vote on questions before the Commission if necessary for a quorum or where there is a tie;
      c) Call special meetings of the Commission;
      d) Sign all documents pertaining to Commission action promptly after approval by the Commission.
      e) Appoint subcommittees.

   2) Vice-Chair. During the absence, disability or disqualification of the Chair, the Vice-Chair shall exercise or perform all the duties and be subject to all the responsibilities of the chairperson.
   3) The role of the Commission Officers shall be:
      a) To conduct meetings;
      b) To educate public;
      c) To get all opinions;
      d) To keep Planning Commission on track;
      e) To ask Planning Commission what the issues are;
      f) To define issues;
      g) To respect citizens;
      h) To promote planning;
      i) To diffuse hostility;
      j) To get relevant testimony and all Citizen Opinion;
      k) To promote and participate in community involvement.

B. Election of Chair and Vice-Chair
   1) Nomination of officers shall be made from the floor at the regular meeting in March each year, and the elections shall follow immediately thereafter.

2) A candidate receiving a majority vote of the appointed membership of the Planning Commission shall be declared elected and shall serve for one year or until a successor shall take office.
3) Vacancies in offices shall be filled immediately by regular election procedures.

IV. General Duties and Powers of Commission

A. To advise the City Council on general land use and transportation planning issues, long range community investment programs; to update and maintain the Tillamook Comprehensive Plan; and to act as a hearings body for certain land use applications and land use appeals as described in the City Zoning Ordinance.

B. To study and to recommend to the City Council such measures as may be advisable for the promotion of the public interest, health, safety, comfort, convenience and welfare of the City, and the Urban Growth Area;

C. The City Planning Commission shall also have all the powers which are now, or may be, given to it under the general laws of the State of Oregon.

V. Meetings, Quorums, Notification

A. Regular meetings will be held on the first Thursday of each month in the Council Chambers at City Hall, 210 Laurel Avenue, Tillamook, Oregon, or at such other places as may be determined by the Planning Commission, unless the Planning Commission cancels or reschedules the meeting. Additional or special meetings may be held.

E. A quorum shall consist of at least four (4) of the seven (7) Planning Commission members. A majority of affirmative votes are needed to pass a motion. For the purpose of forming a quorum, commission members who have disqualified or excused themselves from participation in any matter shall be counted as present. No action shall be taken in the absence of a quorum except to announce the lack of a quorum.

F. Any Planning Commission member having a conflict of interest in any item of business being discussed shall not speak to the matter as a member of the Planning Commission, but shall speak only from the floor as any other private citizen, and shall be disqualified from voting on the particular item in which the member has the conflict of interest as described further in Section VII of these bylaws. Voting shall be viva voce (by the voice). A record of the vote shall be kept as a part of the minutes.

G. It shall be the duty of the Chair to call a special meeting when requested to do so in writing by at least four (4) voting members of the Commission. The notice

of such a meeting shall specify the purposes of the meeting, and no other business may be considered. Staff shall notify all members of the Planning Commission in writing in advance of such meeting so that each Commission member shall reasonably be expected to receive such notice at least 72 hours in advance of such meeting.

H. All meetings shall be adjourned, or continued, no later than three hours from the beginning of the meeting, unless extended past that hour by unanimous consent of Commission members present.

I. The Chair may call a recess of the meeting at their discretion. This they may do whenever it appears that a meeting will be unusually long or that a recess would be beneficial for other reasons.

J. An agenda of items to be discussed at each meeting shall be prepared by staff members of the Commission and shall be forwarded by mail to each member of the Commission at least five (5) business days prior to such meeting. The Agenda shall follow the Conduct of Business as listed in part VI below.

K. All meetings shall be open to the general public.

I. Notice of Meetings. Public notice of all Commission meetings shall consist of the time and place of the meeting and an agenda of the subject matter to be considered by the Commission. Said notice will be posted in the City Hall, County Courthouse, Fire Department Headquarters, and County Public Library.

VI. Conduct of Business

A. Meetings: Order of Business

1) Call to order
2) Roll call/recognition of Planning Commission members present
3) Approval of minutes
4) Public comments
5) Public hearings as scheduled
6) Items of high public interest
7) Items of Commission concern
8) Future Agenda Items
9) Announcements
10) Adjourn

B. Quasi-judicial Hearings: General Rules

1) The Hearing Body is conducting the hearing in a quasi-judicial capacity; there shall be no audience demonstration or other conduct that would disrupt the hearing.

2) The criteria specified by the Zoning Ordinance, which must be satisfied for approval of this action, are in the City Staff Report (Findings and Conclusions).
3) Public testimony must be limited to relevant criteria, or other City or State land use standards that apply.
4) An appeal of the Planning Commission's decision must be based on a specific issue about the criteria and/or standards raised during the public hearing.
5) Any person testifying may request that the hearing be continued to another date, or that the hearing record remain open for a maximum of seven days for further written testimony.
6) Persons may speak only after being recognized by the Chair, stating their full name and address, and will be notified of a continuance, appeal or other action on the application.
7) The Hearing Body shall consider only testimony and information that is relevant to the criteria of the requested change, and will not allow immaterial or repetitious testimony.
8) Order of Procedure
    a) Reading of Hearing Disclosure Statement;
    b) Ask for disclosure of conflicts of interest, ex parte contact, or bias;
    c) Ask for challenge from anyone in the audience in regard to conflict of interest, ex parte contact or bias from Commission members;
    d) Staff Report and summary;
    e) Questions of Staff;
    f) Applicant's case – the applicant will present the proposal to be heard;
    g) Cross-examination of applicant by the Hearing Body;
    h) Proponent's case - the proponent and those favoring the proposal will be heard;
    i) Cross-examination of each proponent by the Hearing Body;
    j) Opponent's case - those opposed shall be heard next. Groups who are represented by a spokesman or who were entitled to receive notice of the hearing are requested to proceed first. Opponents may submit questions of the proponent to the Chair;
    k) Cross-examination of each opponent by the Hearing Body;
    l) Neutral testimony;
    m) Rebuttal. Both the proponents and opponents may submit rebuttal testimony; the proponent shall have final opportunity;
    n) Ask Commission if ready to close public hearing;
    o) Close the public hearing;
    p) Commission discussion;
    q) Commission makes a motion , wait for second of the motion;
    r) Chair repeats, for the record, who made the motion, who seconded the motion, then repeats the motion;

s) Discussion before vote;
t) Call for Planning Commission members' vote;
u) After decision is made to approve or deny the proposal, the Chair shall advise of appeal time, ten (10) days from date of hearing.

9) Decision of the Hearing Body. Upon closing the hearing, the Hearing Body shall deliberate the question and reach a decision, postpone or continue the matter for further study or decision, to a time and place then announced. A decision to postpone or continue an item before the Commission may be debated and amended. If there is a decision to table the matter before the Commission, a time and date when the issue will be considered does not need to be specified, and all amendments or debates of the issue are precluded.

10) Continuance of hearing. The Hearing Body may continue a hearing in order to obtain additional information or to serve further notice upon other property owners or persons it decides may be interested in the proposal being considered. Upon recessing, the time and date when the hearing is to be reconvened shall be announced.

11) Recommendations in Writing. All recommendations made to the City Council by the City Planning Commission shall be in writing signed by the Chair.

Public Testimony

Opportunity for public testimony of any public hearing on the agenda shall be given in the following manner:

In the event that a large number of people wish to speak to a particular agenda item, the Chair, at their discretion, may limit the length of time any one person shall speak to the matter, and every speaker, shall be held to this time limit.

Every person who has signed to speak on an agenda item shall be heard before any person is given an opportunity to speak a second time on that same item. In the event that there is not enough time allotted to an agenda item in which to hear every person wishing to speak, this agenda item shall be postponed to the next scheduled meeting and made a special order to be considered. Such postponement shall be made on direction of the Chair, and shall not be subject to a vote. In the event that more than one agenda item shall be thus postponed, all such items shall be considered at the next meeting in the order in which they were postponed.

D. Minutes.

1) Written minutes of all open and regular special meetings, which shall be approved by the Planning Commission shall be prepared and made available for public inspection. All meetings shall be electronically

recorded for the benefit of the City in the preparation of the minutes. Such recordings shall be retained for a minimum of one year and may then be reused.

2) Written minutes shall include the names of all commissioners and staff members present, and general public speaking, all motions, orders and others decision proposed and their disposition, the result of all votes, with the vote of each Commissioner by name unless the vote is unanimous, the substance of the discussion of any matter and references to any documents discussed. Minutes shall be signed after approval by motion by the presiding officer.
3) Minutes shall be available to the public, in accordance with the City's public records request policy.
4) Any Commissioner not present at a meeting must abstain from voting on approval of the minutes of that meeting.

VII. Disclosure, Conflict of Interest

A. Ex Parte Contact

Any prehearing contacts by a Commission member with a proponent or opponent to a hearing must be divulged by the member if that contact involved discussion of the subject of the hearing. Any visit to a site of the subject of a hearing must be divulged at the public hearing.

B. Conflict of Interest, Prejudice or Bias

A Commission member shall abstain if that member has a Conflict of Interest as defined by ORS Chapter 244. A member shall also abstain if they feel prejudiced or biased towards a quasi-judicial decision.

C. A member of the Planning Commission shall not participate in any Commission proceeding or action in which any of the following exist:

1) Any of the following has a direct or substantial financial interest in the proposal: the Commission member or his/her spouse, brother, sister, child, parent, father-in-law, mother-in-law, any business in which he/she is then serving or has served within the previous two years, or any business with which he/she is negotiating for or has an arrangement or understanding concerning prospective partnership or employment;
2) The Commission member owns property within the area entitled to receive notice of the public hearing;
3) The Commission member has a direct private interest in the proposal;
4) Disqualification for reasons other than the Commission member's own judgment may be ordered by a majority of the Commission members

present and voting, without the vote of the Commission member who is the subject of the motion for disqualification;

5) Participation by interested officers or employees who have a financial or other private interest in the proposal without first declaring for the record the nature and extent of such interest.

Any actual or potential interest shall be disclosed at the meeting of the Commission where the action is being taken.

D. Rights of Disqualified Commission members.

1) An abstaining or disqualified Commission member may be counted for purposes of forming a quorum. A Commission member who represents personal interests at a hearing may do so only by physically joining the audience and vacating the seat on the hearing body.

2) Notwithstanding any provision of this or any other rule: (a) an abstaining or disqualified Commission member may be counted for purposes of forming a quorum; and (b) a Commission member may represent himself or herself, a client or any other member of the public at a hearing, provided that the Commission member:
   a) Abstain from the vote on the matter;
   b) Removes himself or herself from the Planning Commission area and joins the audience; and
   c) Makes full disclosure of his/her status and position at the time of addressing the Planning Commission.

3) If all the Commission members disqualify themselves, the matter shall be referred to the City Council and the City Council shall make the decision on the application.

E. A Member of the Planning Commission absent during the presentation of evidence in a hearing may not participate in the deliberations or final decision regarding the matter of the hearing unless the Commission member has reviewed the evidence received.

F. Gifts, Bequests, and Devises. The City Planning Commission may receive gifts, bequests, or devises of property to carry out the purposes of this act and shall have control and disposition over same, unless this ordinance shall be repealed, in which case such control shall be vested in the City Council.

G. Expenditures of City Funds. The City Planning Commission shall have no authority to make any expenditures on behalf of the City, or to obligate the City for payment of any sums of money, except as herein provided; then only after the City Council shall have first authorized such expenditures for said purpose from time to time by appropriate ordinances and/or resolutions, which shall provide the administration method by which funds shall be drawn and expended.

VIII. Subcommittees

The Chair may appoint subcommittees. Duties and responsibilities shall be spelled out and the length of time the subcommittee is to have to perform the work shall be assigned by the Chair and the Commission.

IX. Amendments

A. An amendment to the Bylaws will be submitted to the Planning Commission at the regular meeting previous to that at which action is taken concerning the amendment.

B. The Bylaws may be amended by a two-thirds vote of the Planning Commissioners voting, a quorum being present.

C. An amendment to the Bylaws shall only become effective after its approval by the City Council.

Appendix XXV – City Council Strategic Plan

STRATEGIC PLAN FOR 2011

COUNCIL GOALS

CITY COUNCIL GOAL 1
PROMOTE QUALITY OF LIFE THROUGH SAFE CITY, SCHOOLS AND STREETS.

Develop Optimal Police Structure
Public Safety Committee: 9 months/no cost – staff time

Explore Alternative Funding for Police Department
Public Safety Committee: 12 months/no cost – staff time

CITY COUNCIL GOAL 2
MANAGED GROWTH AND ECONOMIC DEVELOPMENT.

Promote Industry for Economic Driver
Associations Committee: full year/no cost – staff time

North 101 Enhancement
Associations & Beautification Committees: full year + /no cost – staff time
(if outside consultant, $30,000 to $50,000)

Webpage Update
Full council: 3 months/$5,000 to $10,000 – staff time

CITY COUNCIL GOAL 3
AFFORDABLE, QUALITY HOUSING AND INFRASTRUCTURE.

Storm Drain Plan update with potential SDC & surcharge
Public Works Committee: 9 months/$30,000 to $50,000 – staff time

Elimination of Sewer Cross Connections
Public Works Committee: 6 months/$50,000 to $70,000 – staff time

CITY COUNCIL GOAL 4
A CLEAN, ATTRACTIVE OUTDOOR LIVING ENVIRONMENT.

Holden Creek Enhancement
Associations Committee: 12 months/no cost (possible grant to assist) –
staff & machine time

CITY COUNCIL GOAL 5
A CITY WORKPLACE THAT ENCOURAGES EMPLOYEES AND REWARDS THEIR CREATIVITY AND INNOVATION.

Reorganization of City Staffing structure

Personnel Committee: 2 months/no cost – staff time

Update of Personnel Manual
Personnel Committee: 2 months/no cost – staff time

CITY COUNCIL GOAL 6
EFFECTIVE LOCAL, STATE AND REGIONAL PARTNERSHIPS.

Develop Partnership for Jobs
Associations Committee: full year + /no cost – staff time

CITY COUNCIL GOAL 7
LONG TERM FINANCIAL STABILITY.

Codification of Ordinances
Full Council: 6 months/$10,000 to $20,000 – staff time

Redo Charter
Special Committee: must be drafted by August to place on November ballot and then public education for three months/no cost – staff time

Vision Plan Update
Planning Commission: 1 year + /no cost– staff time (if outside consultant, $20,000 to $30,000)

Comp. Plan Update
Planning Commission: multiple years (Parks Plan 6 months) /no cost– staff time (if outside consultant, $250,000 to $350,000)

Appendix XXVI: Development Ordinance

PLACEHOLDER

[To be inserted at a later date]

Appendix XXVII: Implementing Ordinances

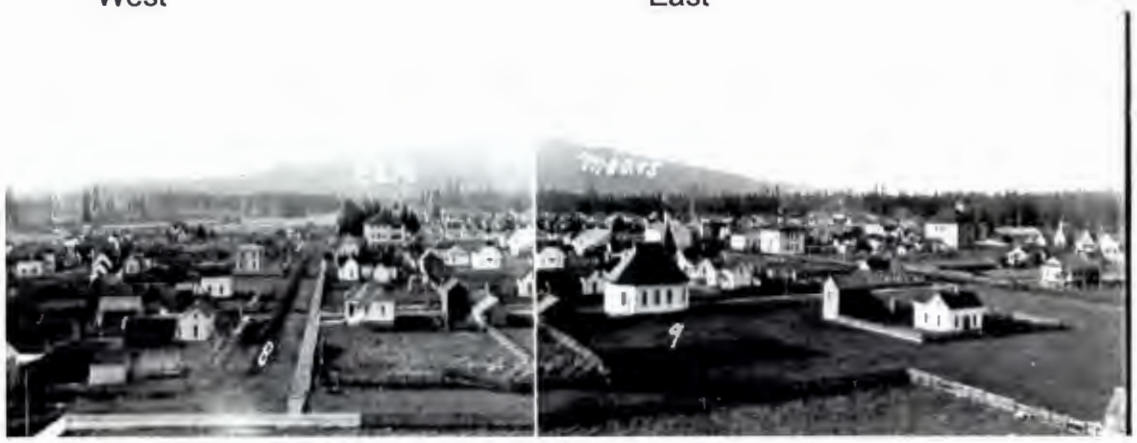
PLACEHOLDER

[To be inserted at a later date]

Appendix XXVIII - Historical Site Inventory within the Tillamook Area

EARLY TILLAMOOK

West East



View of Tillamook looking east on First Street in 1900s



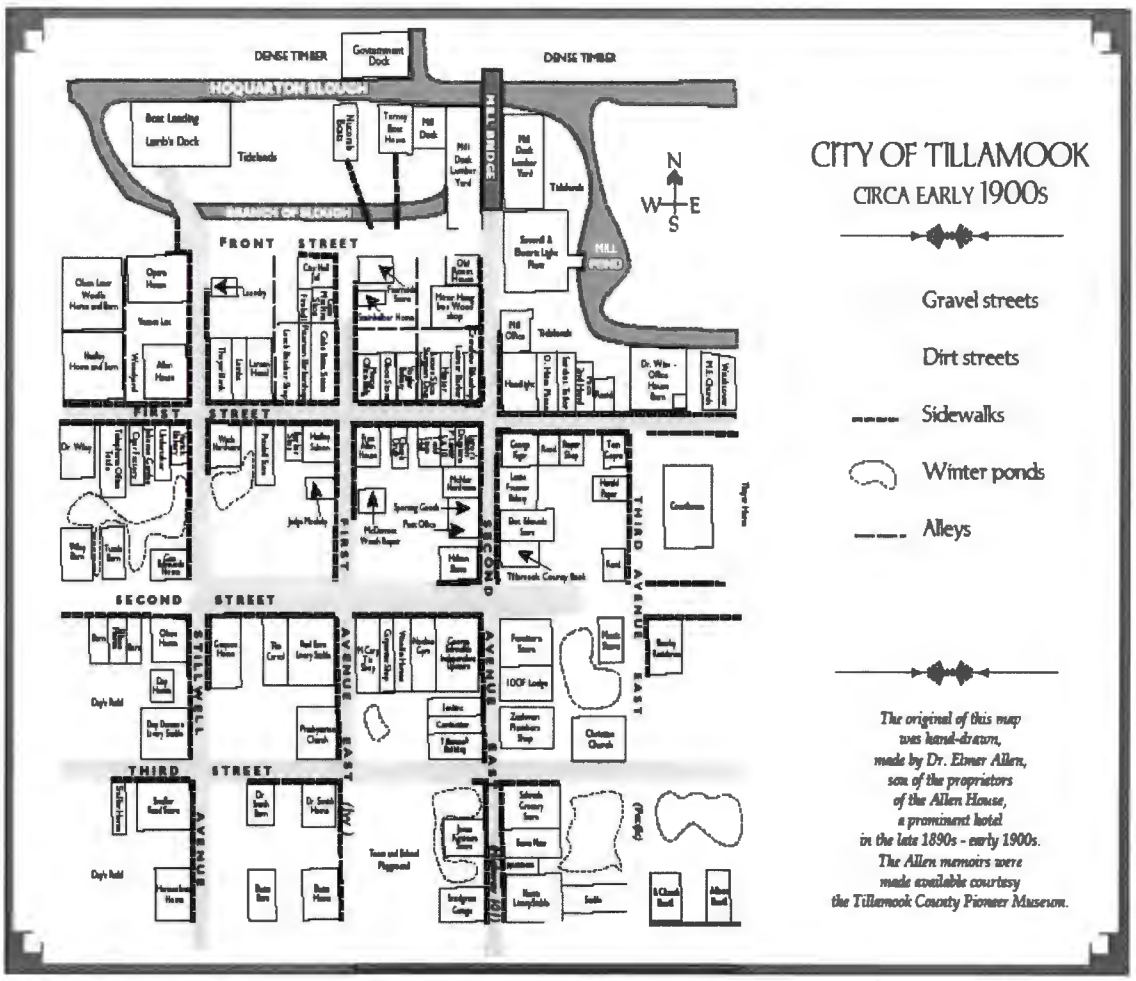
Tillamook High School, 1900



Waiting for the parade 1900



City of Tillamook City Map 1900



Tillamook was called "Hoquarton" by the Indians who lived there before white settlers came. During the 1880s, all business in Tillamook was carried out along streets where boats carrying supplies could land to load and unload cargo. The Highway 101 bridge crossing the slough was built in 1931 by the Clackamas Construction company.

The table below describes Tillamook's historic sites and structures:

Tillamook's Historic Sites and Structures		
NAME	**LOCATION**	**DESCRIPTION**
Fairgrounds Exhibit Hall	4603 Third Street	A two-story wooden structure located on the Old Wilson River Highway (Third Street), two miles east of town. Constructed in 1925, it still serves as an exhibition hall for Fair events. The structure has been enlarged over the years and remains as one of the most formal structures on coastal fairgrounds.
Naval Air Station	HWY 101, two (2) miles south of town	Home of the Tillamook Air Museum
Old Tillamook County Courthouse	2106 Second Street	A two-story stone masonry structure located between First and Second Streets. Constructed in 1905/06, it originally served as the County Courthouse. It now is under the ownership of the Tillamook County Historical Society and houses a museum devoted to the history of Tillamook County.

Old Trout Cemetery	Corner of Wilson River Loop and Third Street	
Tillamook County Courthouse	201 Laurel Avenue	A two-story brick structure constructed in 1950, it continues to serve as the County Courthouse. The Lucia Wiley Mural and the Building of the Morning Star is painted on the west wall of the lobby.
Old Tillamook Post Office	210 Laurel Avenue	A one-story brick structure constructed in 1940. It is presently used as the Tillamook City Hall. Originally it was the Central County Postal Distribution Center. The Lucia Wiley Fresco painting depicting native trade with explorers is found on the north wall of the business lobby.
Old Tillamook Bank	1802 First Street	A one-story masonry structure constructed in 1894, it serves as commercial oyster supply shop. It is an example of late 19th century architecture.
United Brethren Church	Corner of Fourth Street and Madrona Avenue	A one-story wooden structure constructed in 1897, it serves as St. Peters Lutheran Church. The church is one of the oldest in Tillamook, and except for the replacement of its tower and spire, remains in almost original condition.

There are a number of additional buildings of historic importance than just those listed above. These include the following to name just a small number of them: the Masonic Building at the northeast corner of Second Street and Ivy Avenue completed in 1914; the Kelly Building at the SW corner of Second Street and Main Avenue completed in 1925; the Alderman Building at the NW corner of Second Street and Main Avenue, built in 1932; the First National Building at the NE corner of Second Street and Main Avenue, the Odd Fellows Building at the SE corner of Second Street and Main Avenue, built in 1916; the Tillamook Hotel between Second Street and Third Street and Main Avenue and Pacific Avenue, completed in 1941; the C.B. Hadley House on the SE corner of Third Street and Laurel Avenue (as shown in the photograph above), built in 1892; and the United Brethren Church at the SE corner of 4th and Madrona, constructed in 1897-99. These historic structures and many more are listed and described further in the Appendix. Tillamook County Historical Society has published a seven-page document showing early photographs of Tillamook and interesting facts about its pioneers. Click on the image to download a PDF of the document, or go to the Tillamook County Pioneer Museum Web site at http://www.tcpm.org/ and click on TCHS.

WHERE IVY INTERSECTS FRONT STREET AND THE HOQUARTON SLOUGH G.F. Fearnside's Famous Floating Store - in 1892, Mr. Fearnside was the proud owner of a boots, shoes and clothing store built on a scow. When business became a little "slack" at one town, he floated down to the next.





THAYER BANK BUILDING
1802 First St, Tillamook
Constructed in 1894, it now serves as Pearl Point Oyster, a commercial oyster supply shop. The

structure has been altered over the years, but remains in fair condition as an example of late 19th century architecture. A one-story masonry sandstone structure with construction delayed due to experimenting with use of native stone from various quarries of Tillamook Bay. Mr. Thayer insisted on using Tillamook productions and Tillamook labor. The local stone was of excellent quality and by being exposed to the atmosphere, became very hard and durable, while still being easy to work.
The foundation is massive and solid, enclosing a spacious basement. A vault rests on a concrete foundation about 15 feet square and over ten feet from the base of the vault floor. Absolutely fireproof, its walls are 32 inches thick with intervening air chambers and lined with chilled steel, as near burglar proof as vaults are made.
Nearly all materials are Tillamook county products with only the lime, cement and iron in the structure were shipped from abroad. The redwood of California forests was from logs and lumber that drifted in on the "ever hospitable shores of Tillamook." Most of this information from an article in the Tillamook Headlight, 1895. Claude and Estelle Thayer moved to Tillamook shortly after they were married. They were aware the town was in need of both a bank (begun about 1887) and a lawyer, needs that they were able to help satisfy. The criteria for bank loans was "If he has manure on his boots, give him the money." The bank was said to never have lost a dollar on bad investments or risky loans.

MASONIC BUILDING Plaque



The first recorded attempt to establish a Masonic Lodge in Tillamook County was in 1865 by Joseph R. Edwards and others. The first lodge meetings were held in Edwards' barn, later on, inside his house. In 1913, the members bought two lots on 2nd Street to erect a new building. Hiding under the siding is a lovely brick structure.
The lodge members moved in January of 1914 and have occupied that site until the present. Lodge activities take place on the second floor of the building, while first floor tenants have included the U.S. Post Office, Tillamook Cheese and Dairy, and a Montgomery Ward Department Store. Today the Headlight Herald weekly newspaper and several small retail shops occupy the first floor. Note the old Chandler & Price printing press on display in the Headlight Herald windows. Once the home of Sanders Iron Works, where logging trucks were brought to be repaired. After hours, the owner would bring out the bottle and the truckers and he would have a few "snorts."

KELLY BUILDING

SW corner of 2nd street and Main Ave. completed in August, 1925. The original tenants included a sporting goods store and a cigar store with a soft drink and card parlor. Today it is home to Anderson's Florist.

ALDERMAN BUILDING

NW corner of Main and 2nd St., built in 1932, quite extravagant considering that was in the Depression era, once held the offices of Macinerny Jewelers, an optometrist and a barbershop. A hair salon of some sort existed there until the mid 1990s.
Where the Sugar Bean Cafe sits today was once the home of the Smokehouse Tavern and Smokehouse Confectionery, a wooden building that boasted a bowling alley in the basement. Remnants of the bowling alley are still there. The building to the north of Alderman was once home to Buel's Hardware store and Clough's Drugs.

View of Tillamook looking north on Main Avenue in 1950's (Tillamook Hotel on right)



TILLAMOOK HOTEL

The first part to be built included the Rendezvous Bar. In 1912, a new owner added on the hotel portion; in 1941, a woman bought the building and extended it to 2nd St. When the hotel first opened, the cost of a room was $10 a night, girls included. The site of the Mexican Shop once housed a bank vault; Sunflower Flats was once a jewelry store.



C.B. HADLEY HOUSE

C.B. Hadley owned the Grand Central Saloon & Billiard Parlors. Located on Stillwell Avenue, it was one of the best appointed and thoroughly equipped establishments of its kind in the state in 1892, boasting electric lighting. The Hadley home, shown above, has gone through many changes and is today the La Mexicana Restaurant.

UNITED BRETHREN CHURCH

4th and Madrona
A one-story wooden structure constructed in 1897-99, it now serves as St Peter Lutheran Church. One of the oldest churches in Tillamook, the builder was Gust Freeman, an emigrant from Sweden who followed plans commonly found in that

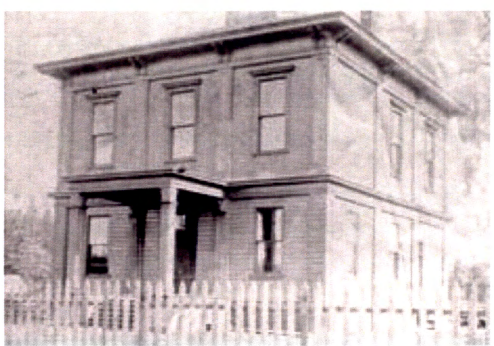
country. He borrowed $600 in January of 1896, to construct the church. Mr. Freeman hand-hewed the beams and John Swenson did beautiful carvings. The tower and spire blew off in a windstorm several years ago and were replaced. Extensive changes have occurred on the inside; the carvings are no longer there. According to the current pastor, the outer walls of the structure are the only remaining parts of the original. The building has gone through three different denominations: Baptist, Mormon and Lutheran. A resident hermit who sold Revlon products lived in the structure for some time; long enough that the Lutheran church had to get a quick claim deed from him. The Tillamook County Historical Society installed a plaque there in 1999, celebrating its 100th anniversary of its dedication.

HIGHWAY 101/MAIN STREET (FORMERLY FIRST AVENUE) & 3RD
Today the Pancake House, originally Ford's Drugstore & Soda Fountain occupied this location on Main St.. That building had the first elevator in Tillamook County. In 1936, the Dudes Coliseum was featuring the movie "Mississippi," starring W.C. Fields and the lesser known Bing Crosby and Joan Bennett. Cost: Adults 10¢, kids under twelve, 5¢. Today Tillamook Music, originally this spot was home to a livery stable, later a radio repair shop and an insurance agency.



FIRST NATIONAL BUILDING
on Main Avenue between 1st and 2nd was first intended to be the First National Bank, although it was never used as such, the bank instead moving across the street to the IOOF building. However, there was a lively establishment upstairs, complete with an oak dance floor and rumored to host ladies-of-the-evening.

ODD FELLOWS BUILDING
Built in 1916, the second floor of the building has been always been occupied by the Odd Fellows (IOOF). The space was shared with the Tillamook County Creamery from 1920 to the mid 1950s. The first floor has been occupied by a bank and several retail stores. In summer of 2006, restoration to its original state began. *(IOOF is one of the largest fraternal and benevolent organizations in the U.S. Founded in England, the members organized a system to provide aid and comfort to their fellow members in times of misfortune.)*



FIRST TILLAMOOK COUNTY COURTHOUSE • 1887
In 1887, the pioneers built a wooden courthouse to conduct the business of Tillamook County.

After the building was devastated by fire in 1903, a grand new courthouse was erected on the same site in 1905.

1905 Tillamook Courthouse (Now Pioneer Museum) on the upper right.

SECOND TILLAMOOK COUNTY COURTHOUSE 1905



With the growth of the county and its inhabitants, larger accommodations were required and in 1932, the current Courthouse replaced the second. The Tillamook County Pioneer Association, wanting to preserve the history of Tillamook County and its inhabitants, spearheaded efforts to create a museum. Since 1935, the second courthouse has functioned as the **TILLAMOOK COUNTY PIONEER MUSEUM**, with three floors of artifacts displaying over 40,000 artifacts.



STEAM DONKEY On the east lawn of the museum is one of the few running steam donkeys left in the US. Fired up four or five times a year, its whistle is the official start for the annual June Dairy Parade. This engine was made by Puget Sound Iron Works, Tacoma, Washington. Used in early day logging to power the highlines. Steam was generated by heat from wood, coal or oil fuel in the firebox and supplied to reciprocating engines.

THIRD TILLAMOOK COUNTY COURTHOUSE

Built in 1932, a Lucia Wiley mural, a true fresco, adorns the wall on the southern end of the building. An explanation is next to the artwork, explaining the methods used in fresco painting and why it is so unique. True frescoes are not plentiful, so here is a wonderful opportunity to see one up close.

OLD POST OFFICE (CITY HALL) - 210 Laurel Avenue Constructed in 1940, it was originally used as the Central County Postal Distribution Center. In May of 1985, the building was placed on the U.S.



Interior list of Depression-era style of architecture. The large mural inside depicting Native Americans present at Captain Robert Gray's 1788 landing at Tillamook Bay was designed and painted in 1942 by Lucia Wiley, originally from Tillamook. While working in the arts in Minnesota, Lucia won a national art contest with the prize being to paint a post office mural. Tillamook requested she paint the mural in their post office. She was one of the seven best-known fresco artists at the time. She also worked in the ghettos of New York as a teacher. In later years, she joined the Episcopal Order of Sisters and became known as Sister Lucia.



WHAT IS FRESCO? The Italian word ëfrescoíis used to describe the painting of a picture on fresh (damp) lime mortar or plaster. Fresh fresco painting applies wet color to wet plaster and dries to become a permanent part of the structure. When it dries, the white of the wet plaster gives the colors on the wall an exceptionally bright transparency, similar to the clarity of watercolor on paper. About fresco painting: a quote by Lucia Wiley... *"I believe fresco is the most universal, simplest, the most direct, the most natural expression of the artist. Yet of all forms of painting, it demands the most of the artist. It calls from the painter the fullest giving of herself. It draws on every inch of her physical and mental and spiritual being, as she contemplates the same idea, the same motif, day after day, month after month, and then creates the fresco out of every ounce of herself. In addition to this, throughout the day the capacity of the plaster to assimilate color varies - it is a living changing thing. The painter must be sensitive to this constantly changing appetite and feed it accordingly. In my own studio practice, I like to call this ability-or gift-the "mothering principle." Painting a fresco uses this gift like no other artistic process."* -Lucia Wiley The procedure is described in great detail by Lucia Wiley herself on this website: http://www.muralist.org/ :fresco/painting.html



A.G. BEALS HOME 2316 3rd St. Arthur Generous Beals, age 18, headed West from Pennsylvania in February of 1891, with his brother Fred. Later he married a Pennsylvania girl, Grace L. Allen, and brought her and his mother back to Tillamook. Arthur ended up developing 12 dairy farms; operating five sawmills; operating the Tillamook City electric light system for several years; serving in the state legislature, sitting on the "Board of High Curricula "for many years and was responsible for spearheading an effort to record and honor all those who served in WWII from Tillamook County. Those record books are on display at the Pioneer Museum. Contrary to his middle name, Mr. Beals had quite a reputation for not

wanting to part with money. So imagine his surprise when after offering $75,000 to start up a YMCA, provided the town matched that amount, the town did.

HABERLACH HOUSE

Located at 2406 Third Street, the house was built for Carl Haberlach and family circa 1930. They originally lived on the site where the City Police building stands today. This home was considered THE house in town at the time, boasting a music room, reading room, large living room and a full basement. Constructed in a "California Spanish style", it had a tiled roof, unusual for this area. Mr. Haberlach, an excellent salesman, was responsible for forming the first cooperative of ten cheese factories in 1909, thereby essentially forming the Tillamook County Creamery Association. He also pushed for consistent quality standards and was responsible through his marketing efforts for getting the award-winning Tillamook Cheeses known far and wide. Mrs. Haberlach is fondly remembered to this day for her maple cakes with maple frosting. Today the house is home to the law office of John Tuthill.

View of Tillamook looking south on Main Avenue in 1910's



MAIN/HWY 101 BETWEEN 2ND & HWY 6

Where the Dance Studio and Optometrist businesses are today was once Lamar's Drugstore, home of the Chocolate Coke: a prized treat on a trip to town.

NEXT TO THE U.S. POST OFFICE

The Hoquarton House. 1889 One of the oldest remaining houses in Tillamook. In great disrepair after be owned by many families over the years, it is undergoing renovation to be the headquarters for the Hoquarton Slough project, an effort to preserve wetlands and history along the Slough. There is a walkway along the slough for approximately a quarter of a mile.

Aerial of Tillamook City circa 1940's



PRIVATE RESIDENCES THIRD STREET
CAPTAIN GROAT HOME

2312 3rd St. Leaving Wick, Scotland, at age 15, Captain Groat ended up a sailor. While on a trip to New Zealand, an earthquake occurred on the island where they were to pick up cargo for England, so they picked up sugar for Portland. Arriving in Astoria in 1881, he took a fancy to the area, decided to stay and took out his first papers in 1882. In 1889, he took out his first Master's papers in the Merchant Service in San Francisco. Prior to his transfer to Tillamook, Captain Groat served with the Army Corps of Engineers in Portland as captain of the survey boat "General Wright."

The captain and his wife Lillian had one child, Eugenia, who died in the flu epidemic of 1917-18. Two nieces from Scotland were adopted and brought to Tillamook in 1914; making the voyage from Scotland on the "Lusitania." Niece Emma was a very popular teacher for many years in local schools and lived in the house Captain Groat built in 1916 until her death in the 1990s.

Captain John Groat



Mrs. John Groat, baby unknown



PRIVATE RESIDENCES
FIRST STREET

Although today a major highway, this was a dirt road in the late 1890s and early 1900s, this area considered "out in the country." The main access road from the east was Third Street, bringing settlers and travelers in from Yamhill via the Trask House. Until paving began in 1912, First Street was no more than a giant mud puddle during heavy winter rains. Emma Ward lived in the **CARLICH HOUSE**, today known as the **HOQUARTON HOUSE**, as a young woman in 1911. She remembered "...that was the street to live on. Everyone in those days had a white picket fence around their house, probably to keep the cows out. When you came home with your boyfriend, you could hang on the gate." Most of these homes are believed to have been built by Archie Broadhead, a "short, typical old pioneer."

View east on *First Street*



2303 First Street - Italianate architecture with turrets, built in 1900s, now apartments. In the 1940s, "The Candy Lady" lived here - a very clever little old lady. Every Friday morning she passed out candy to the local gang of children. They were fiercely loyal as a result and made sure no one bothered her!

2305 First Street - a lovely plantation style home with vintage cars. There have been a couple of extensive renovations since this house was first constructed. On the east side of the property was a carriage house facing the street, later a garage used for storage. Doc Hayes, a well-respected and much beloved local doctor, married a girl from the South, hence the addition of the pillars out front. They had several lively children who are responsible for some interesting tales of the times, including when the Doc's daughter kept a horse in the garage so the local powers that be wouldn't know there was an illegal bit of livestock within the city limits. The house moved out of the Hayes family in the late 1990s.

2309 First Street - an early to mid 1900s bungalow-style home, this was mainly a rental home through the years, providing shelter the hardworking blue-collar workers and their families.

2315 First Street - built in 1903, this home was originally owned by Henry Crenshaw, owner of King-Crenshaw Hardware. There was originally much more "fancywork" on the house, but a former descendent of Crenshaw's who lived in the house said it was difficult to paint, so he and his brother tore much of it off. The yard at one time boasted maple trees 36 inches in diameter. However, the Crenshaws tied their mules to the trees and the mules killed the trees by eating the bark. The local "gang of kids" loved Henry Crenshaw's Model A Ford and after Mr. Crenshaw would get home from work, would patiently wait until he drove the car into his garage (complete with concave concrete to drain water to the street) and safely tucked it away for the night. Then the "gang" swarmed in their special entrance to the garage (unknown to the owner!) and played on the car. They loved that car. They also bedeviled a neighbor they called The Skinner Alive Man. A woodworker and gardener, he would warn them to stay out of his garden and away from his tools with the admonition "I'm the Skinner Alive Man!! I catch little kids and skin 'em alive!" It worked most of the time. Tim Hayes, one of the doctor's children, remembers an agressive goat that lived across the street in a small pasture. When he and another neighborhood boy would be playing in that pasture, the goat kept a sharp eye tuned to them and if a bottom was presented to him would promptly ram into it. According to Tim, the goat was quick and quite accurate.

2403 First Street - built in 1896, this lovely old home believed to have been built and first owned by Archie Broadhead. The current owner has great hopes of restoring the building.

2502 First Street - Built in 1890, Henry and Eli Goodspeed took out a building loan for this $3,000 home, intended to be the showplace of Tillamook. Into the 1970s, Goodspeed descendents still held the original deed to the land signed by President U.S. Grant. The staircase seen right inside the front door was brought around Cape Horn by ship. Today it is a diamond in the rough waiting to be bought and restored. The Coliseum Theater shows the latest movies at this location. Random Tillamook fact courtesy resident Louise Dean: *Blanche Stranahan used to walk over a plank road to Netarts to a one-room school house. Ralph Wright, a fellow student, was often making "flip cartoon book" showing motion of some object. He later grew up to become the "Head Man" for Walt Disney in England, best known for providing the gloomy, sullen voice of* Eeyore *from the popular* Winnie the Pooh *stories*. Mrs. Seaholm, a retired third grade schoolteacher, used to take her students on field trips to learn about trees and how to identify them.



The Joe Champion tree was a favorite. This non-native white oak is the only one on the west side of the Coast Range. Believed to have been planted in the mid 1850s by Joseph Champion (Tillamook's first pioneer settler), from an acorn found in a bird's stomach, this

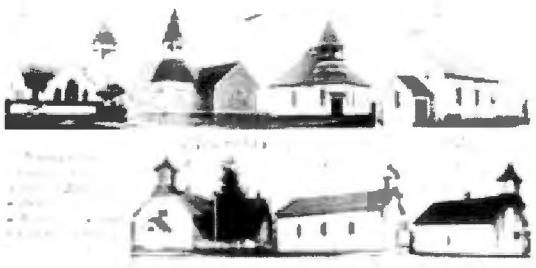
tree still stands today. In 1990, it's height was 80', circumference nearly 14' and the limb spread 100'. This postcard can be found at the Tillamook County Pioneer Museum. The tree stump Joseph Champion first lived in is also on display at the museum.

MILLER STREET...

Winslow House 2415 Third St.

The original property had an old house occupied by an attorney in Tillamook who later moved to Portland. Originally the property belonging to the Alderman house was included. When new streets, sidewalks, sewer and water were put in, this created a lien on the property. George Winslow, Sr., purchased the property by paying the existing liens. The old house was demolished and the current home built in 1924. They chose this style home because it was classic to the East Coast and they both traced their families to the Mayflower. The house had two hand-operated elevators to transport wood for the fireplace and the original wood stove in the kitchen.
The dining room, living room and music room were situated so they could be opened up to create one space for large gatherings. Winslow, Sr., and his wife Florence raised their daughters Pauline and Harriet, and son, George Jr., in this home. All three children were married in front of the fireplace. There is little space between the Winslow house and the Alderman House: George Sr., was always kidded that he purposely planned this so he would not have to maintain a large back yard. Mr. Winslow was a well-known trial and appellate attorney and state representative in the House from 1925 to 1936, as well as a state senator from 1945-47. Main mover behind legislation to reseed the Tillamook Burn.

W.B. Alderman House, 314 Miller, built circa 1929, this home was built by same person as Captain Groat house, using the exact same floor plan as the Groat house and leaks in exactly the same spot. Mr. Alderman was very active in real estate transactions and also highly thought of by the Tillamook Townsend Club No. 1, located at what is today known as the Senior Center. One of the things mentioned in their "Resolution of Condolence" upon Mr. Alderman's passing, was that he "made it his special business to see that plenty of food was provided for our Potluck suppers."



Churches in Tillamook

405 Miller, one of oldest homes remaining in Tillamook, built it 1901, it was originally surrounded by farmland.

Tillamook County Historical Society has published a seven-page document showing early photographs of Tillamook and interesting facts about its pioneers. Click on the

image to download a PDF of the document, or go to the Tillamook County Pioneer Museum Web site at http://www.tcpm.org/ and click on TCHS.

Appendix XXIX – City of Tillamook Demographics

2000 Summary

DP-1. Profile of General Demographic Characteristics: 2000
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data
Geographic Area: **Tillamook city, Oregon**

Subject	Number	Percent
Total population	**1,976**	**100.0**
SEX AND AGE		
Male	986	49.9
Female	990	50.1
Under 5 years	161	8.1
5 to 9 years	147	7.4
10 to 14 years	199	10.1
15 to 19 years	171	8.7
20 to 24 years	130	6.6
25 to 34 years	247	12.5
35 to 44 years	281	14.2
45 to 54 years	200	10.1
55 to 59 years	97	4.9
60 to 64 years	62	3.1
65 to 74 years	119	6.0
75 to 84 years	119	6.0
85 years and over	43	2.2
Median age (years)	32.3	(X)
18 years and over	1,360	68.8
Male	670	33.9
Female	690	34.9
21 years and over	1,269	64.2
62 years and over	313	15.8
65 years and over	281	14.2
Male	115	5.8

Female	166	8.4
RACE		
One race	1,914	96.9
White	1,630	82.5
Black or African American	3	0.2
American Indian and Alaska Native	27	1.4
Asian	15	0.8
Asian Indian	0	0.0
Chinese	0	0.0
Filipino	0	0.0
Japanese	15	0.8
Korean	0	0.0
Vietnamese	0	0.0
Other Asian [1]	0	0.0
Native Hawaiian and Other Pacific Islander	2	0.1
Native Hawaiian	0	0.0
Guamanian or Chamorro	0	0.0
Samoan	0	0.0
Other Pacific Islander [2]	2	0.1
Some other race	237	12.0
Two or more races	62	3.1
Race alone or in combination with one or more other races [3]		
White	1,682	85.1
Black or African American	14	0.7
American Indian and Alaska Native	50	2.5
Asian	31	1.6
Native Hawaiian and Other Pacific Islander	5	0.3
Some other race	259	13.1
HISPANIC OR LATINO AND RACE		
Total population	**1,976**	**100.0**
Hispanic or Latino (of any race)	491	24.8
Mexican	399	20.2
Puerto Rican	0	0.0
Cuban	2	0.1

Other Hispanic or Latino	90	4.6
Not Hispanic or Latino	1,485	75.2
White alone	1,401	70.9
RELATIONSHIP		
Total population	**1,976**	**100.0**
In households	1,859	94.1
Householder	658	33.3
Spouse	375	19.0
Child	672	34.0
Own child under 18 years	568	28.7
Other relatives	84	4.3
Under 18 years	41	2.1
Nonrelatives	70	3.5
Unmarried partner	28	1.4
In group quarters	117	5.9
Institutionalized population	117	5.9
Noninstitutionalized population	0	0.0
HOUSEHOLDS BY TYPE		
Total households	**658**	**100.0**
Family households (families)	488	74.2
With own children under 18 years	269	40.9
Married-couple family	375	57.0
With own children under 18 years	191	29.0
Female householder, no husband present	84	12.8
With own children under 18 years	60	9.1
Nonfamily households	170	25.8
Householder living alone	149	22.6
Householder 65 years and over	81	12.3
Households with individuals under 18 years	290	44.1
Households with individuals 65 years and over	182	27.7
Average household size	2.83	(X)
Average family size	3.32	(X)

Profile of General Demographic Characteristics: 2000
Geographic Area: City of Tillamook, Oregon

Subject	Number	Percent
Total population	4,352	100.0
SEX AND AGE		
Male	2,132	49.0
Female	2,220	51.0
Under 5 years	161	7.7
5 to 9 years	147	8.5
10 to 14 years	199	8.0
15 to 19 years	171	7.6
20 to 24 years	130	6.9
25 to 34 years	247	13.3
35 to 44 years	281	14.8
45 to 54 years	200	12.2
55 to 59 years	97	4.3
60 to 64 years	62	3.2
65 to 74 years	119	6.7
75 to 84 years	119	4.9
85 years and over	43	2.1
Median age (years)	33.3	(X)
18 years and over	3,080	70.8
Male	1,477	33.9
Female	1,603	36.8
21 years and over	2,921	67.1
62 years and over	668	15.3
65 years and over	594	13.6
Male	217	5.0
Female	377	8.7
RACE		
One race	4,275	98.2
White	4,028	92.6
Black or African American	7	0.2

Subject	Number	Percent
American Indian and Alaska Native	53	1.2
Asian	31	0.7
Asian Indian	0	0.0
Chinese	13	0.3
Filipino	12	0.3
Japanese	0	0.0
Korean	0	0.0
Vietnamese	6	0.1
Other Asian [1]	0	0.0
Native Hawaiian and Other Pacific Islander	7	0.2
Native Hawaiian	6	0.1
Guamanian or Chamorro	0	0.0
Samoan	0	0.0
Other Pacific Islander [2]	1	0.0
Some other race	149	3.4
Two or more races	77	1.8
Race alone or in combination with one or more other races [3]		
White	4,102	94.3
Black or African American	11	0.3
American Indian and Alaska Native	91	2.1
Asian	45	1.0
Native Hawaiian and Other Pacific Islander	17	0.4
Some other race	170	3.9
HISPANIC OR LATINO AND RACE		
Total population	1,976	100.0
Hispanic or Latino (of any race)	484	11.1
Mexican	410	9.4
Puerto Rican	6	0.1
Cuban	0	0.0
Other Hispanic or Latino	68	1.6
Not Hispanic or Latino	3,868	88.9
White alone	3,721	85.5
RELATIONSHIP		
Total population	4,352	100.0

Subject	Number	Percent
In households	4,333	99.6
Householder	1,758	40.4
Spouse	786	18.1
Child	1,329	30.5
Own child under 18 years	1,151	26.4
Other relatives	188	4.3
Under 18 years	58	1.3
Nonrelatives	272	6.3
Unmarried partner	107	2.5
In group quarters	19	0.4
Institutionalized population	0	0.0
Noninstitutionalized population	19	0.4
HOUSEHOLDS BY TYPE		
Total households	1,758	100.0
Family households (families)	1,106	62.9
With own children under 18 years	585	33.3
Married-couple family	786	44.7
With own children under 18 years	366	20.8
Female householder, no husband present	220	12.5
With own children under 18 years	159	9.0
Nonfamily households	652	37.1
Householder living alone	565	32.1
Householder 65 years and over	230	13.1
Households with individuals under 18 years	640	36.4
Households with individuals 65 years and over	455	25.9
Average household size	2.46	(X)
Average family size	3.08	(X)
HOUSING OCCUPANCY		
Total Housing Units	1,898	100.00
Occupied Housing Units	1,758	92.6
Vacant Housing Units	140	7.4
For Seasonal, recreational, or occasional use	13	0.7
Homeowner Vacancy Rate		2.5
Rental Vacancy Rate		7.7

Subject	Number	Percent
HOUSING TENURE		
Owner-occupied Housing Units	892	50.7
Renter-occupied Housing Units	866	49.3
Average Household size of Owner-occupied units	2.5	
Average Household Size of renter-occupied units	22.43	

2010 Summary

Tillamook, Oregon - Overview	2010 Census		2000 Census		2000-2010 Change	
	Counts	Percentages	Counts	Percentages	Change	Percentages
Total Population						
Total Population	4,935	100.00%	4,352	100.00%	583	13.40%
Population by Race						
American Indian and Alaska native alone	73	1.48%	53	1.22%	20	37.74%
Asian alone	52	1.05%	31	0.71%	21	67.74%
Black or African American alone	10	0.20%	7	0.16%	3	42.86%
Native Hawaiian and Other Pacific native alone	41	0.83%	7	0.16%	34	485.71%
Some other race alone	341	6.91%	149	3.42%	192	128.86%
Two or more races	147	2.98%	77	1.77%	70	90.91%
White alone	4,271	86.55%	4,028	92.56%	243	6.03%
Population by Hispanic or Latino Origin (of any race)						
Persons of Hispanic or Latino Origin	847	17.16%	484	11.12%	363	75.00%
Persons Not of Hispanic or Latino Origin	4,088	82.84%	3,868	88.88%	220	5.69%
Population by Gender						
Male	2,385	48.33%	2,132	48.99%	253	11.87%
Female	2,550	51.67%	2,220	51.01%	330	14.86%
Population by Age						
Persons 0 to 4 years	437	8.86%	333	7.65%	104	31.23%
Persons 5 to 17 years	894	18.12%	939	21.58%	-45	-4.79%
Persons 18 to 64 years	2,914	59.05%	2,486	57.12%	428	17.22%
Persons 65 years and over	690	13.98%	594	13.65%	96	16.16%

2000 and 2010 Census Summary

Tillamook city

POPULATION BY AGE GROUP 2000 2010 2000 to 2010 Change

Total population 4,352 *100.0%* 4,935 *100.0%* 583 *13.4%*

Under age 18 1,272 *29.2%* 1,331 *27.0%* 59 *4.6%*

Age 18 and over 3,080 *70.8%* 3,604 *73.0%* 524 *17.0%*

AREA AND DENSITY[1]

Land Area - Sq. Mi. (Source: Census) 1.5 1.7 0.2 *10.3%*

Persons per square mile 2,818.8 2,896.6 77.8 *2.8%*

HOUSING OCCUPANCY STATUS

Total housing units 1,898 *100.0%* 2,248 *100.0%* 350 *18.4%*
Occupied 1,758 *92.6%* 2,037 *90.6%* 279 *15.9%*
Vacant or Seasonal 140 *7.4%* 211 *9.4%* 71 *50.7%*

HISPANIC OR LATINO AND RACE[2]

Total population 4,352 *100.0%* 4,935 *100.0%* 583 *13.4%*
Hispanic or Latino (of any race) 484 *11.1%* 847 *17.2%* 363 *75.0%*
Not Hispanic or Latino 3,868 *88.9%* 4,088 *82.8%* 220 *5.7%*
White Alone 3,721 *85.5%* 3,821 *77.4%* 100 *2.7%*
Black or African American Alone 7 *0.2%* 7 *0.1%* 0 *0.0%*
American Indian and Alaska Native Alone 49 *1.1%* 56 *1.1%* 7 *14.3%*
Asian Alone 30 *0.7%* 51 *1.0%* 21 *70.0%*
Native Hawaiian and Other Pacific Islander Alone 7 *0.2%* 39 *0.8%* 32 *457.1%*
Some Other Race Alone 0 *0.0%* 6 *0.1%* 6 --
Two or More Races 54 *1.2%* 108 *2.2%* 54 *100.0%*

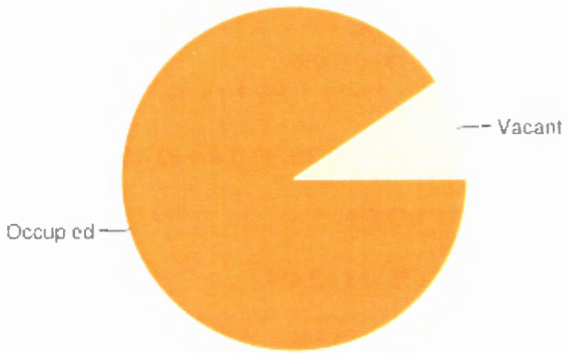
RACE ALONE OR IN COMBINATION[3]

Total population 4,352 *100.0%* 4,935 *100.0%* 583 *13.4%*
White 4,102 *94.3%* 4,411 *89.4%* 309 *7.5%*
Black or African American 11 *0.3%* 24 *0.5%* 13 *118.2%*
American Indian and Alaska Native 91 *2.1%* 123 *2.5%* 32 *35.2%*
Asian 45 *1.0%* 85 *1.7%* 40 *88.9%*
Native Hawaiian and Other Pacific Islander 17 *0.4%* 73 *1.5%* 56 *329.4%*
Some Other Race 170 *3.9%* 376 *7.6%* 206 *121.2%*

Appendix XXX – City of Tillamook Housing

Tillamook city **2010 Housing Units: Occupied versus Vacant**

There were 2,248 housing units in Tillamook city, 90.6% of which were occupied housing units.



Housing Units: Occupied vs Vacant

Occupied housing units	90.6%
Vacant housing units	9.4%

Table 11-1: Current Density and Mix of Housing Types, July 31, 2000
Source: U.S. , Table 2

Type of Dwelling	Units	Percent
Single-family detached dwellings (site-built units and manufactured homes on individual lots)	1,222	63.8
Multifamily dwellings (duplexes, apartments and condominiums)	657	34.3
Mobile homes in parks	37	1.9
Total dwelling units	1,916	100
Net acres of land in residential use	158.97 acres	
Average net density, dwelling units per acre	4.27 units per acre	

Table 11-2: Mix of Housing Types in Tillamook, 1990 - 2000
Source: US Census, Table DP-4

Type of Dwelling	2000		1990	
	Units	Percent	Units	Percent
Single-family detached (site-built dwellings)	442	60.5	436	69.5
Multifamily (duplexes, apartments, condominiums)	121	16.6	96	15.3
Manufactured homes	164	22.5	95	15.2
Boat, RV, van, etc. (counted as manufactured homes in 1990)	3	0.4		
Total dwelling units	**730**	**100.0**	**627**	**100.0**

Table 11-3: Housing and Vacancy Rates in Tillamook, 1990-2000
Source: US Census, Table QT-H1

	2000		1990	
	Units*	Percent	Units	Percent
Total dwelling units	724	100.0	627	100.0
Total occupied dwelling units	658	90.9	557	88.8
Owner-occupied units	416	63.2	357	64.1
Renter-occupied units	242	36.8	200	35.9
Total vacant units	66	9.1	70	11.2
Persons in households	1,859	94.1	1,400	93.9
Persons living in group quarters	117	5.9	91	6.1
Number of households	658		557	
Persons per household	2.83		2.51	
Persons per owner-occupied unit	2.77		2.44	

Persons per renter-occupied unit	2.92	2.64

* Table DP-4 of the census reports Tillamook's "total housing units" in the year 2000 to be 730. Table QT-H1 the census reports "total housing units" to be 724.

Table 11- 4: New Units of Housing Needed in Tillamook by 2025, By Housing Type

	Units	Percent
Single-family detached (site-built)	169	55.0
Multifamily (duplexes, apartments, condominiums)	46	15.0
Manufactured homes	92	30.0
Manufactured homes in parks (35 % of manufactured units)	32	
Manufactured homes on individual lots (65 % of manufactured units)	60	
Total New Units Needed	**307**	**100.0**

Table 11- 5: Land Needed for Residential Development in Tillamook by 2025, By Housing Type

Housing Type	Units	Net Density*	Net Acres Needed	Gross Acres Needed
Site-built single-family detached	169	4	42.25	52.81
Multifamily	46	12	3.83	4.79
Manufactured homes in parks	32	9	3.56	4.44
Manufactured homes on lots	60	4	15.00	18.75
Total Units and Acres Needed	**307**	**4.75**	**64.63**	**80.79**

*A net density of 4 units per acre yields average lots sizes of about 10,000 square feet. "Gross acres" are determined by multiplying net acres by 1.25, thus allowing for public rights of way for streets, etc.

QT-H1. General Housing Characteristics: 2000
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data
Geographic Area: **Tillamook city, Oregon**

Subject	Number	Percent

Subject	Number	Percent
OCCUPANCY STATUS		
Total housing units	**724**	**100.0**
Occupied housing units	658	90.9
Vacant housing units	66	9.1
TENURE		
Occupied housing units	**658**	**100.0**
Owner-occupied housing units	416	63.2
Renter-occupied housing units	242	36.8
VACANCY STATUS		
Vacant housing units	**66**	**100.0**
For rent	28	42.4
For sale only	5	7.6
Rented or sold, not occupied	6	9.1
For seasonal, recreational, or occasional use	5	7.6
For migratory workers	0	0.0
Other vacant	22	33.3
RACE OF HOUSEHOLDER		
Occupied housing units	**658**	**100.0**
One race	643	97.7
White	578	87.8
Black or African American	0	0.0
American Indian and Alaska Native	7	1.1
Asian	10	1.5
Native Hawaiian and Other Pacific Islander	1	0.2
Some other race	47	7.1
Two or more races	15	2.3
HISPANIC OR LATINO HOUSEHOLDER AND RACE OF HOUSEHOLDER		
Occupied housing units	**658**	**100.0**
Hispanic or Latino (of any race)	104	15.8
Not Hispanic or Latino	554	84.2
White alone	525	79.8
AGE OF HOUSEHOLDER		
Occupied housing units	**658**	**100.0**

Subject	Number	Percent
15 to 24 years	46	7.0
25 to 34 years	109	16.6
35 to 44 years	141	21.4
45 to 54 years	100	15.2
55 to 64 years	91	13.8
65 years and over	171	26.0
65 to 74 years	79	12.0
75 to 84 years	71	10.8
85 years and over	21	3.2

DP-4. Profile of Selected Housing Characteristics: 2000
Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data
Geographic Area: **Tillamook city, Oregon**

Subject	Number	Percent
Total housing units	**730**	**100.0**
UNITS IN STRUCTURE		
1-unit, detached	442	60.5
1-unit, attached	6	0.8
2 units	30	4.1
3 or 4 units	16	2.2
5 to 9 units	40	5.5
10 to 19 units	7	1.0
20 or more units	22	3.0
Mobile home	164	22.5
Boat, RV, van, etc.	3	0.4
YEAR STRUCTURE BUILT		
1999 to March 2000	14	1.9
1995 to 1998	46	6.3
1990 to 1994	24	3.3
1980 to 1989	55	7.5
1970 to 1979	181	24.8
1960 to 1969	88	12.1
1940 to 1959	175	24.0

Subject	Number	Percent
1939 or earlier	147	20.1
ROOMS		
1 room	14	1.9
2 rooms	47	6.4
3 rooms	83	11.4
4 rooms	132	18.1
5 rooms	196	26.8
6 rooms	108	14.8
7 rooms	92	12.6
8 rooms	33	4.5
9 or more rooms	25	3.4
Median (rooms)	5.0	(X)
Occupied Housing Units	**659**	**100.0**
YEAR HOUSEHOLDER MOVED INTO UNIT		
1999 to March 2000	164	24.9
1995 to 1998	190	28.8
1990 to 1994	104	15.8
1980 to 1989	91	13.8
1970 to 1979	61	9.3
1969 or earlier	49	7.4
VEHICLES AVAILABLE		
None	56	8.5
1	225	34.1
2	231	35.1
3 or more	147	22.3
HOUSE HEATING FUEL		
Utility gas	240	36.4
Bottled, tank, or LP gas	5	0.8
Electricity	340	51.6
Fuel oil, kerosene, etc.	38	5.8
Coal or coke	0	0.0
Wood	31	4.7
Solar energy	0	0.0
Other fuel	5	0.8

Subject	Number	Percent
No fuel used	0	0.0
SELECTED CHARACTERISTICS		
Lacking complete plumbing facilities	2	0.3
Lacking complete kitchen facilities	5	0.8
No telephone service	33	5.0
OCCUPANTS PER ROOM		
Occupied housing units	**659**	**100.0**
1.00 or less	566	85.9
1.01 to 1.50	48	7.3
1.51 or more	45	6.8
Specified owner-occupied units	**295**	**100.0**
VALUE		
Less than $50,000	60	20.3
$50,000 to $99,999	193	65.4
$100,000 to $149,999	42	14.2
$150,000 to $199,999	0	0.0
$200,000 to $299,999	0	0.0
$300,000 to $499,999	0	0.0
$500,000 to $999,999	0	0.0
$1,000,000 or more	0	0.0
Median (dollars)	71,600	(X)
MORTGAGE STATUS AND SELECTED MONTHLY OWNER COSTS		
With a mortgage	178	60.3
Less than $300	2	0.7
$300 to $499	38	12.9
$500 to $699	56	19.0
$700 to $999	54	18.3
$1,000 to $1,499	28	9.5
$1,500 to $1,999	0	0.0
$2,000 or more	0	0.0
Median (dollars)	665	(X)
Not mortgaged	117	39.7
Median (dollars)	257	(X)
SELECTED MONTHLY COSTS, % OF HOUSEHOLD INCOME IN 1999		

Subject	Number	Percent
Less than 15 percent	139	47.1
15 to 19 percent	31	10.5
20 to 24 percent	45	15.3
25 to 29 percent	14	4.7
30 to 34 percent	10	3.4
35 percent or more	55	18.6
Not computed	1	0.3
Specified renter-occupied units	**239**	**100.0**
GROSS RENT		
Less than $200	21	8.8
$200 to $299	23	9.6
$300 to $499	106	44.4
$500 to $749	60	25.1
$750 to $999	6	2.5
$1,000 to $1,499	0	0.0
$1,500 or more	0	0.0
No cash rent	23	9.6
Median (dollars)	411	(X)
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME IN 1999		
Less than 15 percent	53	22.2
15 to 19 percent	24	10.0
20 to 24 percent	25	10.5
25 to 29 percent	36	15.1
30 to 34 percent	21	8.8
35 percent or more	52	21.8
Not computed	28	11.7

TABLE 10: GEOGRAPHIC POPULATIONS

Within City Limits:

Type of Residential Dwelling Unit	2000 Total Housing Units	2000 Household Size	Totals	1980 Total Housing Units	1980 Household Population Totals	% Population Change since 1980
Single-Family	1,222	2.27	2,776	1,272	3,129	- 11%
Multi-Family	657	2.27	1,492	504	821	+ 82%
Mobile Homes	37	2.27	84	23	42	+100%
Subtotal:	1,916	2.27	4,352	1,799	3,992	+ 9%

Within Urban Growth Area:

Type of Residential Dwelling Unit	2000 Total Housing Units	2000 Household Size	Totals	1980 Total Housing Units	1980 Household Population Totals	% Population Change since 1980
Single-Family	207	2.46	509	216	531	- 4%
Multi-Family	145	2.43	352	34	55	+540%
Mobile Homes	36	2.43	87	39	70	+ 24%
Subtotal:	388	2.44	948	289	656	+ 44%
Total:			5,300		4,648	+ 14%

Appendix XXXI – Buildable Lands Inventory

PLACEHOLDER

[To be Inserted at a Later Date]

Appendix XXXII – ESEE Analysis

1) Conflicting Uses, Activities and ESEE Consequences

The conflicting uses of adjacent properties to the Wilson River are derived from the existing Zoning designation. The property adjacent to this portion of the Wilson River that is with in the City Limits and UGB on Highway 101 (south of the river) is zoned Highway Commercial (C-H).

The Highway Commercial Zone District allows for the following uses outright or conditionally:

Commercial Enterprises;
Accessory uses and buildings (such as incidental storage) appurtenant to a permitted or conditional use;
Government facilities;
Rest Stops or Waysides;
Buildings over 35 feet in height;
Apartments.

Conflicting uses in the Highway Commercial zone appear to be virtually all permitted and conditional uses and typical property improvements associated with commercial uses. In particular, structures, paving, and landscaping with lawns and non-native shrubs all conflict with protection of a riparian resource.

2) Determining Impact area for the significant resource site

Riparian areas are considered part of a much larger ecological system of wetlands, sloughs, stream corridors and the Wilson and Trask Rivers. The ecological value of any particular riparian area is affected by the degree of human intrusion and its connection with stream corridors and other natural resources. Riparian areas contribute directly to decreased downstream flooding potential to improved water quality (and in some places quantity), fish and wildlife habitat, stream productivity, and ground water recharge. Alteration of riparian areas at one location can have identifiable effects some distance up- and downstream of the altered site. Alteration of riparian areas in a way that decreases their ecological function can result in increased flooding downstream, increased water temperatures, increased turbidity, increased stream bank erosion and sedimentation, decreased nutrient inputs into the stream and a consequent decrease in stream productivity, increased stream channel instability, decrease in off-channel aquatic habitat, and the removal of vegetation that is needed to maintain channel structure and complexity.

Intact riparian areas associated with coastal lowland streams are characterized by vegetation communities that often have of several canopy layers; dense vegetation root systems that help hold soils in place; undercut banks; high-flow channels and wetlands; trees that hang over the water; and trees that have fallen into the water, but which may still be anchored to upland features or other trees. Riparian areas and their features can be drastically changed by high floods; the migration of a stream channel will destroy some riparian features along a reach, but will also provide for the regeneration of riparian vegetation in other areas.

When commercial development (including buildings, roads, and driveways, landscaping, storage, parking) occurs in, or nearby, riparian areas, it does not necessarily eliminate all fish and wildlife habitat, but changes the habitat in a way that decreases biodiversity, because only more aggressive and adaptable species can survive under changed ecological circumstances.

Commercial development in riparian areas replaces native vegetation with impervious surface area, and contributes to flooding; reduces groundwater recharge, and increases sediment and nutrient loading. The result is decreased water quantity and quality, and diminished fish and wildlife habitat. Commercial development does pose specific threats to riparian areas, including garbage and littering, disposal of sewage and industrial wastes, runoff from large parking lots, use of fertilizers and pesticides, fences and other structures which limit wildlife access, noise and glare.

The "impact areas" for the significant riparian resource are the parcels that border the Wilson River at the north end of Tillamook. The two sites involve three tax lots, all of which are in the "Highway Commercial" zone. -Two of the lots are developed - the Shilo Inn, east of the highway, north of Wilson River Loop Road, also known as Map # 1S 9W 19, Tax Lot 503, and the Best Western Inn west of the highway, north of Makinster Road, also known as Map # 1S 10W 24, Tax Lot 101. These two motels can be considered to be fully developed parcels. The parcel immediately west of the highway, north of Makinster Road, also known as Map # 1S 10W 24, Tax Lot 100, is about 2.5 acres, and is undeveloped.

What may appear to be a parcel between the Shilo Inn and the ice facility is actually part of the Highway 101 Right-of-Way. The parcels immediately east of the highway and north of the Highway 101 right-of-way, which include the ice facility and the paved ice facility parking lot, are outside of the City Limits and Urban Growth Boundary.

3) The ESEE Analysis

This supplemental ESEE analysis addresses how conflicting commercial uses may negatively affect significant riparian resource sites as well as how the riparian resource site may impact those uses. Conflicting uses in this instance, on north Highway 101 adjacent to the south side of the Wilson River, include all permitted or conditionally permitted uses allowed in the Highway Commercially zoned properties. The following chart shows the ESEE consequences of further development for this area.

4) It appears that both the resource site and the conflicting uses are important compared to each other, and based on the ESEE analysis below, the conflicting uses should be allowed in a limited way that protects the resource site to a desired extent.

Table 5-4: E.S.E.E. Analysis and Consequences

	. . . . , FULLY ALLOWING CONFLICTING USES	. . . . ., PROHIBITING CONFLICTING USES	. . . . ., LIMITING CONFLICTING USES (Permitting development while maintaining a riparian setback of 50 feet)
ECONOMIC CONSEQUENCES OF . . .	Full development of property. Increased property value, property tax revenues, and potential property use. Decreased uncertainty and design costs.	Restricted development of property. Potential for liability if it is found that prohibiting development of the property is an unconstitutional taking of private property without just compensation. . May marginally decrease public costs for storm water management, flood control, and federally mandated water quality improvement programs.	A 50-ft setback provides some protection of the Wilson River riparian area while permitting virtually full development of the parcel west of the highway.
SOCIAL CONSEQUENCES OF . . .	Unobstructed access to the Wilson River. Additional development costs might be reduced, assuming the riparian area would not be protected otherwise under State and Federal regulations. Riparian protections are not applied evenly to all riparian parcels in the City.	Obstructed access to the Wilson River by native vegetation. They can be used as open space for the employees and general public and act as a natural "undisturbed" landscaped area.	A 50-ft setback would be the same as that applied elsewhere in the City. The existing 50-ft setback would provide educational opportunities. The setback also provides opportunities for urban quiet and solitude, which is a positive social consequence.
ENVIRONMENTAL CONSEQUENCES OF . . .	Accelerated run-off from rooftops and impervious surfaces increases loads of silt and pollutants that enter river and increase rate of erosion. Fully allowing conflicting uses would provide less opportunity to restore full riparian function.	Reducing stormwater run-off from impervious surfaces on the property to the river lessens erosion of riverbanks and reduces downstream flooding. Although impractical considering the level of nearby development, would provide for restoration of full connection between the river and its floodplain and of full riparian function	The existing 50-ft setback allows for partial riparian protection while providing for existing amounts of development. Since there is a levee between the river and the developable portion of the properties in the impact area, the environmental effect on the river of a 75-ft riparian corridor would not likely be greater than those from a 50-ft corridor.
ENERGY CONSEQUENCES OF . . .	Negligible. In this instance, it appears that the consequences from such use would be too small to be noticeable	Negligible. In this instance, it appears that the consequences from such use would be too small to be noticeable	Negligible. In this instance, it appears that the consequences from such use would be too small to be noticeable

Appendix XXXIII – Estuary Management Unit Segments

The following Estuary Management Unit Segments are found within the Tillamook UGB.

MANAGEMENT UNIT 1) 35EC1

CATEGORY: Area needed for maintenance or enhancement of biological productivity.

HABITATS

Habitat Classification: subtidal unconsolidated bottom (1.1)

Animals Present: Birds: nesting, feeding, and resting in marshes and riparian areas adjacent to the lower portion of this management unit; Fish: Starry Flounder, salmonids.

Significant Biological Functions: Fish feeding. Passage of salmonids.

HISTORIC ALTERATIONS: The lower reach of this management unit was dredged in 1972 by the U.S. Army Corps of Engineers for flood control purposes. Dikes have been constructed along the banks of this management unit removing large areas of tidal marsh from the estuary. A small boat wharf associated with a boat rental and repair shop is located on the river at 101.

NAVIGATION AND PUBLIC ACCESS TO THE WATER: Boat access is available at a private facility adjacent to the Highway 101 bridge. Salmon fishing is the primary use of this management unit.

MANAGEMENT UNIT 2) 36EC1 (Estuary Conservation 1)

CATEGORY: Area needed for maintenance or enhancement of biological productivity.

HABITATS

Habitat Classification: subtidal unconsolidated bottom (1.1)

Animals Present: Birds: nesting in riparian area adjacent to the lower portion of this management unit.

Significant Biological Functions: Bird use in conjunction with adjacent riparian areas.

HISTORICAL ALTERATIONS: Dikes have been constructed along the lower portions of this management unit. Fill and piling have been placed for the Highway 101 crossing.

NAVIGATION AND PUBLIC ACCESS TO THE WATER

MANAGEMENT UNIT 3) 40EC1 (Estuary Conservation 1)

CATEGORY: Area needed for maintenance or enhancement of biological productivity. Area needed for recreational use.

HABITATS

Habitat Classification: Sub tidal unconsolidated bottom (1.1) Intertidal shore (2.1) Tidal marsh (2.5.12)

Animals Present: Birds: nesting in marshes and riparian areas djacent to the lower portions of this management. Fish: Starry flounder

Significant Biological Functions: Fish feeding. Bird Nesting in adjacent marshes and riparian areas.

HISTORICAL ALTERATIONS: Diking has occurred along significant stretches of this management unit contributing to the loss of large areas of tidal marsh from the estuary. Fill and piling were placed for crossings of Highway 101 and the Southern Pacific Railroad. Fill and a bulkhead were placed in Hoquarton Slough for a public boat ramp and park. Another fill was placed further down stream. Miscellaneous piling was placed in this management unit. The lower reach of the management unit was dredged in 1972 by the U.S. Army Corps of Engineers for flood control purposes.

NAVIGATION AND PUBLIC ACCESS TO THE WATER: Tillamook County public boat ramp near Highway 101.

MANAGEMENT UNIT 4) 41EC1 (Estuary Conservation 1)

CATEGORY: Area needed for maintenance or enhancement of biological productivity. Tracts of significant habitat smaller or of less biological importance than those in natural management units.

HABITATS

Habitat Classification: Tidal marsh (2.5.12, 2.5.13, 2.5.14)

Animals Present: Birds: Feeding, nesting and resting area.

HISTORIC ALTERATIONS: This management unit prior to man-made alteration was partly forested and partly emergent wetland. It was converted to agricultural use, then diked and dredged to create log ponds. A portion of the area was filled for a mill. Subsequently the dike breached and established estuarine connection.

NAVIGATION AND PUBLIC ACCESS TO THE WATER

MANAGEMENT UNIT 5) 43EC1 (Estuary Conservation 1)

CATEGORY: Area needed for recreational and aesthetic uses. Area needed for recreational use.

HABITATS

Habitat Classification: Subtidal unconsolidated bottom (1.1)

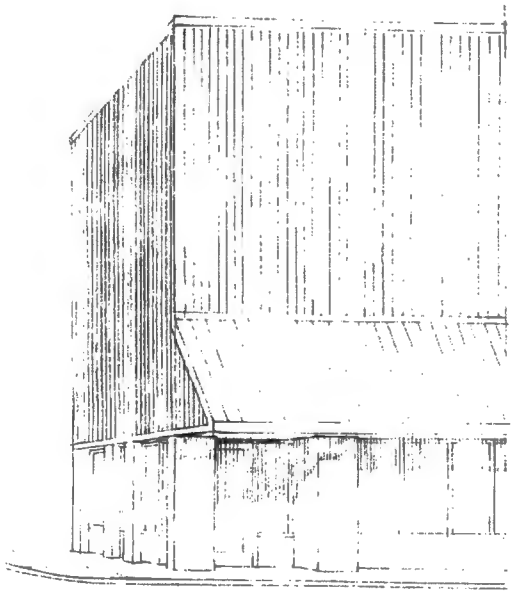
Animals Present: Fish: Salmonids

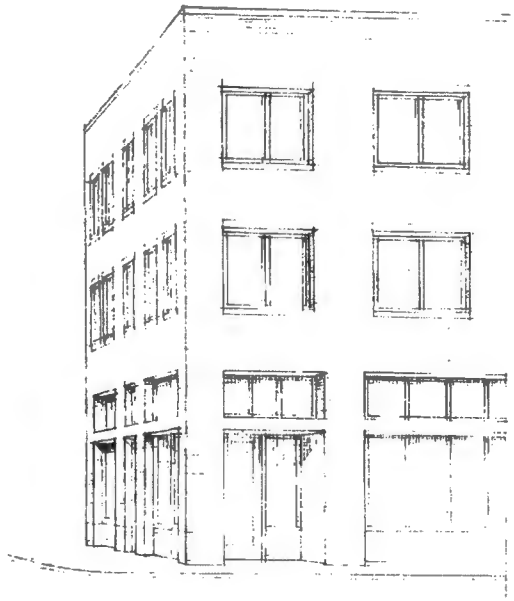
Significant Biological Functions: Salmonid passage.

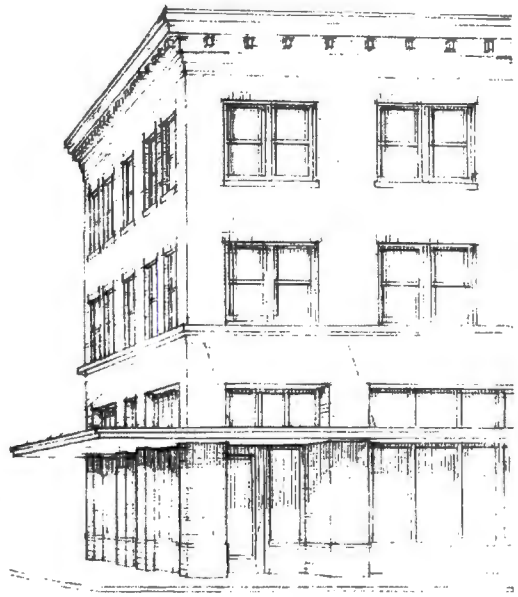
HISTORICAL ALTERATIONS: Filling for dikes along the banks of this management unit has removed areas from the estuary.

NAVIGATION AND PUBLIC ACCESS TO THE WATER: Tillamook City boat ramp

Tillamook Town Center







otak

In Association With
Pacific Rim Resources

July, 1999

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Appendix — Code Concepts, Research, and Examples *(under separate cover)*

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Tillamook Town Center Plan

Transportation and Growth Management Program
Oregon Department of Transportation
Oregon Department of Land Conservation and Development

July, 1999

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Section 1 — Introduction

Introduction

In August of 1998, the Tillamook City Visioning Task Force completed the *Tillamook City 2020: Vision Statement*. Key scenarios and action strategies of that document were important first steps toward creating a town center plan:

- A revitalized downtown with an on-going emphasis on a viable economic mix, pedestrian friendly environment, and architectural restoration and preservation where appropriate;
- A small town atmosphere that recognizes and preserves the community's heritage;
- A Downtown Development Plan that will establish design consistency in the commercial district, new design review standards, and an incentive program for meeting those standards; and
- Attractive and distinctive gateways into the City.

By combining the planning and design expertise of the consultant team and the creative energy of the community through a three-day design charrette, a Town Center Plan was completed in June of 1999. The plan defines a town center boundary and illustrates opportunities for new public open space, potential land uses including civic and government buildings, and architectural restoration of key buildings. The plan supports those opportunities with conceptual site plans, design guidelines, and an outline for a new code district.

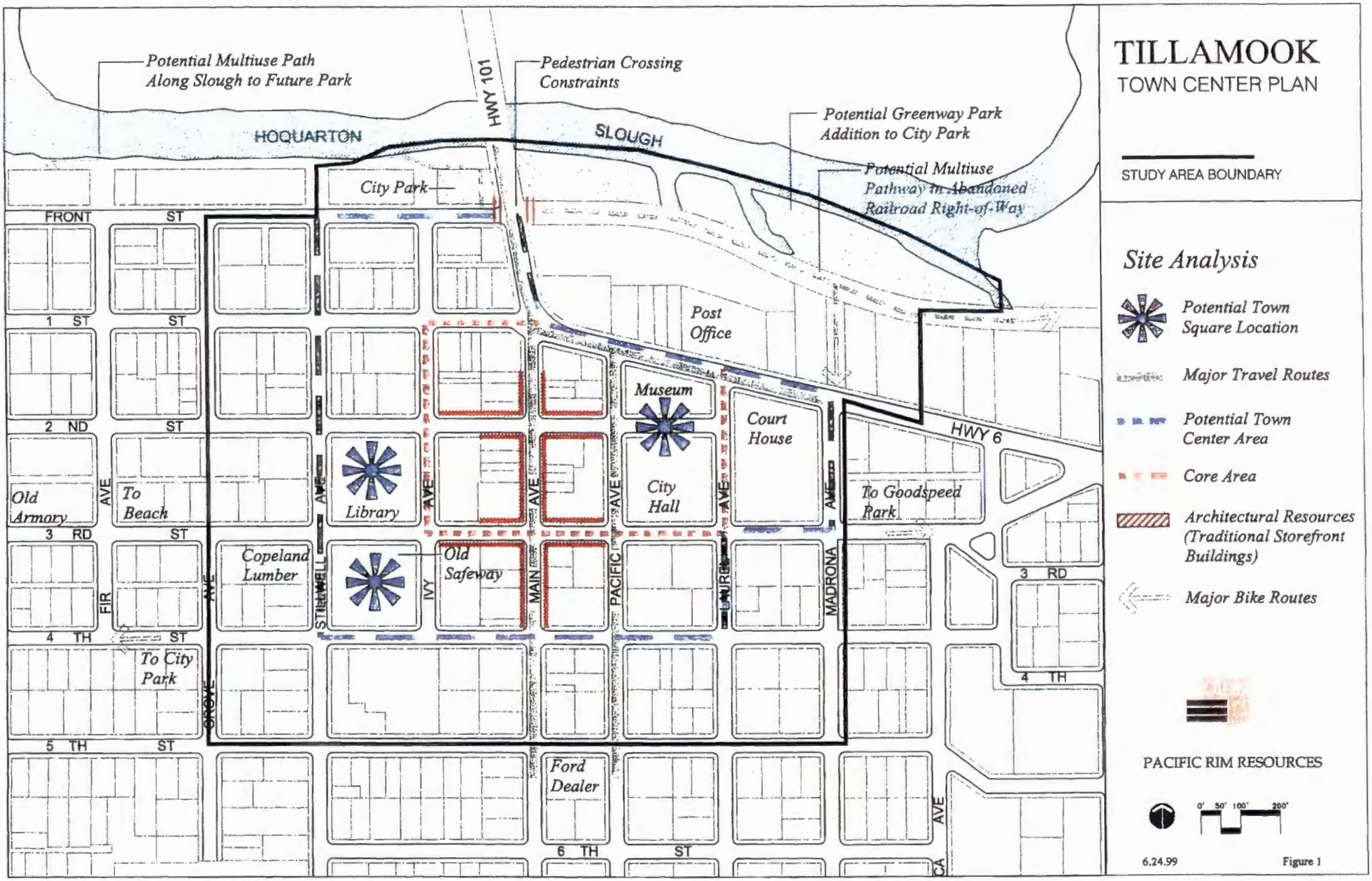
Adoption of the plan recommendations will set the stage for new zoning in the downtown, capital improvements planning, and new programs such as a building facade improvement program.

Plan Area

The study area for the plan is defined by Hoquarton Slough to the north, Grove Avenue to the west, Madrona Avenue to the east, and 5th Street to the south (Figure 1). Within that study area are portions of Highways 6 and 101, the primary commercial district served by Main and Pacific Avenues (one-way couplets for Highway 101 within the City) and 2rd, 3rd, and 4th Streets identified as the Town Center Boundary. Criteria for establishing that boundary included:

- exposure of public spaces and business to highway travelers;
- concentration of small scale businesses with storefront character;
- civic buildings such as City Hall and the County Courthouse;
- historic buildings that could be restored as a distinctive element of the downtown area; and
- the importance of Main Avenue, Pacific Avenue, and 2nd Street in Tillamook's history.

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Potential Multiuse Path
Along Slough to Future Park
HWY 101
Pedestrian Crossing
Constraints
HOQUARTON
SLOUGH
Potential Greenway Park
Addition to City Park
Potential Multiuse
Pathway in Abandoned
Railroad Right-of-Way
City Park
FRONT ST
1 ST
2 ND ST
3 RD ST
4 TH ST
5 TH ST
6 TH ST
Post
Office
Museum
Court
House
HWY 6
Old
Armory
To
Beach
Library
City
Hall
To Goodspeed
Park
Copeland
Lumber
Old
Safeway
To City
Park
Ford
Dealer
FIR AVE
GROVE AVE
STILLWELL AVE
IVY AVE
MAIN AVE
PACIFIC AVE
MARION AVE
MADRONA AVE
TILLAMOOK
TOWN CENTER PLAN
STUDY AREA BOUNDARY
Site Analysis
Potential Town
Square Location
Major Travel Routes
Potential Town
Center Area
Core Area
Architectural Resources
(Traditional Storefront
Buildings)
Major Bike Routes
PACIFIC RIM RESOURCES
0' 50' 100' 200'
6.24.99
Figure 1

The potential contribution of restored and renovated storefront architecture may be one of Tillamook's greatest asset in revitalizing downtown and continuing to be a memorable stop for travelers along the Oregon coast. Traditional storefront facades with upper story residential and office use have characterized Main Avenue and 2nd Street for most of this century. Over the past two decades the architectural continuity within the town center has be compromised. Most of that compromise is a result of covering facades with non-historic materials, removal of traditional signs and marquees, and, in some cases, demolition of older buildings to make way for contemporary buildings lacking the attractiveness and pedestrian friendly qualities of traditional main street building types. Historic building types provide an architectural rhythm and street level design elements essential to a downtown environment that can retain, expand, and recruit business.

Plan Opportunities

Through a process of research, on-site evaluation, and community involvement, significant opportunities were identified for land use planning and physical design to help realize the community vision for the town center area,(Figure 1). Opportunities include:

- New public open space in form of a town square;
- New public open space in the form a greenway park and trail;
- Town center district anchored by the existing government buildings and new civic buildings along Ivy Street;
- An architectural preservation restoration program;
- A streetscape enhancement plan; and
- A special code and design standard district for the town center area.

Section 2 — The Town Center Plan

The Tillamook Town Center Plan consists of four elements:

- Framework Plan
- Illustrative Plan and Streetscape Recommendations
- Historic Building Restoration Recommendations
- Outline for a Town Center District

Each element was initially developed during a three day community design charrette and subsequently refined by the consultant team. Design refinements were presented and reviewed at a subsequent public meeting.

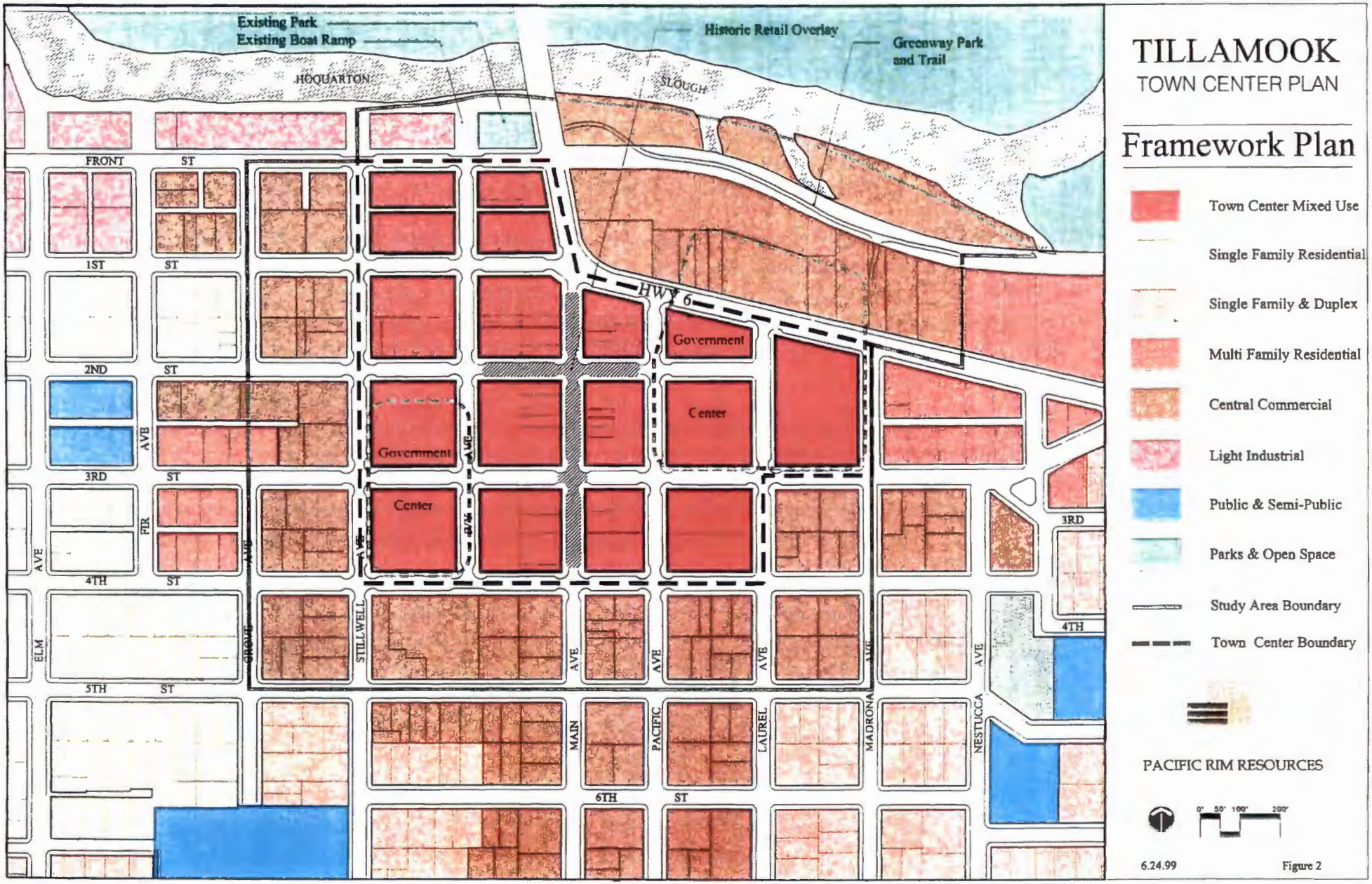
Framework Plan

The Framework Plan is intended to be the overall guide to new zoning for the downtown, and a first step to capital improvement and building restoration. A 15-block area has been identified as a new Town Center district (Figure 2). It is distinguished from the existing Central Commercial district by its purpose to be the center of the community, focus on mixed-use and retailing, and pedestrian-oriented design standards. A five-block "Historic Retail Overlay" is recommended as a strategy to focus retailing on the key historic blocks of the downtown.

The Framework Plan also illustrates two government centers. This government center at 2nd and Laurel reflects the existing City Hall, County Courthouse, and Pioneer Museum uses. To build on this center, a Town Square is recommended for this government center.

The government center at 3rd and Ivy is intended to create a second civic anchor for the downtown. This area is appropriate for a redeveloped public library, new governmental buildings, and potential a downtown campus for Tillamook Community College.

A new greenway park and trail is recommended for the area extending from the railroad right-of-way to Hoquarton Slough. Access would be provided from publically-owned parcels north of Madrona Avenue. This park and trail makes use of the abandoned right-of-way and land adjacent to the slough that is largely floodplain area.


Existing Park
Existing Boat Ramp
HOQUARTON
Historic Retail Overlay
Greenway Park and Trail
SLOUGH
FRONT ST
1ST ST
2ND ST
3RD ST
4TH ST
5TH ST
6TH ST
HWY 6
Government
Center
Government
Center
AVE
FIR AVE
ELM AVE
GROVE AVE
STILLWELL AVE
MAIN AVE
PACIFIC AVE
LAUREL AVE
MADRONA AVE
NESTUCCA AVE
TILLAMOOK
TOWN CENTER PLAN
Framework Plan
Town Center Mixed Use
Single Family Residential
Single Family & Duplex
Multi Family Residential
Central Commercial
Light Industrial
Public & Semi-Public
Parks & Open Space
Study Area Boundary
Town Center Boundary
PACIFIC RIM RESOURCES
0' 50' 100' 200'
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Figure 2

Illustrative Plan and Streetscape Recommendations

The Illustrative Plan is a conceptual vision for revitalization of the Town Center area. It reflects relationships and opportunities identified during the site analysis phase of the project and "fills in" the Framework Plan with design forms and recommendations for public space, land uses, building types, and streetscape enhancements (Figure 3). Specific design elements are illustrated as conceptual site plans and design guidelines.

Town Square — Figures 4 and 5 illustrate the potential conversion of parking and lawn areas for the County Courthouse, City Hall, and historic Pioneer Museum into a town square. The intent is to provide a multi-use plaza for daily casual use and special events. When not in use for special events, the plaza would still provide public parking for the area. The plaza and associated government buildings would be the eastern "anchor" for Town Center area. The future building site indicated on the plan is a currently vacant parcel. The architectural character and uses of any redevelopment of that site should be compatible with the public plaza.

Civic Buildings — Two new civic buildings at the intersection of Third and Ivy Streets would be the western "anchors" for the Town Center. The northwestern corner of the intersection is the site of the current County Library building. The southwestern corner is the site of a recently closed supermarket. Both sites offer sufficient land for civic buildings such as a new library or and extension of Tillamook Community College. New buildings on either site should be constructed with no setback from the Ivy Street sidewalk in order to restore the historic building pattern of downtown (Figure 6).

Greenway Park and Trail — The 5-acre greenway park would utilize a vacant parcel of land along Hoquarton Slough and the abandoned railroad right-of-way. Development within the park would be for passive uses only. New public parking and a pedestrian/bike link between park and town square should be developed east of the post office.

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TILLAMOOK
TOWN CENTER PLAN

Illustrative Plan

Study Area Boundary

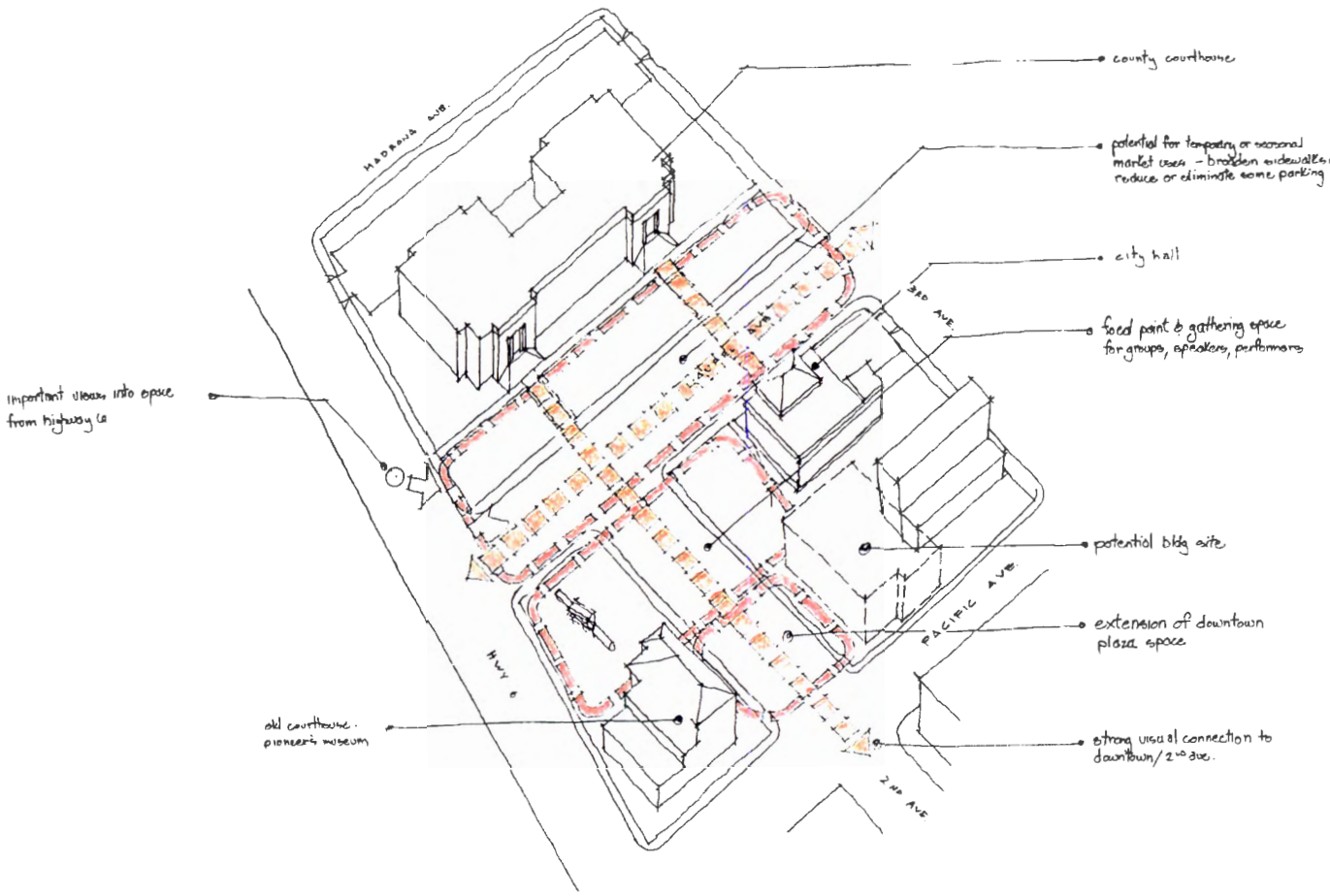
Town Center Boundary

Existing buildings and selected infill are shown. Additional infill and redevelopment are expected and encouraged in the Town Center.

PACIFIC RIM RESOURCES

0' 50' 100' 200'

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TILLAMOO
TOWN CENTER PLA

Town Square

Spatial and Circulation Diagr

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TILLAMOOK
TOWN CENTER PLAN



Town Square
Conceptual Site Plan

PACIFIC RIM RESOURCES

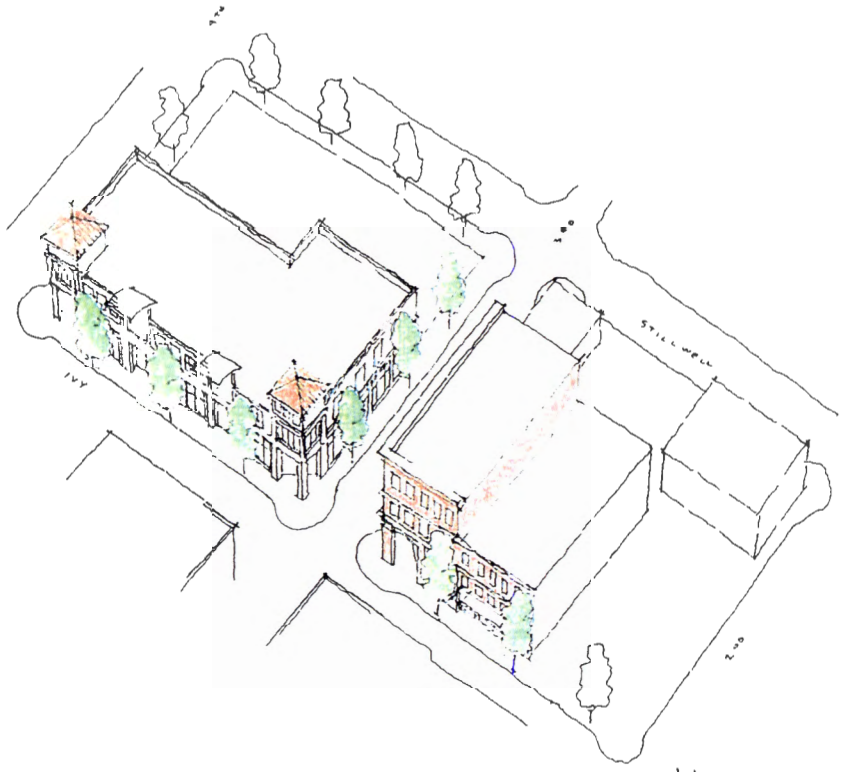
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Figure 5

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TOWN CENTER PLA



Civic Center

Conceptual Site Plan

PACIFIC RIM RESOURC

Not to Scale

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Figu

Streetscape Enhancements — Design guidelines illustrated in Figure 7 and 8 apply to all streets within the Town Center except Main Avenue. Guidelines illustrated in Figure 9 are intended to preserve and restore the unique qualities for Main Avenue. The key difference is the recommendation that street trees not be used along Main between Highway 6 and Fourth Street, where sidewalk widths are narrow and, historically, there was an abundance of blade style signs and distinctive storefront illumination.

Street trees used on all other streets should be responsive and subordinate to the architectural character, existing or potentially restored, of building facades. Trees with strong horizontal forms will tend to "frame" large street-level display windows and reinforce the distinction between street-level and upper-level uses. Taller and more columnar trees are appropriate where the building facades without the main entrance to building which usually have few or no display windows.

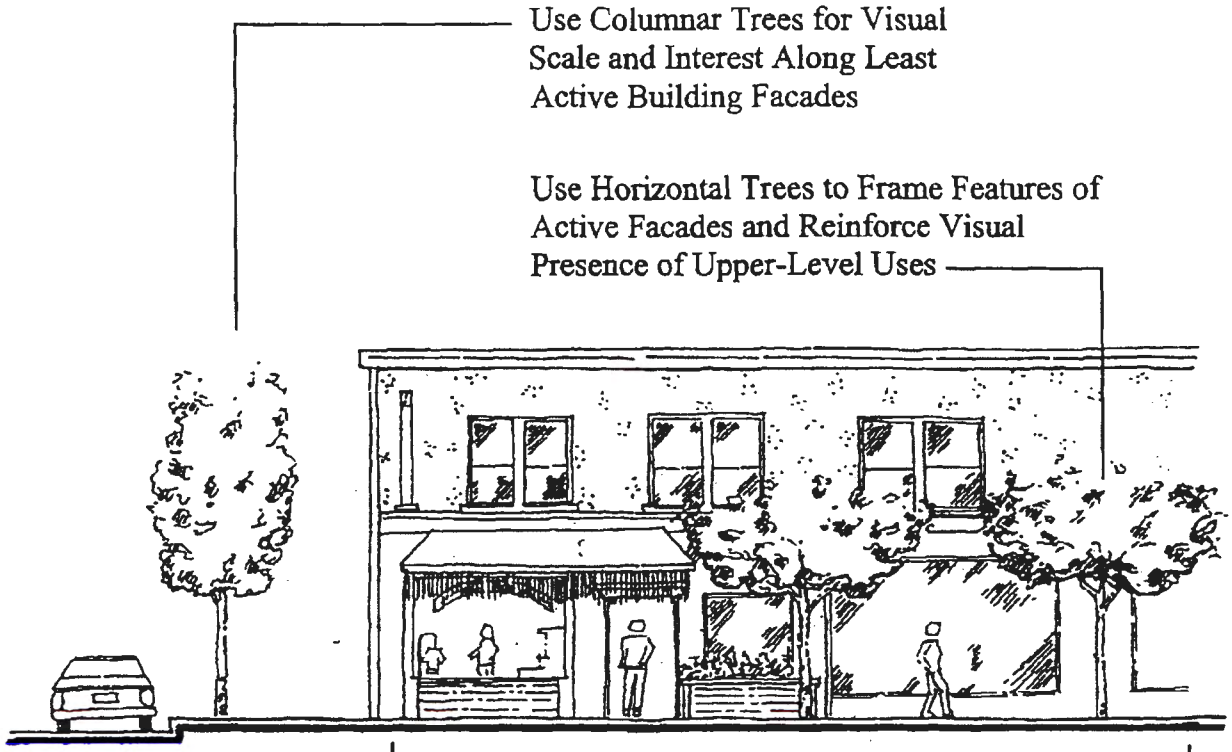
Where parking lots rather than building fronts form the street edge, a combination of evergreen shrubs three to four feet in height and regularly space street trees should be installed as a "green wall" along the street. Unscreened parking areas with weaken the overall visual integrity of the streetscape.

Historic Building Restoration Recommendations

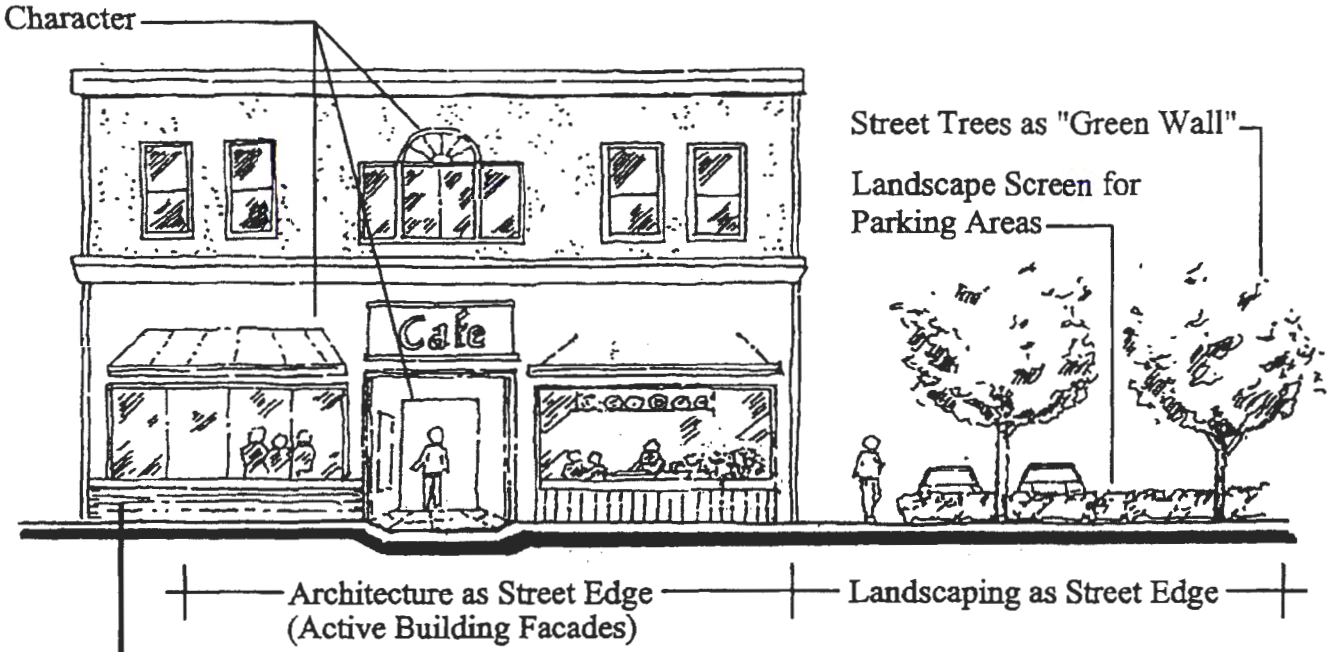
Architectural Heritage

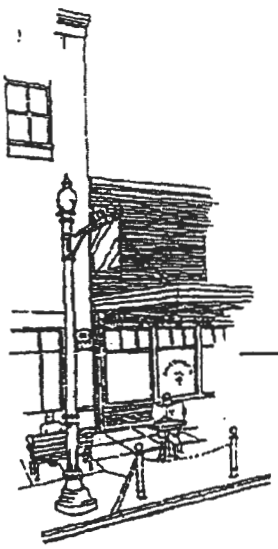
As late as the 1940s, the original historic facades that characterized the historic downtown core remained largely intact (Figure 10). The most recognizable features are:

- Uniform building heights with no setback from the sidewalk
- Uniform architectural rhythm of alternating columns and bays
- Large storefront display windows at street level suitable for commercial use
- Upper stories, typically for residential use, with "punched" masonry openings and double-hung wood windows
- Articulated parapets and cornices that vary from building to building
- Masonry as the predominant building material


Use Columnar Trees for Visual Scale and Interest Along Least Active Building Facades
Use Horizontal Trees to Frame Features of Active Facades and Reinforce Visual Presence of Upper-Level Uses
Active Building Facade
Primary Entries
Storefront Display Windows
Upper Level Uses with Typical Window Rhythm
Traditional Masonry Exterior
Projecting Marquees/Blade Signs

Step 1 - Creating Street Edges

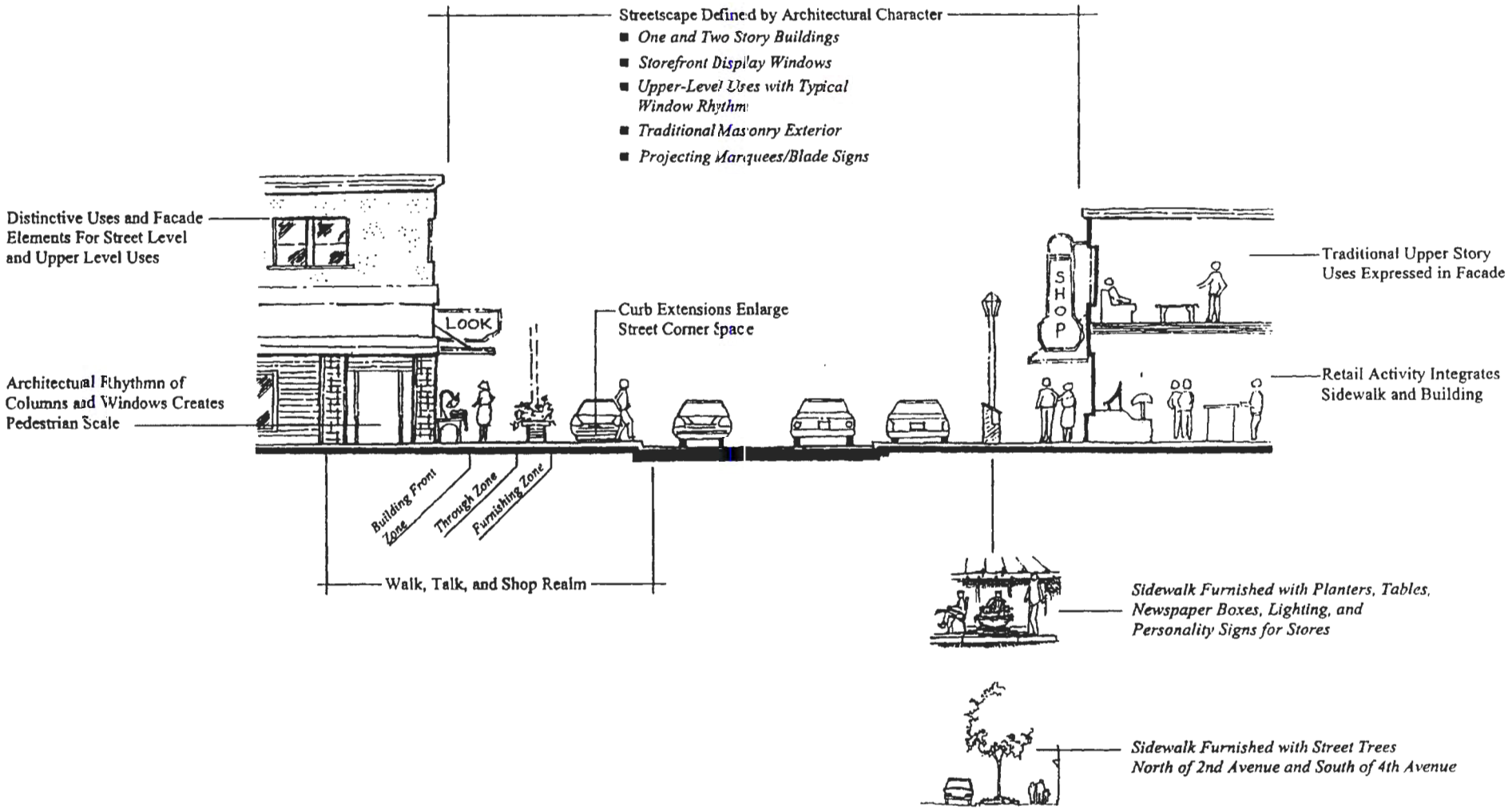




Step 2 - Active Street Edges

Enhance Streetscape Presence of Building Facade with Sidewalk Furnishings and Storefront Activity





Streetscape - Main Avenue

Figure 9

Design Guidelines



Figure 10 – Historic Downtown Architecture — Main Avenue, 1948

With these historic buildings lining the streets, there was an inherent pedestrian scale. It begins with the rhythmic column and bay construction of the buildings and street-level faces that are almost entirely glass and upper stories that are predominantly masonry and smaller windows. Marquees or canopies over the sidewalks, blade signs projecting from the building fronts, and architectural trims and accents that enlivened the streetscapes complete the picture of an inviting downtown.

Unfortunately, a walking tour of Tillamook today reveals only a modest portion of this architectural legacy. As buildings aged and efforts to maintain them waned, the original masonry walls began to leak, particularly during the driving rains (with winds up to 80 to 100 miles per hour) of a coastal winter. Many building owners in the 1960s and 1970s opted for solutions that seriously compromised the historic facade of the buildings. Masonry walls were covered with metal siding or painted in an effort to try to seal out moisture. Additional injury to the architectural character resulted from the removal of cornices and projecting trims, allowing the flat, planar metal siding to run uninterrupted over the original facades. In some cases, rather than retain the original upper-level window openings, siding ran continuously over the upper floors, obscuring the windows in entirety. If an upper-level window remained, a new metal window was often installed directly over the existing wood window (Figures 11 and 12).

Despite this unsympathetic treatment, an architectural presence reflecting a rich past remains in downtown Tillamook. East and west along Second and Third Streets, and north and south along Main and Pacific Avenues, the historic downtown building stock is very apparent. Along these streets are opportunities to revive the traditional storefront architecture and create a vibrant downtown.

Preserve and Restore

Within the Town Center area are side by side examples of the extremes of Tillamook's architectural lineage (Figures 13 and 14). Good examples of historic fabric should be preserved, while non-historic facades that obscure original architectural features should be removed to reveal the original building behind.

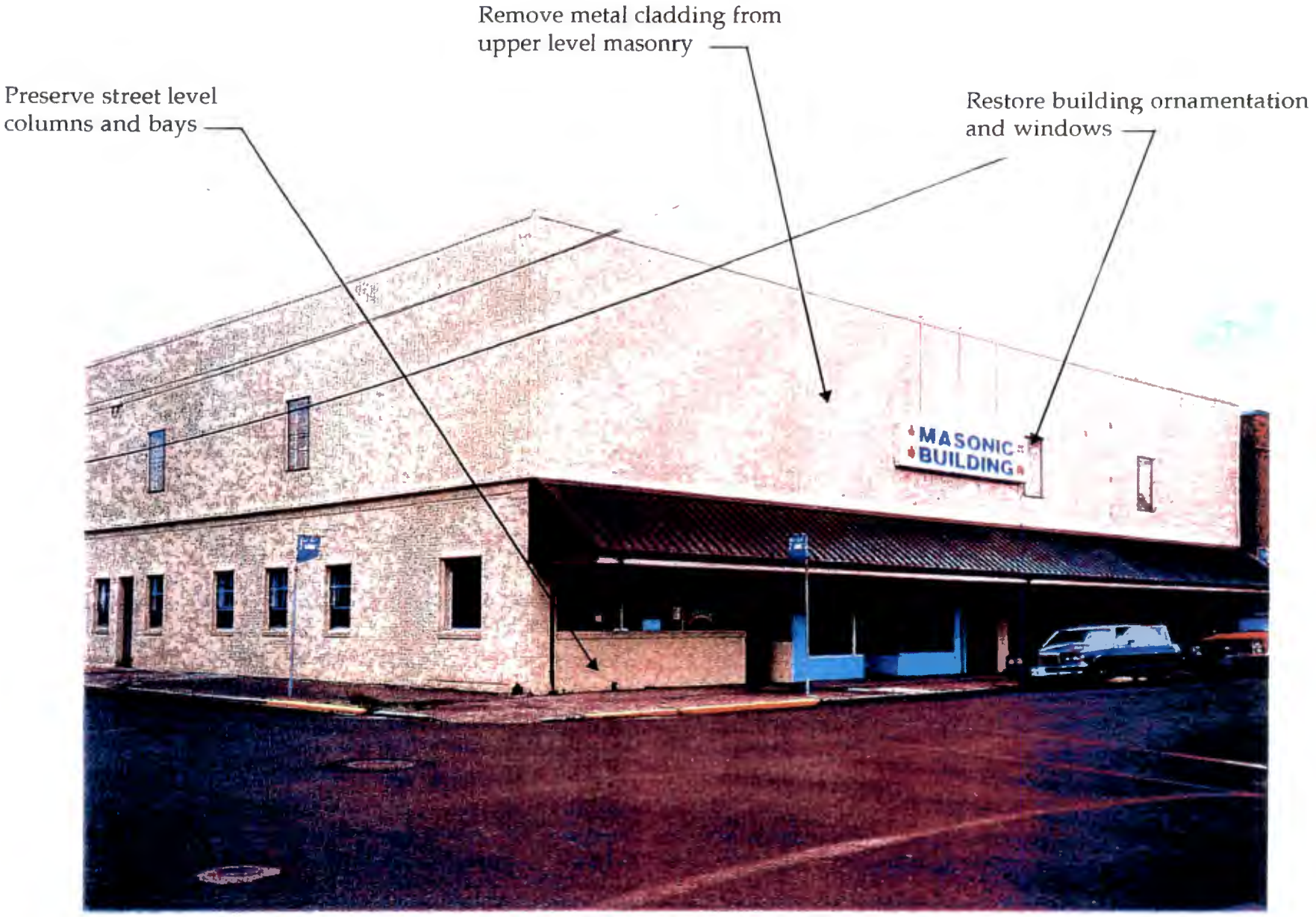


Figure 11 – Architectural Restoration Guidelines



Figure 12 – Architectural Restoration Guidelines

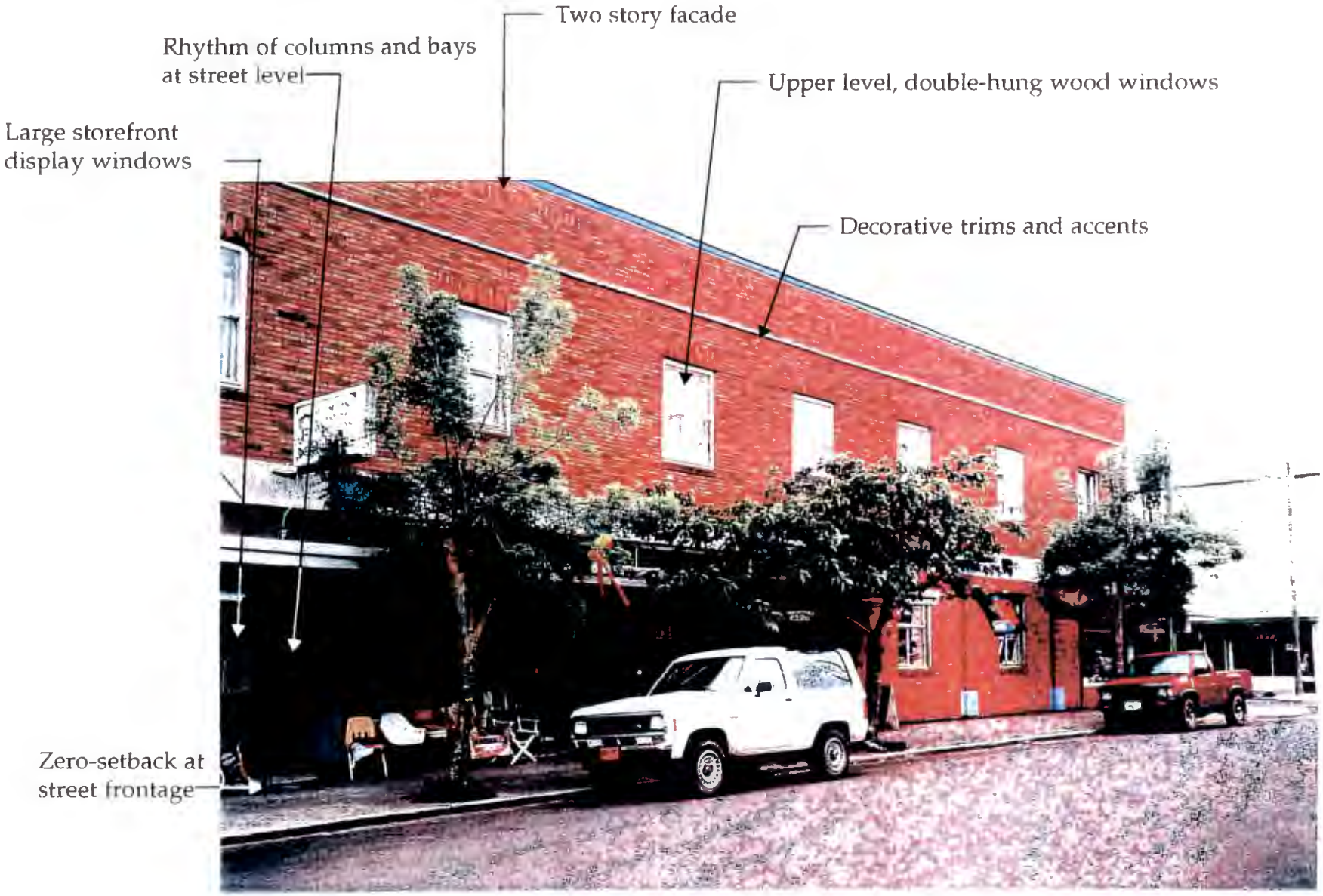


Figure 13 – Architectural Restoration Guidelines

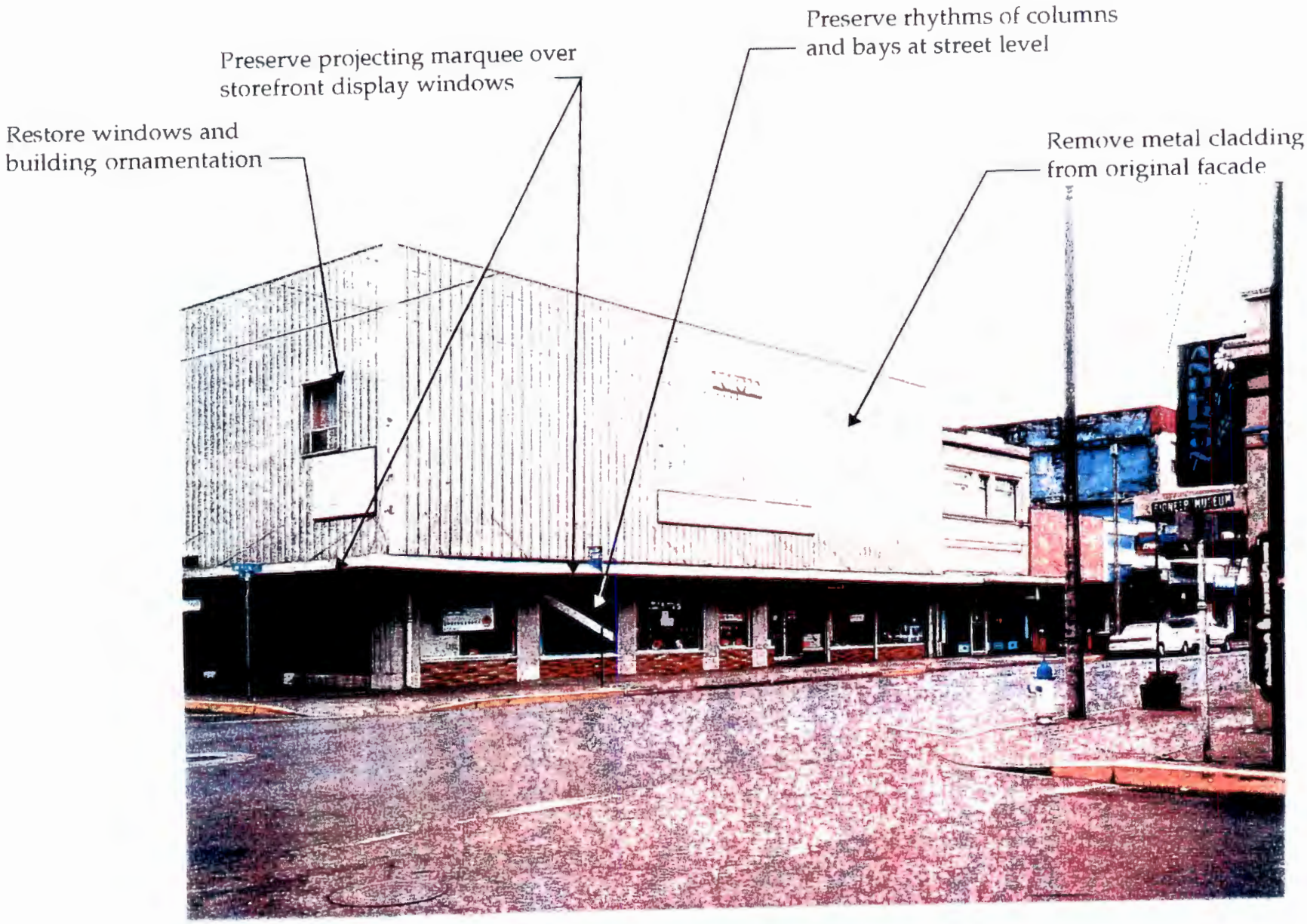
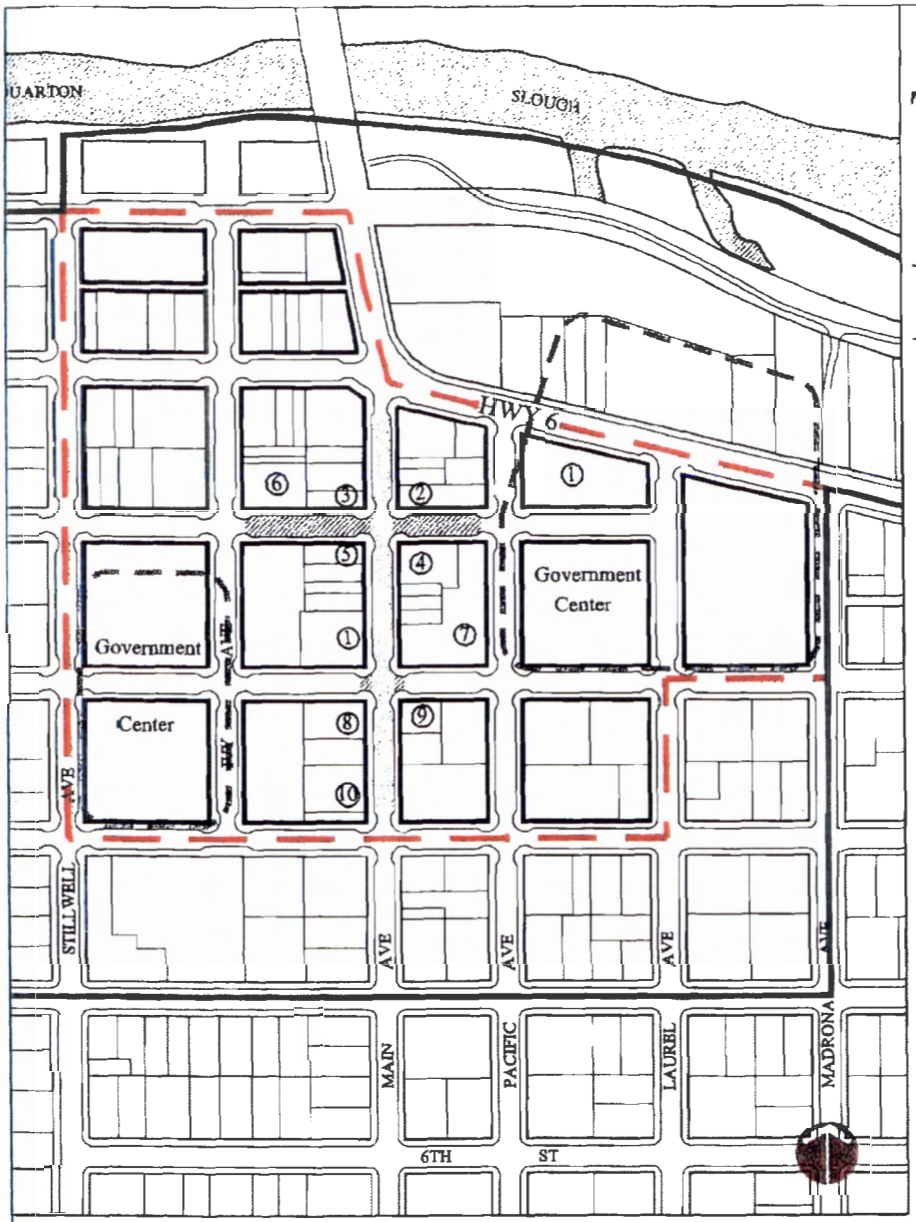


Figure 14 – Architectural Restoration Guidelines



TILLAMOOK
TOWN CENTER PLAN

ARCHITECTURAL RESTORATION

Priority Buildings

1. Pioneer Museum
2. First National Bank Building
3. Alderman Building
4. IOOF Building
5. Anderson Building
6. Masonic Building
7. Tillamook Hotel
8. Beal Building
9. J.C. Penny
10. Bird Boys

Study Area Boundary

Town Center Boundary

Historic Retail Overlay

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Figure 16

Building Restoration

Restoring a older two or three story building in a downtown environment can be a daunting task. However, it can be accomplished in steps, with each step having a cumulative effect on the building's appearance (Figure 15). In turn, each building that begins to once again reveal the desirable qualities of its original architecture will have a cumulative effect on the overall attractiveness of a main street or downtown area. The following three step restoration plan can be used to evaluate the needs and architectural potential of key buildings in Tillamook's's downtown.

Step One

Step one begins with a building assessment. Thorough assessment of the building will establish:

- construction type;
- height and area;
- general structural configuration; and
- the condition of its exterior walls and roof with regard to resisting the weather.

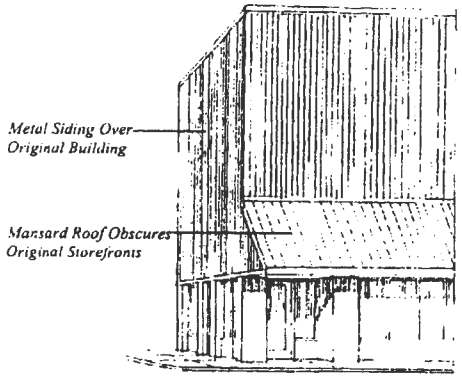
It will also include an inventory of the building's historic, character-defining features to clarify the scope of needed restoration. That inventory should include research of the building's past, including the organization and original uses of its interior spaces. Photographs, first-hand accounts, and a review of records in the County's archives will prove helpful.

The building's long-term viability must be carefully considered. Its structural integrity, for example, should be examined with particular reference to its ability to resist the forces generated by earthquakes. Seismic (earthquake) codes have evolved considerably since the buildings within the Town Center were constructed. A responsible restoration plan would take into consideration the fundamental structural problems which must be addressed.

Another long-term viability consideration is incorporation of fire and life safety standards. Planned improvements to existing corridors and fire resistive construction standards should be reviewed and approved by the local jurisdiction prior to beginning restoration work. Once these considerations have been addressed, the property owner may proceed with the assurance that restoration of building's historic architectural features can occur in concert with the improvements to the long-term viability of the building.

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Developing a Restoration Plan



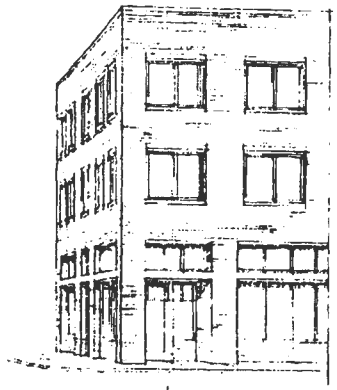
Step One

Building Assessment

- Historic Character Features
- Research
- Original Interior Spaces

Develop Phased Restoration Plan

- Long-Term Viability
- Fire and Life Safety
- Understanding of Costs



Step Two

Character Features

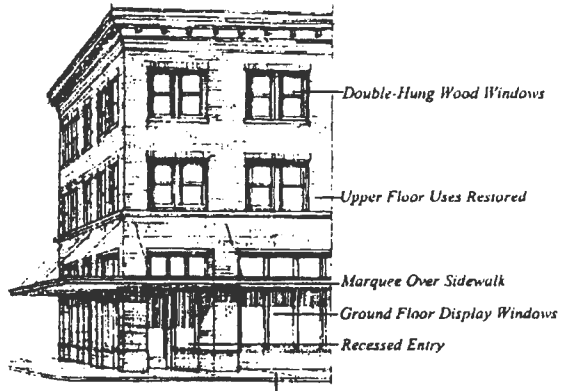
- Remove Non-Historic Cladding and Paint from Masonry Walls
- Evaluate Facade with Regard to Original Interior Spaces

Exterior Finish

- Restore Parapet Caps
- Roof Integrity and Weather Resistance
- Masonry and Wall Joints

Interior Improvements

- Ground Floor Space (Retail Use)
- Electric, Siesmic, Plumbing, and Insulation



Step Three

Character Features

- Cornice and Upper-Level Double-Hung Windows
- Street-Level Character Elements (Windows, Marquees, Signs)

Exterior Finish

- Restore Trim and Exterior Details

Interior Improvements

- Upper Floors (Potential Residential Use)
- Plumbing, Electrical, and Insulation

TILLAMOOK
TOWN CENTER PLAN

ARCHITECTURAL RESTORATION

PACIFIC RIM RESOURCES

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Finally, an understanding of the costs involved in the restoration should be undertaken. Property owners may not be able to restore their buildings in a single construction phase. Order of magnitude cost information will help define a phased approach to the restoration master plan that will help spread the overall renovation costs over time.

Step Two

Implementation of the second step in a restoration plan would only occur after the fundamental structural issues have been satisfactorily addressed. Work should emphasize restoration of exterior character defining features, repair and renovation of original exterior finish, and improvements to interior spaces.

Character Features — Restoration begins with the removal of non-historic cladding materials such as metal siding that obscures the original detailing. Removal of the cladding will allow evaluation of the condition of the exterior finish and the relationship of interior spaces to features of the facade such as windows, doors, and trim details.

Exterior Finish — At the same time attention must be given to restoring the building's original exterior shell. Painted masonry surface should be stripped and cleaned with an appropriate detergent and sealer. Sandblasting and abrasive (acidic) cleansers are not recommended as they may cause long-term harm to the masonry units. Additional masonry restoration efforts would also include:

- re-pointing of the mortar joints;
- installation of new sealant joints at openings within the masonry wall;
- re-furbishment of the sheet metal flashing and coping at the parapet;
- installation of new roofing and insulation; and
- installation of sheet metal roofing terminations.

Interior Improvements — Renovation of interior spaces should be based on a clear understanding of the original use of those spaces and their relationship to exterior features, particularly window openings. Improvements should include new electrical, mechanical and plumbing systems. Renovation of the first floor retail areas would be appropriate and supportive of the Town Center Plan goal of maintaining a strong retail environment, particularly in the Historic Retail Overlay District.

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Step Three

Character Features — Cornices and parapets, street-level display windows, and marquees that project over the sidewalk, were key architectural features of Tillamook's historic downtown environment. They should be restored and preserved. Upper level windows should also be restored to replicate the original double-hung, wood windows. Energy saving features such as insulated glazing can be incorporated with these improvements.

Restoration work might also include building illumination and the blade style building signage that was a vibrant part of Tillamook's past. Like a person's signature, signs can express the personality of business and compliment building form.

Exterior Finish — Work should include additional repair of the masonry building shell, including bullnose accents and trim blocks. Appropriate painting of trim details (masonry surfaces should not be painted) and restoration of other finish details will complete the facade restoration).

Interior Improvements — Step three might emphasize the renovation of upper floors for residential use. Insulation and any other interior improvements deferred due to lack of funding should be completed at this time.

With exterior building upgrades and improved interior spaces, higher rents are justified, offsetting some of the capital costs of the improvements. Consumer perception of downtown is influenced. Additionally, one or two restoration projects can rekindle the community's recognition of Tillamook's historic architectural resource. Interest in the historic fabric of the Town Center area will become a source of civic pride and a motivation for other building owners join the effort to restore a vibrant, pedestrian-friendly downtown.

Helpful Resources

There are numerous resources available to help property owners organize the restoration process. The National Park Service maintains a website which contains Preservation Briefs covering many topics concerning the preservation of historic buildings. Numerous topics bear a direct relevance to the buildings in Tillamook.

Historic Societies and County archives are good sources for information about the older buildings of Tillamook. The archives of local newspapers should also be reviewed. They generally maintain good records of their publications and it is likely that they contain photographs taken over a long period of time.

The Masonry Institute of Oregon can be contacted for assistance in gathering information about the technical restoration of the masonry buildings. They can be reached at: 3309 SW Corbett, Suite 4, Portland, Oregon 97201 (Telephone: 503-244-1940, Attn: Joe Boland).

The Portland Chapter of the American Institute of Architects may also have information concerning the technical renovation of masonry buildings. They can be reached at: 315 SW 4th Avenue, Portland, Oregon 97204 (Telephone: 503-223-8757). Active chapters often have Professional Interest Areas that specialize in restoration architecture. The state AIA office may also be a resource for similar information. They are located at: Architectural Council of Oregon, 1207 SW 6th Avenue, Portland, Oregon 97204 (Telephone: 503-223-0275).

Product literature pertaining to the restoration of masonry buildings which may be of interest include:

Prosoco, Inc.
1.800.255.4255
www.prosoco.com

Dur-O-Wal
1.877.851.8400 (Toll Free)
www.dur-o-wal.com
Request a copy of their Masonry Restoration Handbook

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Outline for a New Town Center District

Town Center Zoning

New zoning is recommended for the Town Center area. The following is an outline of *potential* components of a new Town Center Zone District. It should be noted that some existing uses may be made "non-conforming" under the new TC district. The city may want to review its non-conforming use regulations to determine how transition of these uses should be handled.

Purpose — The TC zone is intended to create pedestrian oriented, mixed use downtown core, and, preserve and enhance the historic buildings and character of the town center

Permitted Uses — The permitted uses should distinguish the TC zone from the CC zone. Permitted uses would include retail, office, residential on upper floors, museums, schools, parks, plazas, governmental offices, and fraternal organizations (potentially limited to upper floors). Auto-oriented businesses, including drive-through facilities should not be permitted in the TC zone (e.g., gas stations, vehicle repair/sales/service, drive-through restaurants and banks). The permitted uses in the CC zone should include upper story, multifamily residential.

Historic Retail Overlay (see Framework Plan) — Ground floor spaces facing the street would be limited to retail use in order to encourage pedestrian activity and retail vitality.

Front Setback — Minimum: 0, maximum: 10 feet. Within the Historic Retail Overlay, a 0 setback/build-to line would be established for all floors. Outside of the HR Overlay, the 10 foot maximum setback applies to first 15 feet (or other minimum building height standard) of building height only, upper stories may step back for balconies or other outdoor space. Front setback area only may be used for pedestrian areas, or other useable space related to the adjacent business (no parking lots or driveways between building and sidewalk).

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Side Setback — Minimum: 0, maximum: 10 feet for parcel lines adjacent to public street (i.e., corner lots). Side setback area only may be used for pedestrian areas, or other useable space related to the adjacent business (no parking lots or driveways between building and sidewalk). Actual side setbacks will be determined by building frontage requirements (see below).

Rear Setback — None.

Vision Clearance Zones — The existing code standards will need to be reviewed to ensure safety at corners implementing zero setbacks. The curb extensions recommended in the Illustrated Plan assist in improving the vision clearance at corners.

Building Height — Minimum: 2 stories in the Historic Retail Overlay, maximum: 4 stories.

Building Coverage — No maximum in TC. 50 to 75 percent should be considered in the CC.

Building Frontage — Within the HR Overlay Zone, continuous storefronts must occupy at least 80 to 100 percent of the parcel width at the front setback line. Parcels with frontages on other streets within the TC zone must occupy 60 to 80 percent of the parcel width along those streets. This requirement could be reduced for the CC zone.

Building Entrances — At least one customer entrance shall be oriented (face, visible) to the abutting street. For corner lots, entrance can face the corner or the primary street (i.e., Main Ave, Pacific Ave, or 2nd Street).

Ground Floor Windows — At least 60 to 80 percent of the first floor building façade that faces streets must have transparent windows or display cases. A review of the existing historic storefronts will assist in establishing a clear standard as opposed to a range. No mirrors or darkly tinted glass would be permitted. This requirement could be reduced for the CC zone.

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Landscaping — The city should change the existing requirement of a minimum percentage of lot area to a requirement that all areas not occupied by structures, parking lots or pedestrian plazas that are visible from a public right-of-way must be landscaped. Perimeter landscaping and seating walls should be required in parking lots.

Parking — The city should eliminate or reduce off-street parking requirement for commercial uses, and consider implementing parking maximums. Parking lots must be located to the side or rear of buildings.

Sidewalk Cafes and Vendors – Allowed. The Roseburg Downtown Master Plan has a good set of standards to consider.

Roof-top Equipment – No roof-mount equipment shall be visible from ground level from any adjacent parcel or any public street right-of-way.

Architectural Guidelines – Existing buildings should transition back to historic forms. New buildings should be similar to historic forms. Standards and guidelines should be developed per the recommendations in this report.

Financial and Educational Incentives

Downtown Improvement programs work best when there are financial and educational resources for building renovation available to the city and property owners. The Oregon Downtown Development Association and Oregon State Historic Preservation Office are excellent sources for how the city can establish
financial and educational support for building renovation.
With such a program in place the City can target specific buildings as opportunities to capitalize on the existing architectural fabric of downtown as part of an overall revitalization effort to retain, expand, and recruit retail businesses (Figure 16). For example, the intersection of Second Street and Main is an important intersection in context to the proposed Town Center Plan. It will be a visual and functional hinge between the new Town Square and primary shopping streets in downtown. At this intersection, the Alderman Building sets an example of a building that preserves the architectural legacy of the past, while the IOOF building across the intersection is an example of a structure that warrants restoration.

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City of Tillamook
210 Laurel Avenue
Tillamook, OR 97141

Attn: Plan Amendment Specialist
Dept. of Land Conservation & Dev.
635 Capitol St. NE, Ste. 150
Salem, OR 97301-2540

DEPT OF
OCT 25 2012
LAND CONSERVATION
AND DEVELOPMENT

C/O POSTABOX
CITY OF TILLAMOOK
414 PACIFIC AVE
TILLAMOOK OR 97141

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SHIP TO:
PLAN AMENDMENT SPECIALIST
DEPT OF LAND CONSERVATION & DEV
STE 150
635 CAPITOL ST NE
SALEM OR 97301-2540

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