

BROWNSVILLE  
COMPREHENSIVE  
PLAN

Adopted by Ordinance No. 494, May 19, 1980

Acknowledged by the Land Conservation and  
Development Commission February 4, 1982

## CITY OF BROWNSVILLE

Founded 1846 as Kirk's Landing  
Platted 1853 as Brownsville  
Incorporated October 19, 1876, as Brownsville

### Present City Council

Tony Gorsline, Mayor  
Fred Smith                      Leo Haney  
Pamela Miller                  Paul Cahill  
Ray Bubak                        Chenoweth Robertson

### Present Planning Commission

David Pond, Chair  
George Weppler                Anne Stein  
Kim O'Brien                    Jerry Marsh  
Tonia McConnell               Violet Steinborn

### Citizens Who Have Contributed to the Development of the Comprehensive Plan

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Richard Robertson              Dorinda Nelson  
Bill Yeldig                        Jim Pearce  
Ruth Ganta                        Roy Mason  
Joe Clark                         Harold Sharp  
Lee Heckathorn                  James Claypool (Planner)  
Irene Dressel                    Roy Vroman

### City Staff

Ruth Hermach, City Administrator  
Cathy Robertson, Administrative Assistant  
Corky Wise, City Clerk  
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Bob Wilson, Maintenance Supervisor  
Chick Fisher, Assistant Maintenance  
Don McGarry, Street Cleaner  
John L. Hruska, City Planner

## ACKNOWLEDGEMENTS

The financial support for the development of the Brownsville Comprehensive Plan was provided through the State of Oregon, Land Conservation and Development Commission. Technical assistance and resources were provided by the Linn County Planning Department. Maps drawn by Keri Jackson. Other technical assistance by Jackie Lynch. Typing by Nancy Brumbaugh. Members of the Brownsville Planning Commission and City Council have volunteered their time towards the development of this plan.

The City of Brownsville would like to thank those citizens of Brownsville whose testimony and input during the development of this plan was of great value.

The City of Brownsville would also like to thank those state agencies who reviewed and commented on drafts of the plan.

## INTRODUCTION

The Brownsville Comprehensive Plan is the result of a four year effort which involved the citizens of Brownsville, the Linn County Planning Department, the State of Oregon Land Conservation and Development Commission and various State and Federal agencies.

The purpose of the Brownsville Comprehensive Plan is to provide a framework for the orderly and economic development and growth of the City of Brownsville. In the past four years, the citizens of Brownsville have shown a genuine interest in the way in which Brownsville grows. This interest will need to be maintained through the years to come. The mechanism for continued local control is the Comprehensive Plan.

In 1973, the Oregon Legislature adopted Senate Bill 100 (Oregon Revised Statutes [ORS] Chapter 197). Under the provisions of ORS 197, all jurisdictions within the State of Oregon are required to develop and adopt Comprehensive Plans in compliance with statewide planning goals. The Land Conservation and Development Commission was established to develop the statewide planning goals, to administer funds for the development of Comprehensive Plans and to review all plans for compliance with the statewide planning goals.

"Comprehensive Plan" means a generalized, coordinated land use map and policy statements of the governing body of a state agency, city, county or special district that inter-relates all functional and natural systems and activities relating to the use of lands, including but not limited to sewer and water systems, transportation systems, educational systems, recreational facilities, and natural resources and air and water quality management programs. "Comprehensive" means all-inclusive, both in terms of the geographic area covered and functional and natural activities and systems occurring in the area covered by the plan. "General nature" means a summary to policies and proposals in broad categories and does not necessarily indicate specific locations of any area, activity or use. A plan is "coordinated" when the needs of all levels of governments, semipublic and private agencies and the citizens of Oregon have been considered and accommodated as much as possible. "Land" includes water, both surface and sub-surface, and the air.

The Brownsville Comprehensive Plan is composed of three (3) major inter-related parts. They are: the background studies; the goals, policies and official plan maps; and the implementation ordinances. The background studies and goals, policies and maps are contained in this text. The implementation ordinances are contained under a separate cover.

## USE OF THE BROWNSVILLE COMPREHENSIVE PLAN

The action which the City of Brownsville takes in adopting this Comprehensive Plan is considered to be legislative. Any amendment to this Plan will also be considered as legislative.

Decisions made based on the goals, policies, maps or text of this Plan are considered to be quasi-judicial. Actions to carry out programs called for by the plan are considered to be administrative.

The fundamental difference between a goal and a policy is: 1) a goal is a general directive or accomplishment towards which the city wishes to go in the future; 2) a policy is a more specific action the city feels is necessary to accomplish the goal.

The relationship between the Comprehensive Plan and the Zoning Ordinance can best be explained by two cases heard by the Oregon Supreme Court. In the case of Fasano v. Washington County Commissioners it was determined that: "the plan embodies policy determinations and guiding principles; the zoning ordinances provide the detailed means of giving effect to these principles," and that "it must be proved that the (zone) change is in conformance with the comprehensive plan."

An earlier decision was emphasized to a much greater extent in the 1974 case of Baker v. City of Milwaukie. In that case it was concluded "that a comprehensive plan is the controlling land use planning instrument for a city. Upon passage of a comprehensive plan, a city (or county) assumes a responsibility to effectuate that plan and resolve conflicting zoning ordinances. We further hold that the zoning decision must be in accord with that plan and a zoning ordinance which allows a more intensive use than that prescribed in the plan must fail."

As development activities increase in Brownsville, the City will be called upon to make decisions. The Plan will provide the direction necessary to make meaningful and consistent decisions. However, if no new development were to occur in Brownsville (which is highly unlikely) the Plan shall still provide the direction necessary in making decisions which will improve the existing systems. Decisions shall also be consistent regardless who is in the position to make the decision.

The end result should be an economic benefit to the community, as duplication and unnecessary programs and projects could be easily identified.

The Brownsville Comprehensive Plan was developed to meet the needs of the City of Brownsville to the year 2000 by the citizens of Brownsville in the late 1970's. As times change, so do the conditions for which many of the goals and policies of this Plan were written. It is therefore important that the Plan be maintained as a workable document sensitive to the people and environment of Brownsville. To maintain the Plan, periodic review and updating will be necessary. This first Brownsville Comprehensive Plan will serve as the basis for all future Comprehensive Plans of the City of Brownsville.



POLICIES	IMPLEMENTATION MECHANISMS										STATEWIDE PLANNING GOALS																
	Zoning	Subdivision	Flood Hazard Ordinance	Planning Commission	Ordinance	Capital Improvement Program	Coordination	Commitment to Future Action	System's Development Charge Ordinance	Historic Review Committee Ordinance	Urban Growth Boundary Ordinance	Zoning	Policy Number	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Eleven	Twelve	Thirteen	
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61													30														
P-P 1													31														
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23													54														
24													55														
25													56														
26													57														
27													58														
28																											



## TABLE OF CONTENTS

List of City Officials . . . . .	i
Acknowledgements . . . . .	ii
Introduction . . . . .	iii
Use of the Brownsville Comprehensive Plan . . . . .	v
Goal and Policy Implementation and Goal Review . . . . .	vii
Table of Contents. . . . .	x
List of Figures. . . . .	xi
List of Tables . . . . .	xii
 <b>Background Studies</b>	
Physical Environment . . . . .	2
Cultural Resources . . . . .	25
Historical Profile . . . . .	25
Citizen Involvement. . . . .	30
Land Use . . . . .	31
Public Facilities and Services . . . . .	70
Transportation . . . . .	92
Housing, Population and Economics. . . . .	103
Urbanization . . . . .	131
 <b>Goals and Policies</b>	
Key to Numbering System. . . . .	165
Citizen Involvement. . . . .	166
Land Use . . . . .	168
Public Facilities and Services . . . . .	186
Transportation . . . . .	204
Housing. . . . .	210
Urbanization . . . . .	215
Plan Review and Amendment. . . . .	219

## LIST OF FIGURES

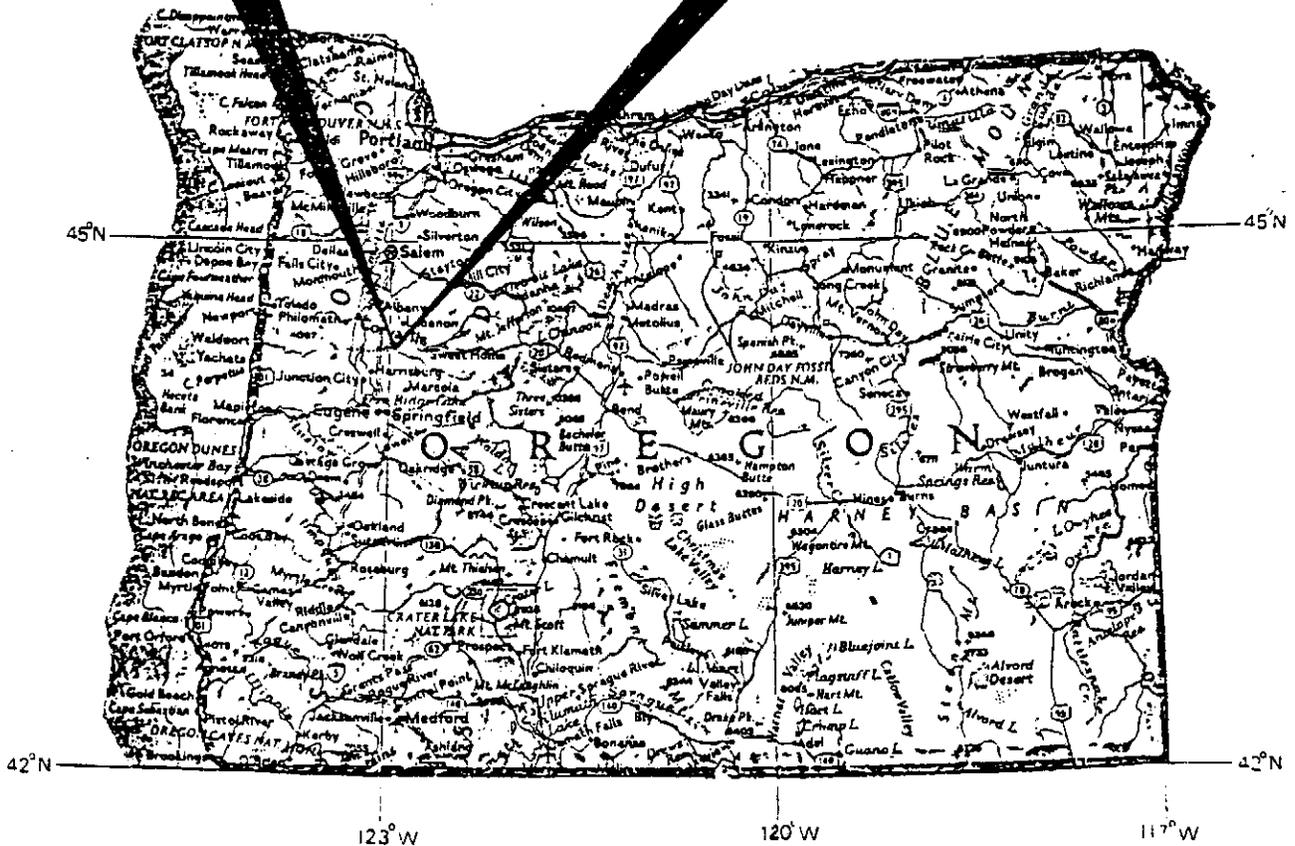
1.0	Brownsville Location Map . . . . .	1
2.0	Slope Map Within City and U.G.B. . . . .	3
3.0	Geology Map. . . . .	5
4.0	Soils Map. . . . .	7
4.1	Soils Map Within City and U.G.B. . . . .	8
5.0	Agricultural Capability Classes. . . . .	10
6.0	Flood Hazard Maps. . . . .	13,13a
7.0	Ground Water Availability. . . . .	15
8.0	Minerals - Resource Overlay. . . . .	19
9.0	Vegetation Cover . . . . .	21
10.0	Forest Capability Classes. . . . .	22
10.5	Pre-Historic Mounds. . . . .	27
11.0	Current Land Use . . . . .	32
12.0	Vacant Lands . . . . .	42
13.0	Land Use Outside City Limits . . . . .	44
13.5	Energy Uses. . . . .	50
14.0	Historic Inventory . . . . .	52
15.0	Revised Calapooia Irrigation District. . . . .	56
15.5	Comprehensive Plan Map . . . . .	57
15.6	Zoning Map . . . . .	58
15.7	Buildable and Unbuildable Areas of the Special Development Zone . . . . .	66
15.8	Special Development Zone Slopes Map. . . . .	67
16.0	Water System . . . . .	72
16.1	Water System . . . . .	73
16.2	Proposed Waterline Improvements. . . . .	74
17.0	Sanitary Sewer System. . . . .	77
18.0	Location of Public Facilities. . . . .	83
19.0	Street Plan. . . . .	95
20.0	Pedestrian and Bikeway Plan. . . . .	97
20.1	Transportation Network . . . . .	102
21.0	Housing Conditions Survey. . . . .	110
21.1	Buildable Acreage Zoned Medium and High Density Residential . . . . .	111
Exhibit "I"	Urban Growth Boundary. . . . .	145
Exhibit "II"	Areas of Community Concern . . . . .	149
22.0	Public Lands . . . . .	175

LIST OF TABLES

1	Soil Fact Sheet. . . . .	11
2	Ground Water, Harrisburg-Halsey Area . . . . .	17
3	1976 Land Use Inventory. . . . .	31
4	Residential Land Use in the City of Brownsville. . . . .	36
5	Land Use in the Planning Area. . . . .	43
6	Age and Sex Distribution of Brownsville (1970) . . . . .	104
7	1970 Family Income Levels. . . . .	107
7a	Below Poverty Level. . . . .	107
8	Brownsville Year Round Housing Units . . . . .	108
9	Estimated Mobile Home Costs 1978 . . . . .	112
10	Population Trends. . . . .	120
11	Building Permits Issued (to) Brownsville . . . . .	121
12	Brownsville Financial Statement. . . . .	127
13	Employment in Brownsville. . . . .	129
14	Employment Projected to 1990 . . . . .	129
15	Land Use Comparison Existing and Proposed by Acres and Percent . . . . .	33
16	Acres and Percent of Land by Proposed Zoning in Identified Floodway. . . . .	33
17	Lands for Commercial and Industrial Development. . . . .	34
18	Sewer and Water System's Maximum Capacity vs. Population Projections . . . . .	79
19	Residential Land (analysis). . . . .	119
20	Land in the U.G.B, Out of City Limits. . . . .	135

Figure 1.0

# BROWNSVILLE



## BROWNSVILLE LOCATION MAP



## PHYSICAL ENVIRONMENT

### Climate

Brownsville enjoys a temperate climate influenced by marine air from the Pacific Ocean. The characteristics of this temperate climate are dry warm summers and mild wet winters. Temperatures range between 20° F and 100° F during a typical year.

Precipitation averages between 40 to 60 inches a year with the majority falling between October and April.<sup>1</sup> While most precipitation falls in the form of rain, it is not unusual to see snow and freezing rain from mid-November through mid-January. Snow which does fall can be expected to dissipate within a few days.

Fog, which can be extremely thick, is a common phenomenon of autumn and winter.

The dominant wind flow patterns are from the northwest during the summer months and from the southwest during the winter months.

The physical shape and east-west orientation of the Calapooia Valley acts as a trough to pull the wind towards the east.

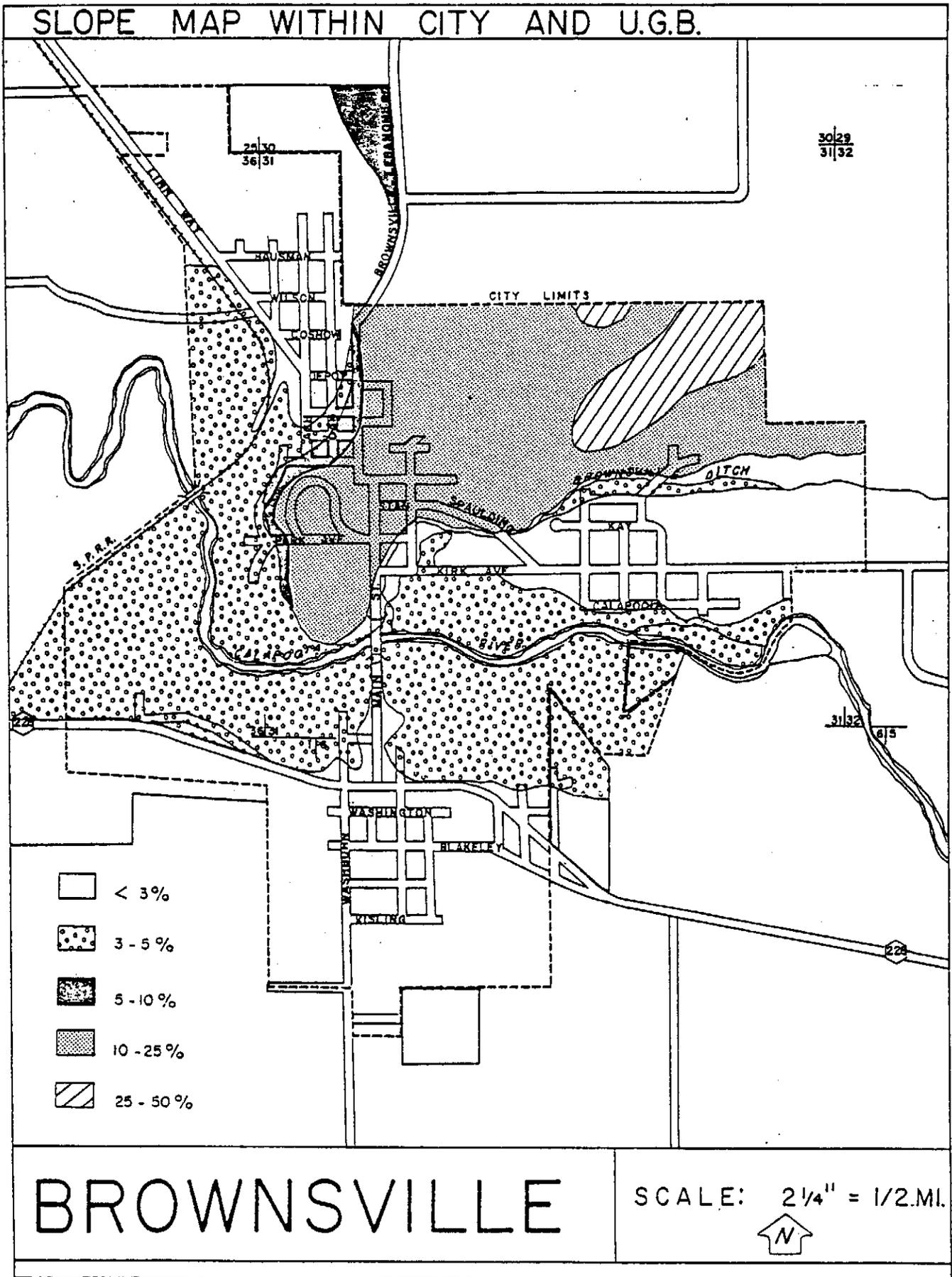
### Topography: Figure 2.0 (Slope Map)

Elevations within the Brownsville Planning Area range from a low of 320 feet near the western boundary of the Planning Area to approximately 1000 feet in the northeast corner of the Planning Area. The lower elevations correspond to the valley floors of the Willamette and Calapooia Valleys. The higher elevations which begin inside the city limits of Brownsville rise quickly with the western edge of the foothills of the Cascade Mountain Range. Within the Brownsville Planning Area south of the Calapooia River the land is generally flat with less than 3% slope, draining in a west northwesterly direction. North of the Calapooia River, the terrain becomes more complex and includes both flat land hills and the valley wall of the Calapooia and Willamette Valleys. Slope north of the Calapooia River ranges between 3% and 50%.

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1. Environmental Geology of Western Linn County B-84.

Figure 2.0



The main topographic features in the Brownsville Planning Area are 1) The valley floors of the Calapooia and Willamette Valleys, 2) The Calapooia River, 3) The hill south of City Hall; the hill known as Holloway Heights and the south slope of Middle Ridge which is located inside the city limits north of the Old Town Commercial area. This massive formation is considered the western edge of the foothills which, if followed east, would lead to the Cascade Mountain Range.

Geology: Figure 3.0

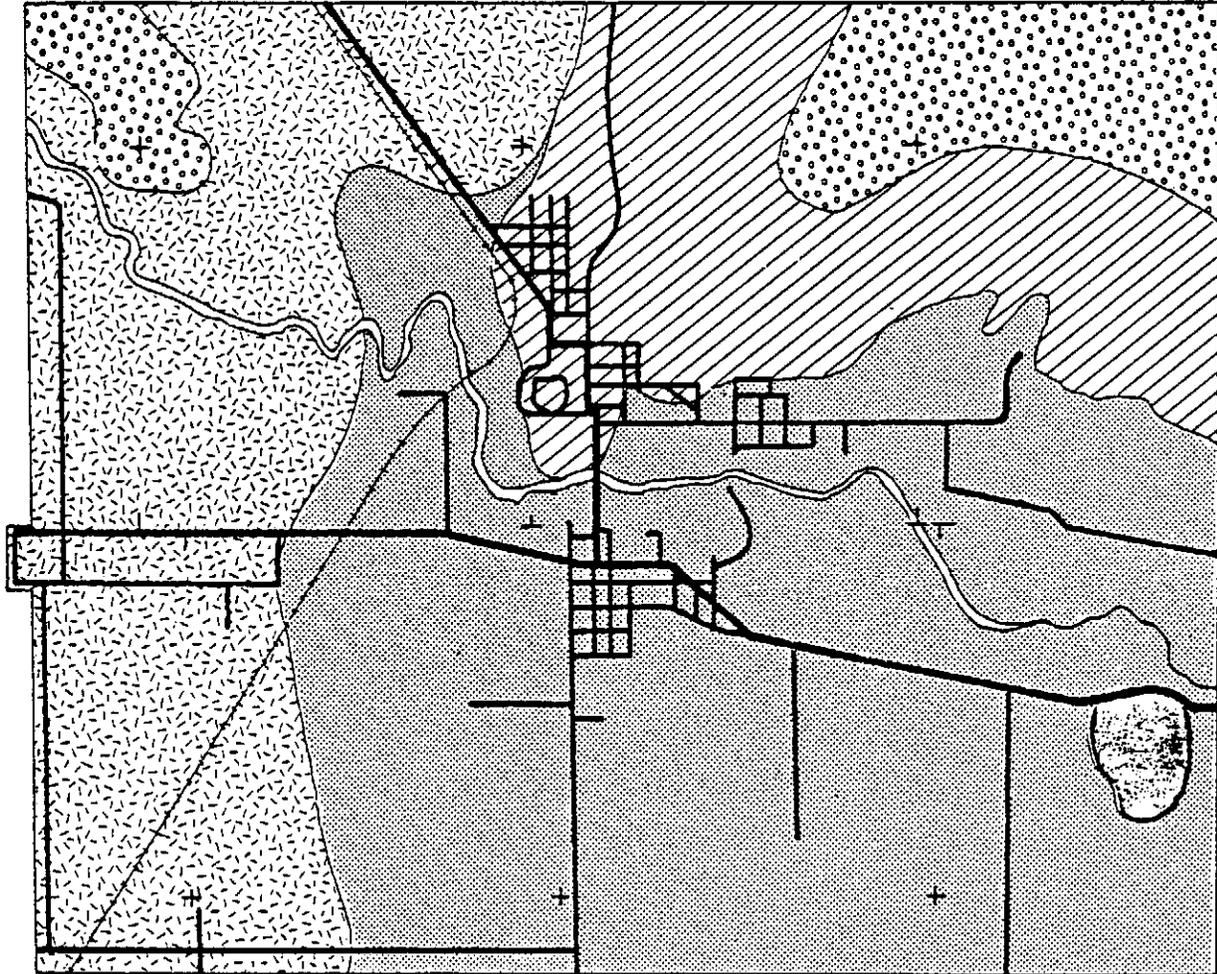
Within the Brownsville Planning Area are five (5) distinct geologic units. The oldest is the Eugene Formation which consists of beds of quartzo-feldspathic marine sand stone. The Eugene Formation forms the lower and middle portions of the foothills as they rise above the valley floor. The age of the Eugene Formation has been determined through the study of fossils to be approximately 30 million years before present; placing it in the Oligocene epoch of the Tertiary Period of geologic time. Sharing the same geologic time period is the Little Butte Formation which represents the higher ridges north and south of Brownsville. The Little Butte Formation while interbedded with the Eugene Formation at lower elevations near the valley floor is composed of volcanic material primarily of an association of Dacitic to Andesitic Pyroclastic rock including coarse greenish to buff breccias and dense dark basaltic flow rock.

A third geologic unit sharing a similar time period within the planning area is Tertiary Intrusive rock (Ti). This unit is located east of Brownsville along the south side of Highway 228. The Ti consists of a basaltic plug believed to be of the Oligocene or early Miocene epoch of the Tertiary Period of geologic time or approximately 30 - 25 million years of age. It is believed that basaltic plugs like this provided the source of the basalt which fed the Little Butte Formation. Only the larger Ti are mapped which indicates that smaller Ti formations do exist; many of which are incorporated into the Little Butte Formation, which is evident by the lumpy topography of what should be an even flow feature.

The next oldest geologic unit is the quaternary lower terrace (Qtl) which covers the floor of the Calapooia Valley. The Qtl consists of low-lying fluvial gravels,

Figure 3.0

# GEOLOGY MAP



 EUGENE FORMATION

 QUATERNARY LOWER TERRACE

 LITTLE BUTTE FORMATION

 WILLAMETTE SILTS

 INTRUSIVE ROCK

## BROWNSVILLE PLANNING AREA

SCALE: 1" = 1/2 MI.



moderately to well-rounded granule pebbles and sands carried to their present location by moving water. The age of the Qtl based on relative topographic position, degree of stream dissection, elevation and stratigraphic position beneath the Willamette silts, would indicate the late Pleistocene epoch of the Quaternary Period of geologic time or approximately 30,000 to 100,000 years before present.

The last geologic unit in the Planning Area is the Willamette silts. (Qws). The Qws covers the greater part of the Willamette Valley low land and are composed of parallel-bedded sheets of silt and associated materials. The origin of the Qws is believed to be glacial flood waters during the late Pleistocene Epoch of the Quaternary Period of geologic time or approximately 18,000 to 100,000 years before present.

Soils: Figure 4.0, 4.1

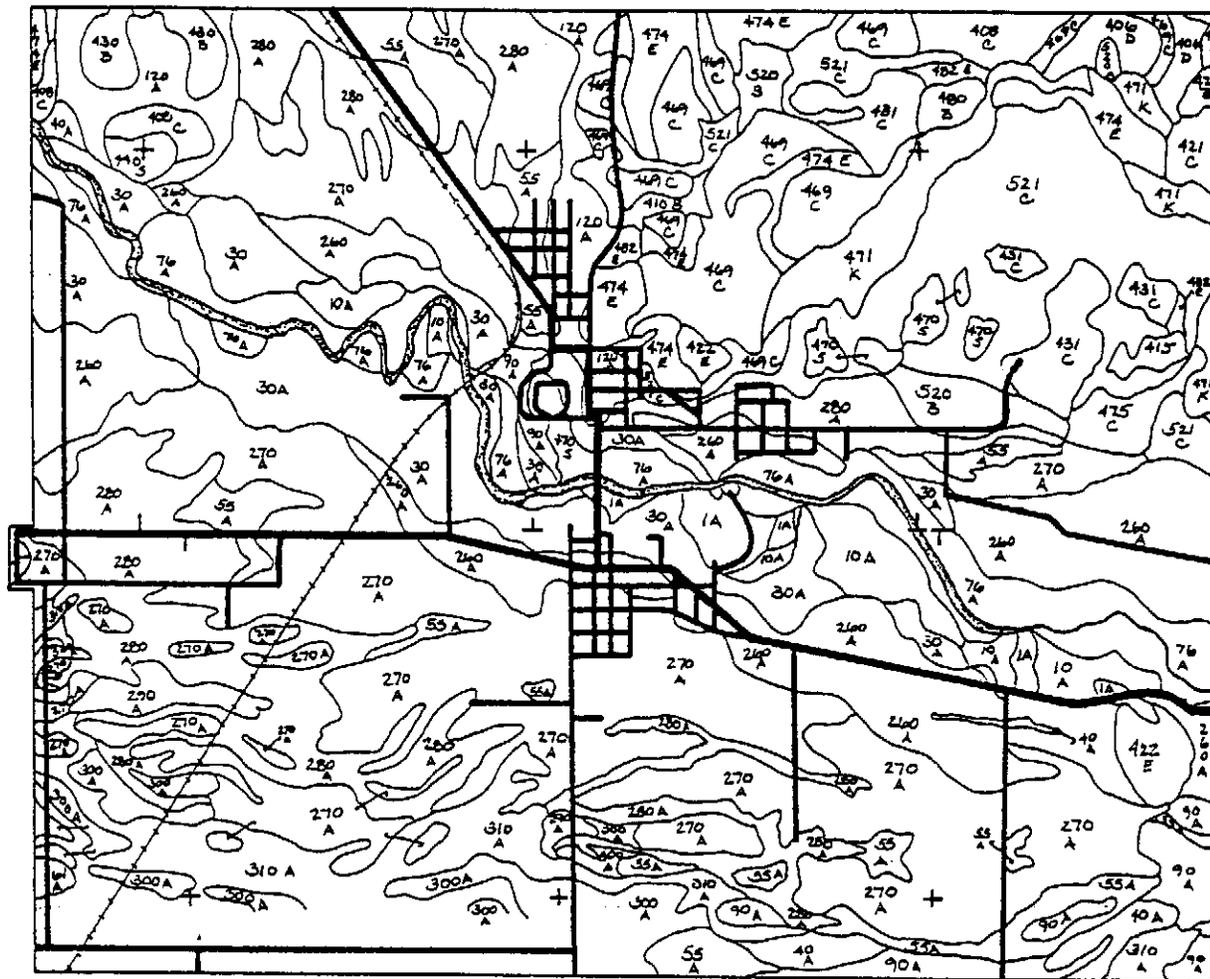
Soil information for the Brownsville Planning Area has been developed and mapped by the U.S. Department of Agriculture Soil Conservation Service. The use of soil information in planning is fundamental. Within the Brownsville Planning Area a total of twenty (20) different soils have been identified and mapped.

Each soil has its own unique qualities and while some soils may be excellent for agriculture they may pose substantial problems with regards to foundation suitability. The restrictive qualities of soils are discussed in the U.S.D.A. Soil Conservation Services documents entitled Oregon-Soils-1 (OR-Soils-1).

As an example, the Hazelair soil series has low bearing strength and tends to slump if the toe of a hill is excavated. Drainage is also a problem, with the soil liquifying quickly when exposed to water. Development on soils of the Hazelair series should consider slide, erosion, and drainage problems in site design review. The P.U.D. concept is a useful method to stimulate development and still minimize the risk and expense of building on Hazelair soils. Development proposals which come before the city should be reviewed with the soil information contained in the OR-Soils-1. While the intent is not to discourage development, the OR-Soils-1 can provide information which will be beneficial with regards to special engineering which might be required.

Figure 4.0

# SOILS MAP



**FLOODPLAIN SOILS**

- 76A Alluvial land
- 1A Camas gravelly sandy loam
- 30A Chehalis silty clay loam
- 40A McBee silty clay loam
- 10A Newberg fine sandy loam

**TERRACE SOILS**

- 280A Awbrig silty clay loam
- 300A Clackamas gravelly loam
- 270A Coburg silty clay loam
- 55A Conser silty clay loam
- 310A Courtney silty clay loam
- 260A Malabon silty clay loam
- 290A Salem gravelly silt loam

**FOOTHILL SOILS**

- 480B Bellpine silty clay loam
- 481C Bellpine silty clay loam
- 482E Bellpine silty clay loam
- 406D Dixonville silty clay loam
- 408C Dixonville silty clay loam
- 520B Hazelair silty clay loam
- 521C Hazelair silty clay loam
- 422E Nekia silty clay loam
- 475C Panther silty clay
- 120A Pengra silty clay loam
- 469C Ritner cobbly silty clay loam
- 470S Ritner cobbly silty clay loam
- 471K Ritner cobbly silty clay loam
- 474E Ritner cobbly silty clay loam
- 431C Steiwer silt loam
- 492D Willakenzie clay loam
- 440S Witzel very cobbly loam

BROWNSVILLE

SCALE: 1" = 1/2 MI.





### Soil Capability Class: Figure 5.0

All soils have been classified as to their agricultural capabilities. State law requires all soils from Class I to Class IV be retained for agricultural use. While soils within incorporated city limits are exempt from this law, any addition to the city such as identifying land for inclusion to the Urban Growth Boundary will require an exception to the Agricultural Soils Law based on need. A discussion on the soils within the Brownsville Urban Growth Boundary is contained in the Urbanization Element of the background studies.

The following table contains information derived from the OR-Soils-1 on the twenty (20) soils of the Brownsville Planning Area. (Table 1)

### Natural Resources

The natural resources of the Brownsville Planning Area are important to the economic base of the community and to the quality of life now enjoyed by the residents.

Natural resources can be divided into four categories; they are: Water including surface and groundwater, Land including terrain and mineral deposits, Vegetation, and Fish and Wildlife.

#### Water:

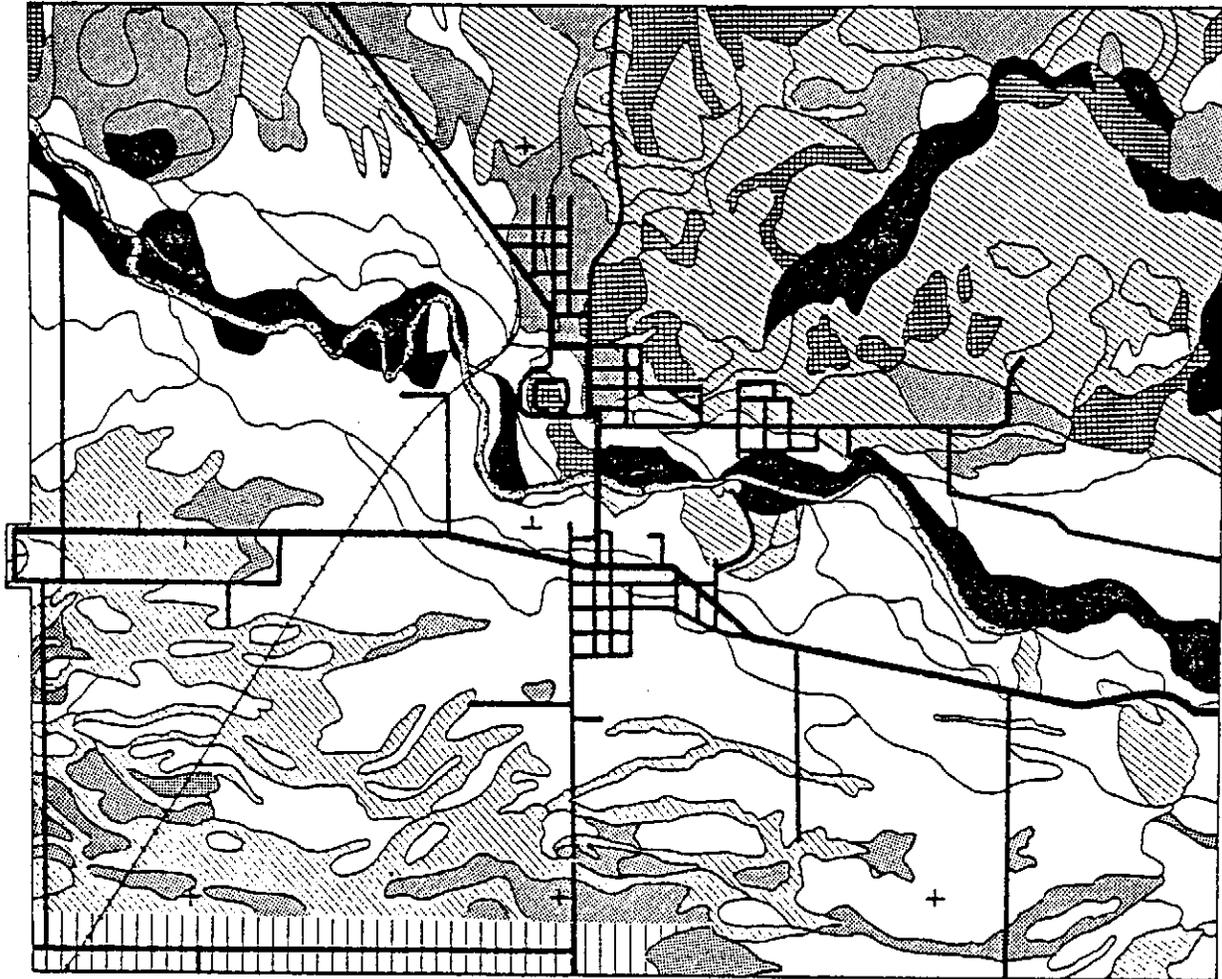
Surface water consists of all rivers and streams. Within the Brownsville Planning Area there is one river, the Calapooia and two creeks, Courtney Creek and a branch of Butte Creek.

#### Calapooia River:

The Calapooia River passes through the center of the Brownsville Planning Area and the City of Brownsville. Originating on the western slopes of the Cascade Mountains, the Calapooia River flows in a northwesterly direction. In its mountainous head waters, the Calapooia River Valley is steep and narrow; by the time it reaches Brownsville, approximately 38 miles downstream, the valley widens to about 2 miles. Brownsville sits at the mouth of the Calapooia River Valley.

Figure 5.0

# AGRICULTURAL CAPABILITY CLASSES



- II
- ▒ III
- ▨ IV
- ▩ VI
- VII

AGRICULTURAL  
CAPABILITY  
CLASSES

▩ INFORMATION NOT AVAILABLE

## BROWNSVILLE PLANNING AREA

SCALE: 1" = 1/2 MI.



Table 1

BROWNSVILLE PLANNING AREA: SOIL FACT SHEET								
Soil Name and Code	Agricultural Capability Class	% Slope	Foundation Suitability			Shallow Excavations	Restrictive Features	
			With Basement	Without Basement	Commercial Building			
<u>FLOODPLAIN SOILS</u>								
1A Camas gravelly sandy loam	IV	0-3%	Severe	Severe	Severe	Severe	Floods.	
10A Newberg fine sandy loam	II	0-3%	Severe	Severe	Severe	Severe	Floods.	
30A Chenalis silty clay loam	II	0-3%	Slight med.	Slight med.	Slight	Slight	Floods, low strength.	
40A McBee silty clay loam	II	0-3%	Severe	Severe	Severe	Severe	Floods.	
76A Alluvial land	VII	0-3%	Severe	Severe	Severe	Severe	Floods.	
<u>TERRACE SOILS</u>								
55A Conser silty clay loam	III	0-3%	Severe	Severe	Severe	Severe	Wet, shrink-swell.	
260A Malabon silty clay loam	II	0-3%	Moder- ate	Moder- ate	Moder- ate	Moder- ate	Shrink-swell, low strength.	
270A Coburg silty clay loam	II	0-3%	Severe	Moder- ate	Severe	Severe	Wet, low strength.	
280A Ambrig silty clay loam	IV	0-3%	Severe	Severe	Severe	N/A	High shrink-swell.	
290A Salem gravelly silt loam	II	0-3%	Slight	Slight	Slight	Moder- ate	----	
300A Clackamas gravelly loam	III	0-3%	Severe	Moder- ate	Moder- ate	Severe	Wet.	
310A Courtney silty clay loam	IV	0-3%	Severe	Severe	Severe	Severe	Wet, low strength, shrink-swell.	
<u>FOOTHILL SOILS</u>								
120A Pengra silty clay loam	III	1-4%	Severe	Severe	Severe	Severe	Wet, low strength, shrink-swell.	
406D Dixonville silty clay loam	IV	12-50%	Severe	Severe	Severe	Severe	Depth to rock, shrink-swell, low strength.	
408C Dixonville silty clay loam	III	3-12%	Severe	Severe	Severe	Severe	Depth to rock, shrink-swell, low strength.	
422E Nekia silty clay loam	IV	20-30%	Severe	Severe	Severe	Severe	Slope, depth to rock.	
431C Steiwer silt loam	IV	12-20%	Severe	Severe	Severe	Severe	Slope.	
440S Witzel very cobbly loam	VII	3-30%	Severe	Severe	Severe	Severe	Depth to rock, slope.	
469C Ritner cobbly silty clay loam	IV	2-12%	Severe	Moder- ate	Moder- ate	Severe	Depth to bedrock.	
470S Ritner cobbly silty clay loam	VI	3-50%	Severe	Severe	Severe	Severe	Depth to rock, slope.	
471K Ritner cobbly silty clay loam	VII	50-60%	Severe	Severe	Severe	Severe	Depth to rock, slope.	
474E Ritner cobbly silty clay loam	VI	12-50%	Severe	Severe	Severe	Severe	Slope, depth to bedrock.	
475C Panther silty clay	VI	2-12%	Severe	Severe	Severe	Severe	Wet, low strength.	
480B Bellpine silty clay loam	II	3-12%	Severe	Moder- ate	Moder- ate	Moder- ate	Slope, depth to bedrock, shrink-swell.	
481C Bellpine silty clay loam	III	12-20%	Severe	Severe	Severe	Severe	Slope, depth to bedrock, shrink-swell.	
482E Bellpine silty clay loam	IV	20-30%	Severe	Severe	Severe	Severe	Slope, depth to bedrock, shrink-swell.	
492D Willakenzie clay loam	IV	20-30%	Severe	Severe	Severe	Severe	Slope.	
520B Hazelair silty clay loam	II	2-7%	Severe	Severe	Severe	Severe	Wet, depth to rock.	
521C Hazelair silty clay loam	IV	7-20%	Severe	Severe	Severe	Severe	Wet, depth to rock.	
*classified under: Foundations for Low Buildings.								

Minor sources of pollution in the Calapooia River come from upstream gravel removal and stream-bed excavation. This work increases the turbidity of the water, as well as the total dissolved solids level. The City of Brownsville obtains its water supply from five diffusion wells located 200 feet from the river. Total surface water pollution of the Calapooia, at this time, is relatively minor.

Upstream from Brownsville, the Calapooia River drains an area of approximately 150 square miles.<sup>2</sup> Flooding is a natural hazard associated with the Calapooia River. Five large floods have occurred on the Calapooia River since the U.S. Geological Survey began taking stream gage readings at Holley. The two largest of those floods occurred in December 1945 and December 1964. Both of these floods have a return interval of approximately 20 years. It has been estimated that the base flood (100 year flood) which has a 1% chance of happening in any given year would be two feet higher than the December 1964 flood. A flood such as the base flood (100 year flood) could cause extensive damage if precautions are not taken. The three other major floods which have occurred in Brownsville were in December 1955, February 1961, and January 1972.

Information on flooding (Figure: 6.0) has been developed by the U.S. Army Corps of Engineers for the U.S. Department of Housing and Urban Development Flood Insurance Administration.

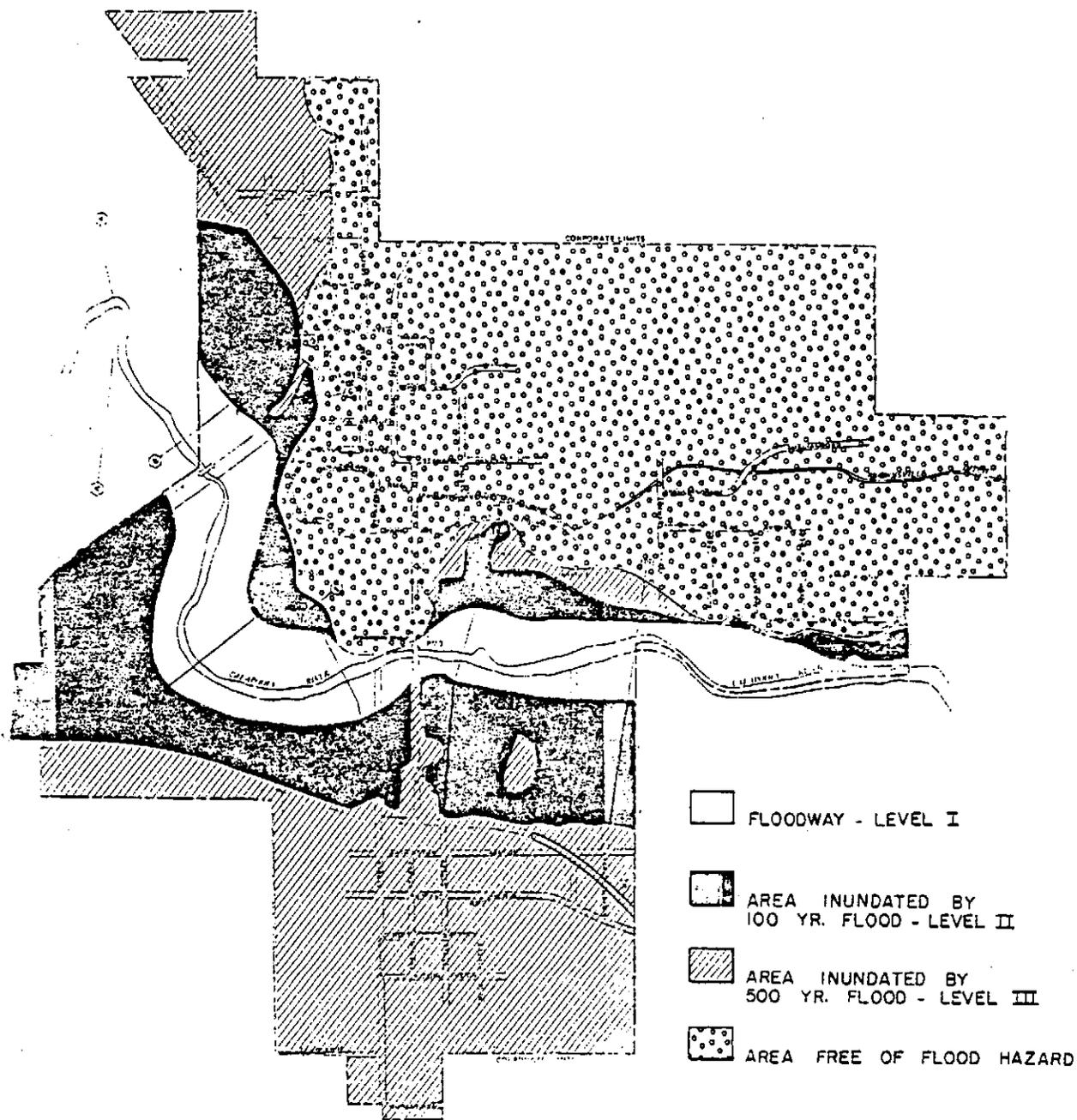
Flood hazard information developed by the Corps is divided into three levels of hazard: Level I identifies areas that would be in the floodway or area of moving water and debris during a flood; the floodway is the most hazardous area. Level II identifies the base flood (100 year flood). Flood waters in Level II areas will cause damage. This area is referred to as the floodplain. The city is responsible under the Flood Disaster Protection Act of 1973 and the National Flood Insurance Act of 1968, to regulate development in areas identified as Level I and II. The area identified as Level III is an expanded floodplain which would only experience major flooding during the worst conditions. This has been referred to as the regional or 500 year flood. The city is not required to take any protective action in Level III areas.

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2. U.S. Department of Housing and Urban Development Federal Insurance Administration.

Figure 6.0

# FLOOD HAZARD MAP

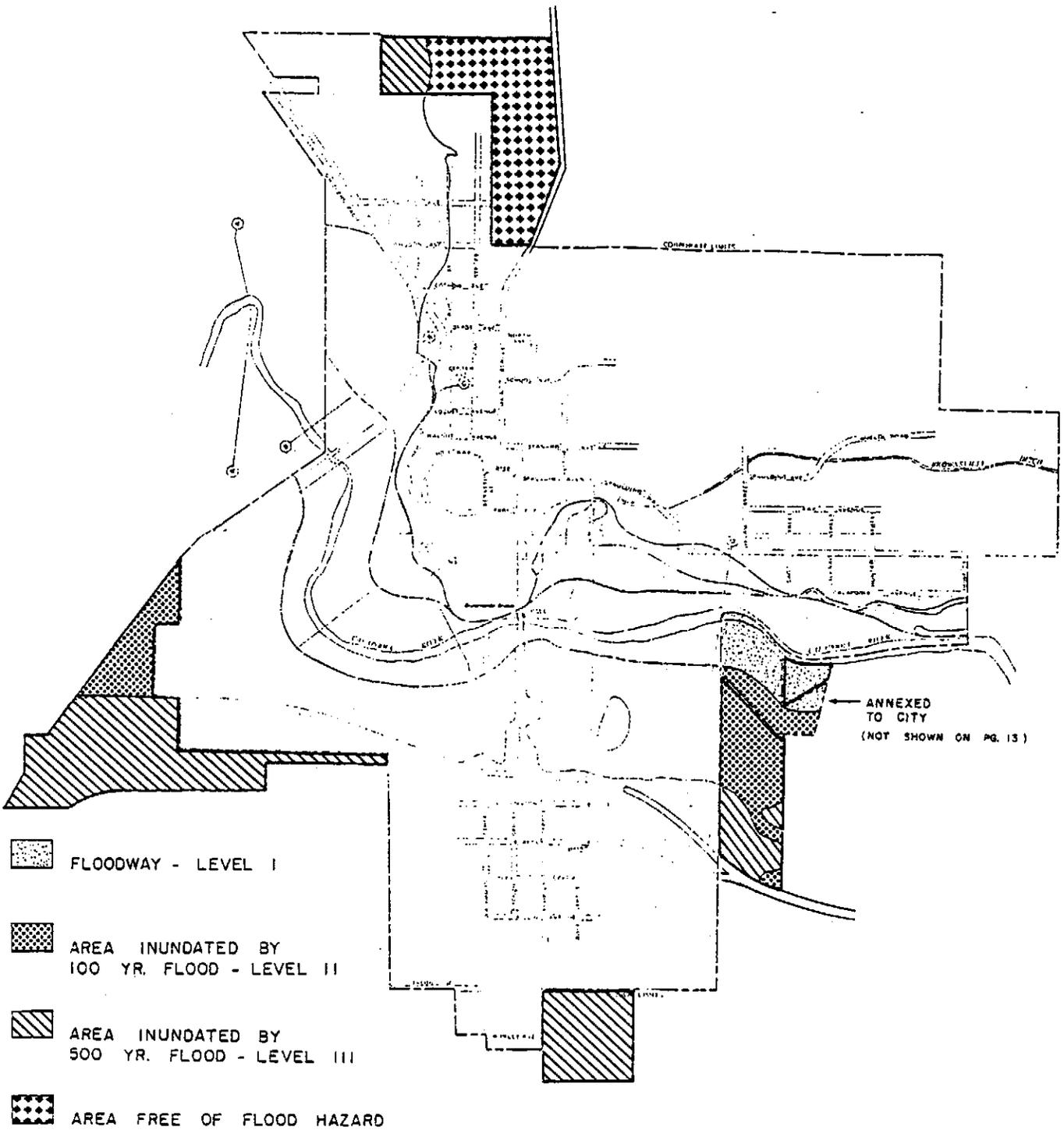


**NOTE:**

This map is a reduction of the Floodway and Flood Boundary Map, Community Panel number 410138 0001 C prepared for the U.S. Dept. of H.U.D. Federal Insurance Administration. (This is a preliminary)



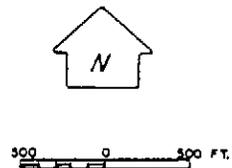
# FLOOD HAZARD MAP WITHIN U.G.B.



Note; This map is a reproduction of the following:  
 Flood Plain Information Map  
 Calapooia River at Brownsville, Oregon  
 Flooded areas and water surface profiles  
 U.S. Army Engineer Dist., Portland

( This is a preliminary map )

July 1978



Courtney Creek crosses the southern portion of the Planning Area. Originating in the hills on the south side of the Calapooia Valley, Courtney Creek drains most of the southern Planning Area. The main branch of Courtney Creek carries water year round while lesser branches are easily interrupted during dry weather.

Courtney Creek has been identified as having a flood hazard in Bulletin 84 Environmental Geology of Western Linn County. However, the full extent of flooding or the severity of flooding has not been determined.

A section of Courtney Creek singled out in the Bureau of Land Managements (B.L.M.) Mohawk-Dorena Oil and Gas Leasing Environmental Assessment Record Map 7 identified a trout (cutthroat-rainbow) habitat.

Butte Creek provides drainage to a small portion of the northern Planning Area through one of its lesser branches. The important aspect of this lesser branch of Butte Creek is that a portion of the Planning Area drains north. Little else is known of this lesser branch.

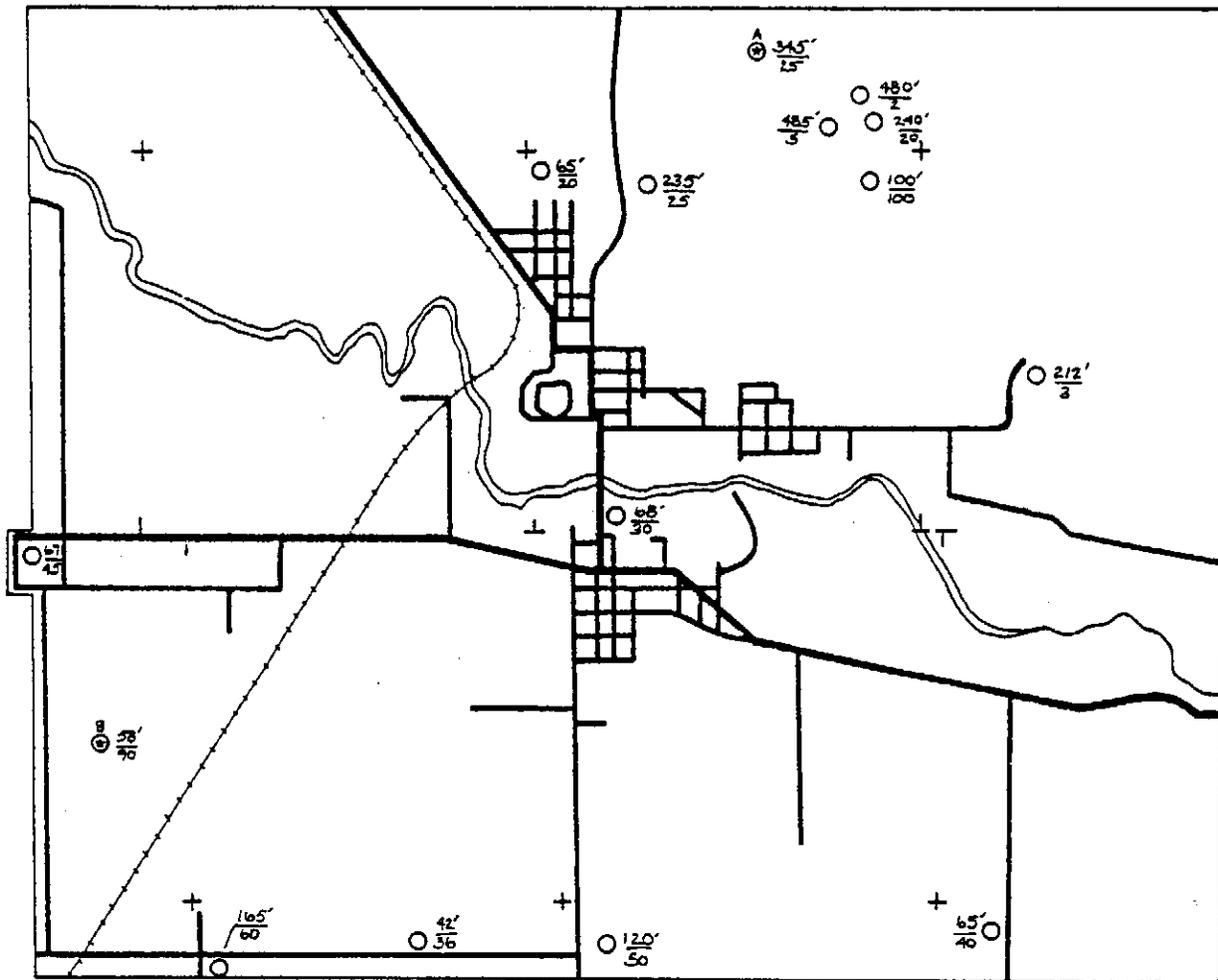
#### Groundwater: Figure 7.0

Precipitation, falling as rain or snow, is the principal source of groundwater. Part of the precipitation evaporates, part is transpired to the atmosphere by vegetation, some runs off as surface flow, and some infiltrates into the ground to replenish soil moisture. Part of the water that infiltrates percolates to the zone of saturation where it recharges the groundwater system. The water in a saturated zone moves by force of gravity down-grade to points of discharge, such as springs, seeps along stream channels, or wells. Rock materials that yield usable quantities of water to wells and springs are called aquifers.

The upper surface of a zone of saturation is the water table, and the water in a zone of saturation is groundwater. The water table is regionwide, but other water tables of minor extent (perched-water tables) may occur where groundwater collects above poorly permeable materials that are above the main water table. Perched-water bodies generally yield only small quantities of water to

Figure 7.0

# GROUND WATER AVAILABILITY



○ APPROXIMATE WELL LOCATION

20' DEPTH OF WELL IN FEET  
GALLONS PER MINUTE

⊗ CHEMICAL ANALYSIS AVAILABLE

A-B INFORMATION AVAILABLE IN TABLE

SOURCE:

OREGON STATE ENGINEER  
GROUND WATER REPORT NO. 22  
1975

# BROWNSVILLE PLANNING AREA

SCALE: 1" = 1/2 MI.



wells because the rate of recharge and volume of water in storage are often small. (Geological Survey Water Supply Paper 2040)

Well records are helpful in understanding the availability of groundwater. Several studies have been developed which address the subject of groundwater in the Brownsville Planning Area.

- 1) Groundwater Data in the Harrisburg-Halsey Area, Central Willamette Valley, Oregon Groundwater Report No. 22 is a record of well logs which detail such things as location of well, depth, gallons per minute, subsurface materials and water levels.
- 2) Groundwater in the Harrisburg-Halsey Area Southern Willamette Valley, Oregon Geologic Survey Water-Supply Paper 2040 is an in depth study of groundwater characteristics including a selective chemical analysis of groundwater.
- 3) Brownsville Water Supply System, 1973, Kraus & Dalke Consulting Engineers. This study was developed for the City of Brownsville to assess options for their water supply system; and it includes information from test wells and water quality analysis.
- 4) Brownsville Water Supply Development Environmental Review Record. CH<sub>2</sub>M Hill 1977, a water study analysis including information on test wells in Brownsville.

Chemical analysis of groundwater is helpful because certain activities may be sensitive to chemicals or hardness of the water. Table 2 displays all information obtained from a chemical analysis of selected wells in the region including two wells in the Brownsville Planning Area.

Minor groundwater pollution in the Brownsville Area centers around failing septic systems to the west of town. Brownsville municipal water is not threatened by this type of pollution, but private well-users in the area may be exposed to water-borne diseases if the problem is not controlled. Linn County has been tightening its septic controls.

It should be noted that the Brownsville city water supply is periodically tested using a chemical analysis.

TABLE 2

GROUND WATER

GROUND WATER, HARRISBURG-HALSEY AREA, OREGON

Table 7.—Chemical analyses of water in the Harrisburg-Halsey area  
[Analyses by the U. S. Geological Survey unless otherwise noted]

Location No.	Water-bearing material	Depth of well, feet	Zinc (ppm)	Iron (ppm)	Manganese (ppm)	Calcium (ppm)	Magnesium (ppm)	Sodium (ppm)	Potassium (ppm)	Bicarbonate (ppm)	Sulfate (ppm)	Chloride (ppm)	Fluoride (ppm)	Milligrams per liter										pH	Temperature, C
														Phosphate (ppm)	Born (ppm)	Arsenic (ppm)	Dissolved solids determined constituents (ppm)	Hardness (ppm)	Noncarbonate hardness (ppm)	Sodium sulfate (ppm)	Specific conductance at 25 C (microhm/cm)				
18S-2W-54da	Volcanic rocks	71	0.13						122	0	0	0	0	0	170	81	1.00	0	2.5	528	7.5	8.5	47		
18S-2W-54fb	Sandstone	12 5 73	32	0	0	90	90	68	1.3	303	0	0	0	0	300	100	0	75	1,100	7.2	8.5	47			
18S-2W-54gc	do	12 5 73	35	48	10	59	96	150	1.3	117	0	0	0	0	620	190	0	30	1,100	7.2	8.0	46			
18S-2W-54hd	Volcanic rocks	12 5 73	43	20	23	27	69	11	2.3	181	0	0	0	0	250	96	0	20	340	7.1	8.0	46			
18S-2W-54ia	Sandstone	12 1 73	35	5	32	11	29	71	1.3	233	0	0	0	0	100	180	0	2.4	230	7.4	9.0	48			
18S-2W-54ib	Sand and gravel	12 1 73	36	88	130	11	12	12	8	130	0	0	0	0	200	130	0	5	301	7.3	9.0	48			
18S-2W-54ic	Volcanic rocks	12 1 73	40	0	0	11	1	30	6	110	0	0	0	0	160	39	0	2.1	199	8.0	8.5	47			
18S-2W-54id	Volcanic rocks	6 58	51	58	47	350	20	130	0	1,000	0	0	0	0	3,100	1,100	4.5	7.0	10.5	10.5	51				
18S-2W-54ie	Sand and gravel	12 4 73	59	0	150	32	11	15	1.2	80	0	0	0	0	230	140	0	6	309	7.3	8.0	46			
18S-2W-54if	do	12 4 73	40	140	72	120	36	97	2.5	173	0	0	0	0	740	450	310	2.0	1,170	7.6	8.0	46			
18S-2W-54ig	Sandstone	12 6 73	35	0	89	29	12	30	0.8	165	0	0	0	0	240	120	0	1.2	300	7.2	9.0	48			
18S-2W-54ih	do	12 5 73	50	0	0	16	10	8.0	7.1	105	0	0	0	160	66	0	1	100	0.5	9.0	48				
18S-2W-54ii	Sand and gravel	12 3 73	45	67	16	170	10	100	1.5	110	0	0	0	0	800	120	320	2.0	1,520	7.3	9.0	48			
18S-2W-54ij	Sand and gravel	12 5 73	33	0	13	3.5	8.1	6	7.1	0	2.8	1.0	1	0.5	100	51	0	5	127	7.7	9.5	49			
18S-2W-54ik	gravel	12 5 73	34	10	0.7	15	3.2	31	1.1	135	0	0	0	0	160	51	0	1.9	225	8.0	8.5	47			
18S-2W-54il	Volcanic rocks	12 5 73	12	0	0.68	11	1.1	61	7	163	0	0	0	0	230	32	0	1.7	327	8.3	9.0	47			
18S-2W-54im	Sand and gravel	12 1 73	34	16	23	39	8.3	35	1.1	118	0	0	0	0	260	130	35	3.3	452	7.7	9.5	49			
18S-2W-54in	do	12 1 73	32	0	21	12	8.6	10	1.3	132	0	0	0	0	290	140	32	3.5	478	7.9	9.5	49			
18S-2W-54io	do	12 1 73	42	0	37	130	22	89	2.4	235	0	0	0	0	780	490	300	1.8	1,320	7.1	12.0	54			
18S-2W-54ip	Volcanic rocks	12 5 73	74	23	67	75	30	13	1.6	125	0	0	0	0	490	310	210	3	645	6.8	5.5	42			
18S-2W-54iq	Sandstone	12 5 73	11	59	33	46	11	62	3.3	139	0	0	0	0	400	100	38	2.1	585	7.7	9.5	49			
18S-2W-54ir	Sand and gravel	3 61	31	29	8.5	13	62	6.2	3.7	170	0	0	0	0	530	270	0	0	530	7.1	8.0	46			
18S-2W-54is	do	12 4 73	25	0	0	19	13	14	1.0	113	0	0	0	0	200	100	6	6	265	7.5	8.0	46			
18S-2W-54it	do	9 11 73	36	21	48	32	19	39	2.1	200	0	0	0	0	200	160	0	1.1	473	7.7	11.0	52			
18S-2W-54iu	do	12 4 73	50	0	0	39	23	28	1.2	127	0	0	0	0	320	190	88	9	511	7.2	8.0	46			
18S-2W-54iv	Sandstone	12 3 73	23	100	1081	250	9.1	150	0.9	165	0	0	0	0	1,000	680	330	2.7	2,220	7.3	7.0	45			
18S-2W-54iv	do	12 6 73	14	11	0	9.8	3.5	110	1.3	291	0	0	0	0	310	39	0	7.7	521	7.5	6.5	41			
18S-2W-54iv	do	12 6 73	28	0	0	4.3	9	5.4	4.1	1.6	0	0	0	60	14	0	6	32	9.9	7.0	45				
18S-2W-54iv	do	12 5 73	11	23	11	150	4.7	360	2.6	61	0	0	0	0	1,100	390	110	1.9	2,690	7.1	5.3	47			
18S-2W-54iv	Sandstone and gravel	12 1 73	39	13	633	16	5.7	9.5	1.0	7.7	0	0	0	0	120	63	0	5	196	7.1	5.3	47			
18S-2W-54iv	Sandstone	12 4 73	17	12	229	97	150	4.6	195	0	0	0	0	0	1,000	950	790	2.1	2,700	7.1	8.0	46			
18S-2W-54iv	Sand and gravel	12 6 73	39	0	0.25	31	16	6.9	1.6	72	0	0	0	0	250	150	92	3	355	7.0	9.0	48			
18S-2W-54iv	do	12 4 73	53	0	0.08	19	12	22	1.3	136	0	0	0	0	300	97	0	1.0	292	7.7	7.7	47			
18S-2W-54iv	do	1 4 73	23	17	31	12	6.1	13	1.2	94	0	0	0	0	420	130	0	0	422	7.5	10.0	50			
18S-2W-54iv	Sandstone	12 3 73	23	0	0	34	12	24	1.3	213	0	0	0	0	260	180	0	7	340	6.8	10.0	50			
18S-2W-54iv	Sand and gravel	12 4 73	35	0	0.31	31	15	13	2.1	125	0	0	0	0	220	140	34	5	340	6.8	10.0	50			

\*Analyses by Charlton Laboratories, Portland, Oreg.

(A) and (B) relate to ground water map. (Fig. 7.0)

Hardness range (mg/l as CaCO<sub>3</sub>)

0-60 ..... Soft  
61-120 ..... Moderately hard  
121-180 ..... Hard  
> 180 ..... Very hard

Description

### Land:

The Brownsville Planning Area has a diversified landscape. Much of the area to the east, south and west is relatively flat, affording many opportunities for a variety of uses of which agriculture predominates.

The northeast portion of the Planning Area, which includes much of the City of Brownsville, is dominated by foothill type relief. It would appear that the foothills pose some problems to development as this area, particularly within the city limits, is sparsely developed.

### Minerals: Figure 8.0

The primary mineral resource in the Brownsville Planning Area is gravel and quarry rock. Gravel mining activity occurs along and in the Calapooia River. Quarry activity occurs in the Little Butte Formation, which forms the hills above Brownsville.

At present, there are two active gravel operations in Brownsville. The largest is located adjacent to the south side of the Calapooia River near the eastern city limits. This operation appears to be contained within two soil types which are identified as 76A Alluvial Land and 1A Camas Gravelly Sand Loam.

The other active gravel operation has been engaged in removing river bars on the west side of the City. Soil information indicates that this area is also identified as 76A Alluvial Lands.

Historically, quarry activity has taken place in several areas in and around the City of Brownsville. Quarry stone used to build the early homes of Brownsville came from the area of the abandoned townsite of Union Point just south of Brownsville.<sup>3</sup> A review of the soil map indicates that all quarry activity has taken place in areas identified as soil type 474E, Ritner Cobbly Silty Clay Loam 12-30% slope.

### Other Minerals:

In 1979, a test well was drilled south of the Brownsville Planning Area. The purpose of the test well was explor-

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3. Land of Linn.



atory, in search of oil and/or natural gas. The well was proposed to reach a depth of 14,000 feet. However, only a trace of natural gas was found and the well was abandoned. Another proposed site for oil exploration is just north of the Brownsville Planning Area at Plainview. However, because of negative results at the previously mentioned location, this site may never be explored.

Semi-precious gems, mostly agates, jasper and petrified wood are found along the banks of the Calapooia River. The occurrence of these minerals increases as one moves up-stream. Names such as Calapooia Blue and Holley Blue Agates speak to the regional uniqueness of some of these minerals. The headwaters of the Calapooia River were productively mined for gold in the late 1800's. By 1812 the gold for the most part had been played out. (Mullen, 1971)

#### Vegetation Cover: Figure 9.0

It is believed that the flat open spaces of the valley floors have never been covered with forest. Grasses and camas were most likely the natural vegetation. In support of this, the Indian name Calapooia refers to "place of plentiful grass." (Mullen, 1971) Fires set by the Indians may also have been responsible for some of the grass covered slopes adjacent to the valley floor. However, in most instances, as the valley floor gives way to the foothills the grass lands give way to the forest.

Forest lands (Figure 10.0), like agricultural lands, are protected by State law. To aid in the identification of forest land, the State Department Revenue Land Classification, is used along with Forest Service Site Class system. Based on these classification schemes, the northeastern portion of the Planning Area has been identified as forest resource land. However, forest lands should be looked on as a resource and utilized to the fullest to produce forest products, urban buffers, windbreaks, wildlife and fisheries habitat, livestock habitat, scenic corridor, and recreational use.

The other important vegetation cover occurs along the river banks and stream channels. The term used to address the vegetation along a water channel is "riparian". Riparian vegetation has many important qualities. Probably its greatest value is in providing habitat for

Figure 9.0

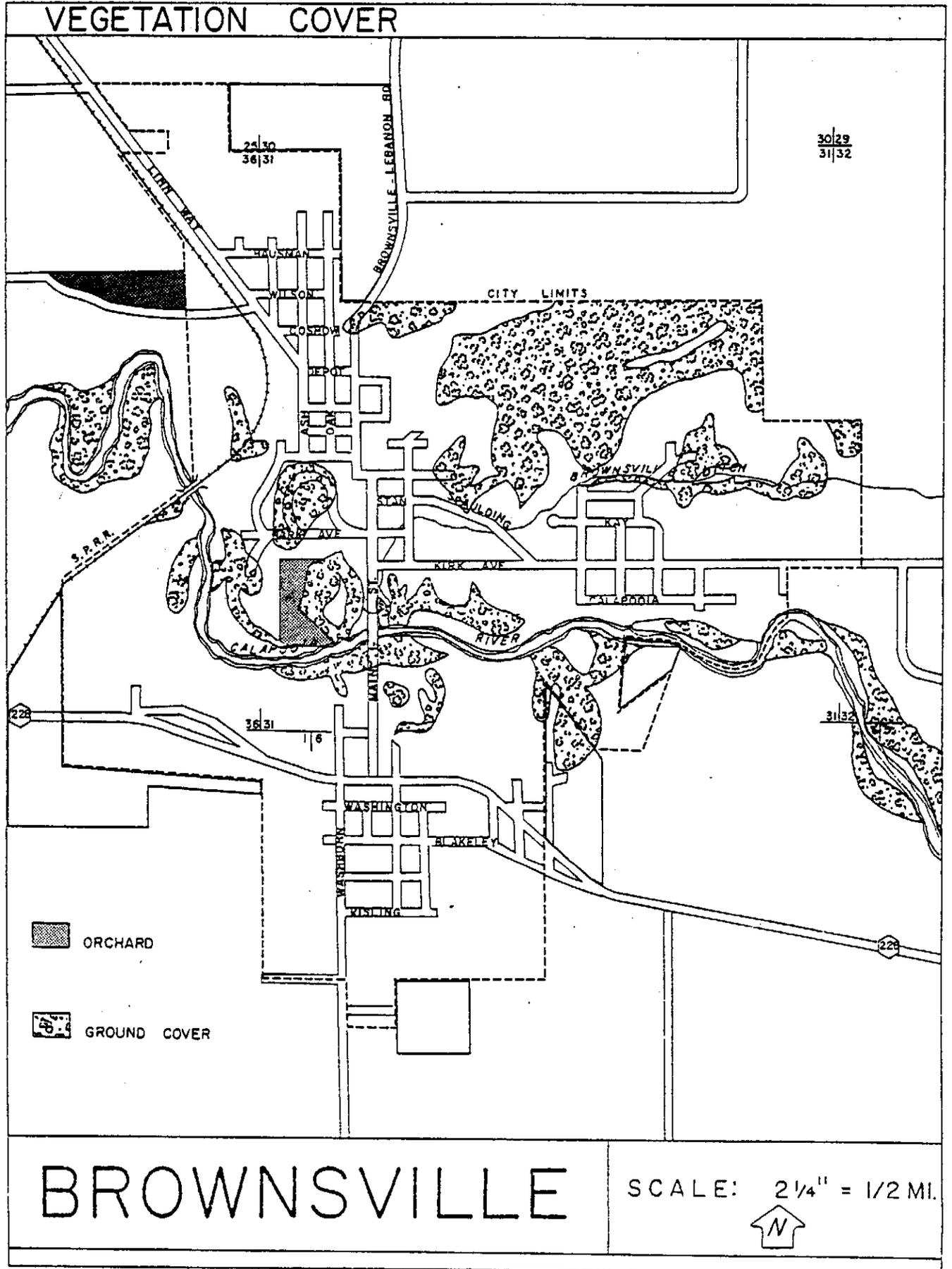
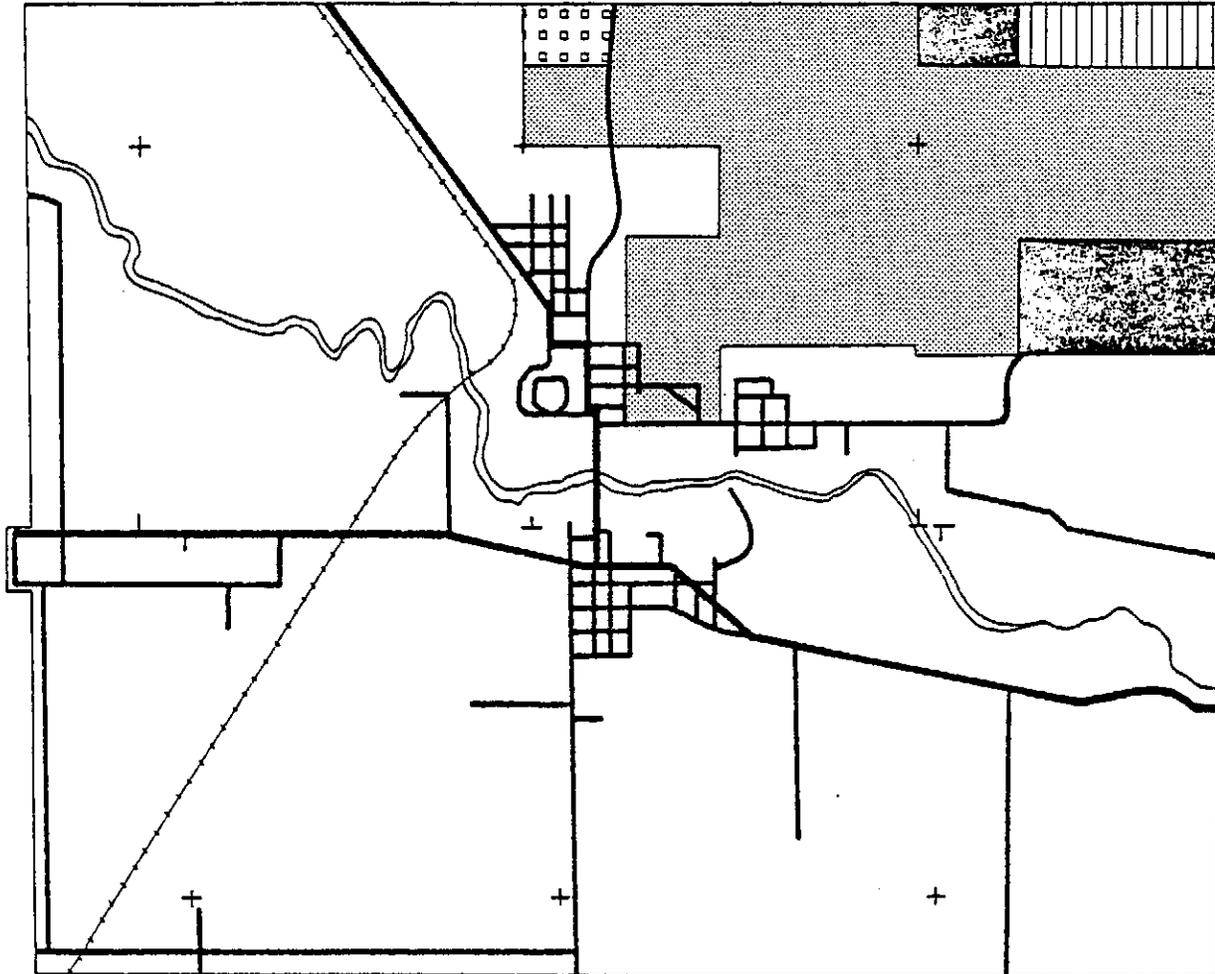


Figure 10.0

# FOREST CAPABILITY CLASSES



- NO SITE CLASS
- LAND CLASS FC  
SITE CLASS II- & III\*
- LAND CLASS FD  
SITE CLASS III
- LAND CLASS FE  
SITE CLASS III- & IV\*
- LAND CLASS FF  
SITE CLASS IV & IV-

## EXPLANATION OF CLASSIFICATION

	DEPT. OF REVENUE LAND CLASS	FOREST SERVICE SITE CLASS
MOST PRODUCTIVE	FA	I
	FB	II & II*
	FC	II- & III*
	FD	III
	FE	III- & IV*
	FF	IV & IV-
LEAST PRODUCTIVE	FG	V

**BROWNSVILLE**  
PLANNING AREA

SCALE: 1" = 1/2 MI.



wildlife. The relationship between riparian vegetation and wildlife is tied so closely to the natural system that removing the riparian vegetation would severely impact the survival of certain fish, birds, and animals.

### Fish and Wildlife

Within the total environment, each native bird, mammal, reptile, and amphibian has its own habitat: a complex and often narrowly specific set of conditions to which it is adapted and without which it cannot survive. Loss of habitat need not be total to exclude an animal from a given area; it is enough to remove only one element which fills a critical need. Food, water, and vegetative cover or other natural features necessary for escape, shelter, and reproductive needs must be present in the kind, quantity, and distribution peculiar to the requirements of the individual animal. The key to maintaining diverse and abundant wildlife is simply to provide an abundance of habitats of a diverse nature suited to the needs of all species.

Big game species found within the Brownsville Planning Area include black-tailed deer and Roosevelt elk. While black-tailed deer are very common, the Roosevelt elk are scarce and usually appear during the winter months when the highlands (above 2500') are frozen.

The Calapooia drainage below 2500' has been identified as sensitive big game habitat particularly adjacent to forest lands.

Several species of birds and small animals are found around the Brownsville Area. Included in this group are ring-necked pheasant,\* grouse, quail, doves, pigeons, and several varieties of song bird. Small animals include squirrel, raccoon, nutria, opossum, skunk, and many others.

Forest cover and riparian areas provide the habitat necessary for these species.

Fish: The Calapooia River and many of its small tributaries are important habitat for a variety of fish.

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\* The first China ring-necked pheasant in the United States was released in 1882 at Petersons Butte just north of the Brownsville Planning Area.

Large Chinook and Coho Salmon, Steelhead, and Rainbow and Cutthroat Trout use the waters of the Calapooia to spawn.

The State Department of Fish and Wildlife has identified the Calapooia River and Courtney Creek as having important riparian vegetation for the support of fish and wildlife. The Department of Fish and Wildlife has also identified the Calapooia River, Courtney Creek, Warren Creek, and Cochran Creek as sensitive habitat for fish.

Goal 5 requires an inventory of all applicable open space, scenic and historic areas, and natural resources. There are no potential or existing wilderness areas, or federal or state wild and scenic waterways within the planning area. No potential or approved Oregon recreation trails pass through the area.

## CULTURAL RESOURCES

Cultural resources involve the activities of man on the natural environment. Brownsville is an area rich in cultural resources. In this section of the background studies the historic aspects of Brownsville will be reviewed along with information pertaining to: citizen involvement, land use, economics, public and private facilities, housing, transportation and urbanization.

## HISTORICAL PROFILE

It is believed that the first people to inhabit the Brownsville area were the mound-builders whose earthen mounds line the Calapooia River from Brownsville to Albany.

When the first settlers arrived in the Brownsville area in the mid-1840's, the Calapooia people roamed the land. The Calapooia survived on the rich natural abundance as a hunting and gathering people.

The Calapooia used the canoe as a main vehicle of transport. By means of the canoe, families and whole communities went to their favorite fishing grounds, hunting terrain, nut and berry patches, or to places of abundant wild roots and plants.<sup>2</sup>

In 1847 through 1859, three Indian wars broke out. They were the Cayuse War 1847-1850, the Rogue River War 1850-1856, and the Yakima War 1852-1859. Although the Calapooia people were peaceful and most likely they did not participate in any of the wars, the fear of uprising must have contributed to the action which in 1856 displaced some 242 Calapooia to the Grand Ronde Indian Reservation.<sup>3</sup>

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1. Linn Benton Community College Archeologist M. Rosenson.
  2. History of Linn, Linn County Pioneer Memorial Association, a W.P.A. Project.
  3. Land of Linn, F. Mullen (out of context).

The Calapooia who were not displaced were gradually absorbed into the new culture. On August 22, 1922, Aunt Eliza, believed to be the last of the Calapooia people, died in Brownsville. She is buried at Pioneer Cemetery. On June 10, 1924, Oregon Indians were given full citizenship and no longer were compelled to live on reservations.<sup>4</sup>

Several mounds have been identified within the Brownsville Planning Area (Figure 10.5). The presence of these mounds would indicate a high level of prehistoric human activity within this area. The mounds which were identified and mapped by E. H. Margason, Lee Rohrbough, Dr. J. L. Hill, J. G. Crawford, Prof. John B. Horner and A. (Foot) Blevins are by no means a complete inventory of prehistoric sites. More information needs to be gathered on the Calapooia and all people who inhabited the area. If a conscious effort is not made to identify, protect and understand the cultural resources of the area many of these resources may be lost forever, as new development moves in, disrupts the land and new cultural resources begin.

The map shows two mounds within the Brownsville UGB. Discussions with city residents and the landowner indicate that the mound south of the Calapooia River has been destroyed by past industrial activities in the area and is not a valuable resource site. The second mound, north of the river, may be valuable as a resource site but the existing inventory is inadequate to accurately identify the location, quality and quantity of the site. Further study is needed to address the value of the second mound. [Paragraph added by Ord. No. 524, § 15, passed September 8, 1981.]

It is believed that in 1812 Donald McKenzie of Astor's Pacific Fur Company was one of the first white men to venture into the region. He was followed by Duncan M. Dougall who, while in search of beavers and other fur bearers, spent some months among the col-lap-poh-yea-ass.<sup>5</sup>

"...It was the immigration of 1845 that made the first settlement in this country, although they did not arrive

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4. Land of Linn, F. Mullen.

5. History of Linn County.

Figure 10.5

# PRE - HISTORIC MOUNDS

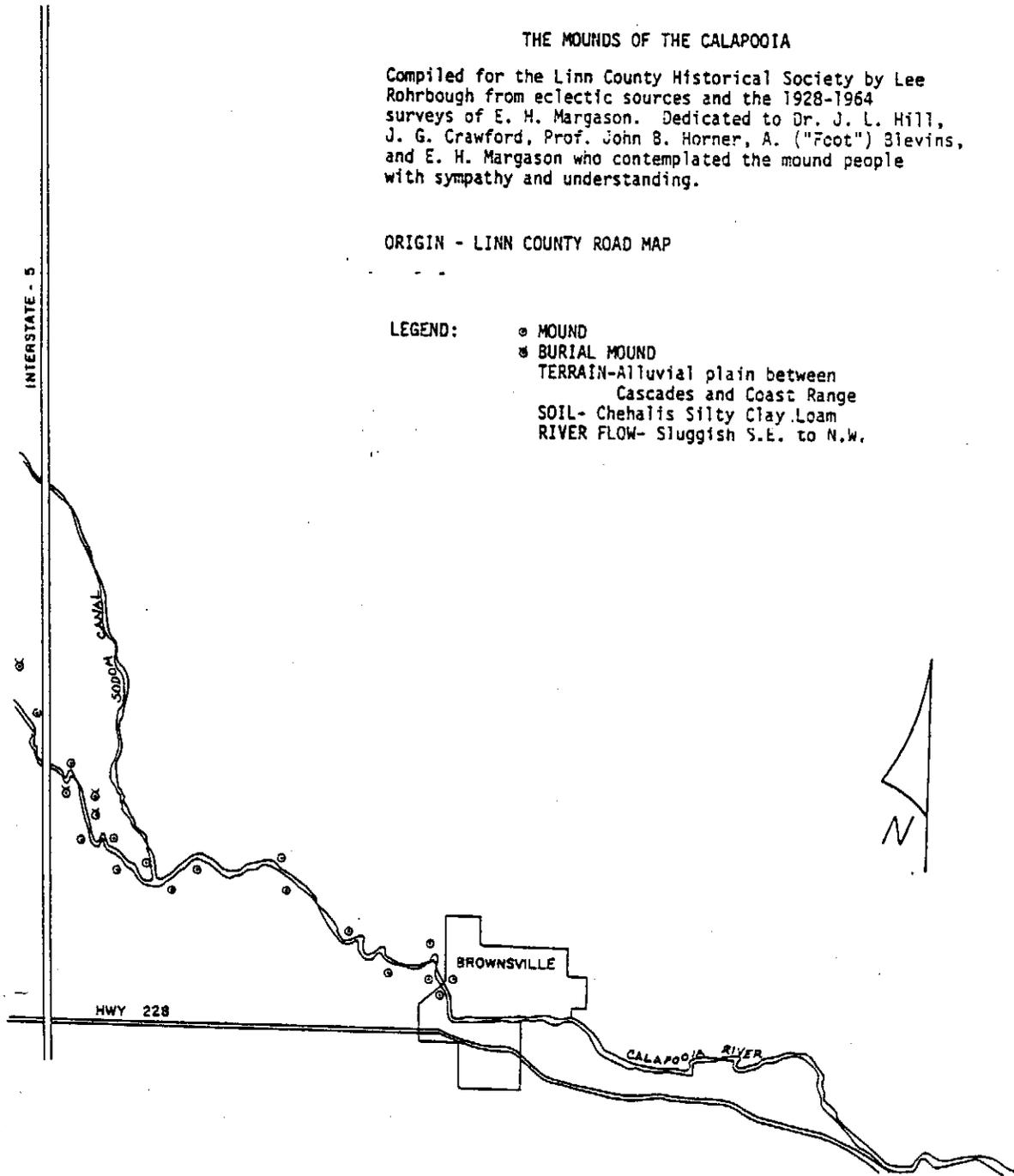
## THE MOUNDS OF THE CALAPOOIA

Compiled for the Linn County Historical Society by Lee Rohrbough from eclectic sources and the 1928-1964 surveys of E. H. Margason. Dedicated to Dr. J. L. Hill, J. G. Crawford, Prof. John B. Horner, A. ("Foot") Blevins, and E. H. Margason who contemplated the mound people with sympathy and understanding.

ORIGIN - LINN COUNTY ROAD MAP

LEGEND:

- MOUND
- ⊗ BURIAL MOUND
- TERRAIN-Alluvial plain between Cascades and Coast Range
- SOIL- Chehalis Silty Clay Loam
- RIVER FLOW- Sluggish S.E. to N.W.



# BROWNSVILLE PLANNING AREA

here until the spring of 1846. Up until that time, there was only one settler east of the Willamette River and south of the North Santiam.<sup>5</sup>

The Willamette Valley was settled from the north to the south, the main route of immigration being along the valley edge. As the settlers moved south the trend was to move ahead of the crowd. It was this trend and the urge to see what was over the next hill that in 1845 or 1846 brought James Courtney, Isiah Hutchins, Josiah Osborne, William Finley, Elias Walters, and Austin Walters into the Brownsville area. These men were at the forefront of a wave of humanity that would continue moving south into the frontier. In the fall of 1846, James Blakely, Hugh L. Brown, Jonathan Keeney, and R. C. Finley arrived in the area. The following year, 1847, Alexander Kirk and his son Riley arrived.<sup>6</sup>

All water bodies posed a problem to the immigrants who wanted to reach the other side and beyond. In 1847, Alexander Kirk built a ferry which was used during the winter to cross the Calapooia River. The north ferry landing was in the vicinity of present day Pioneer Park. Because of the ferry, Brownsville was first called Kirk's Ferry or Kirk's Landing.<sup>7</sup>

When gold was discovered in California in 1848-1849, many of the first settlers headed for the riches of the gold fields. Brownsville witnessed this sudden increase in the human parade as the main overland route passed through Brownsville.

The 1850's were prosperous; a post office was established and named Calapooia. James Blakely and Hugh Brown started a store. In 1853 Blakely had Luther White survey and lay out a town site on the south side of the Calapooia River and named it after his uncle, Hugh Leeper Brown.

In 1856, a bridge was built over the Calapooia River and in 1858, a ditch was constructed to supply power.<sup>8</sup> A grist mill was established. Also in 1858, the City of Amelia was laid out in what is now East Brownsville.<sup>9</sup>

- 
5. History of Linn County.
  6. Ibid.
  7. Ibid.
  8. Ibid.
  9. Ibid.

Industrial activity moved into full swing with the construction in 1861 of a woolen mill.<sup>10</sup> The woolen mill was Brownsville's sustaining industry. Although it experienced the peaks and valleys of economic reality, it managed to continue far into the mid-1900's.

North Brownsville was laid out in 1863 creating a third city; all three were as close to each other as one city, and in 1895 the three cities were incorporated as the City of Brownsville.<sup>11</sup> Much has been written about Brownsville. As such, the preceding was only an effort to explain the beginnings of the community of Brownsville. Throughout the background studies, reference will be made to pertinent historical aspects of Brownsville. For those who are interested in further historical information on Brownsville, the following references should be explored.

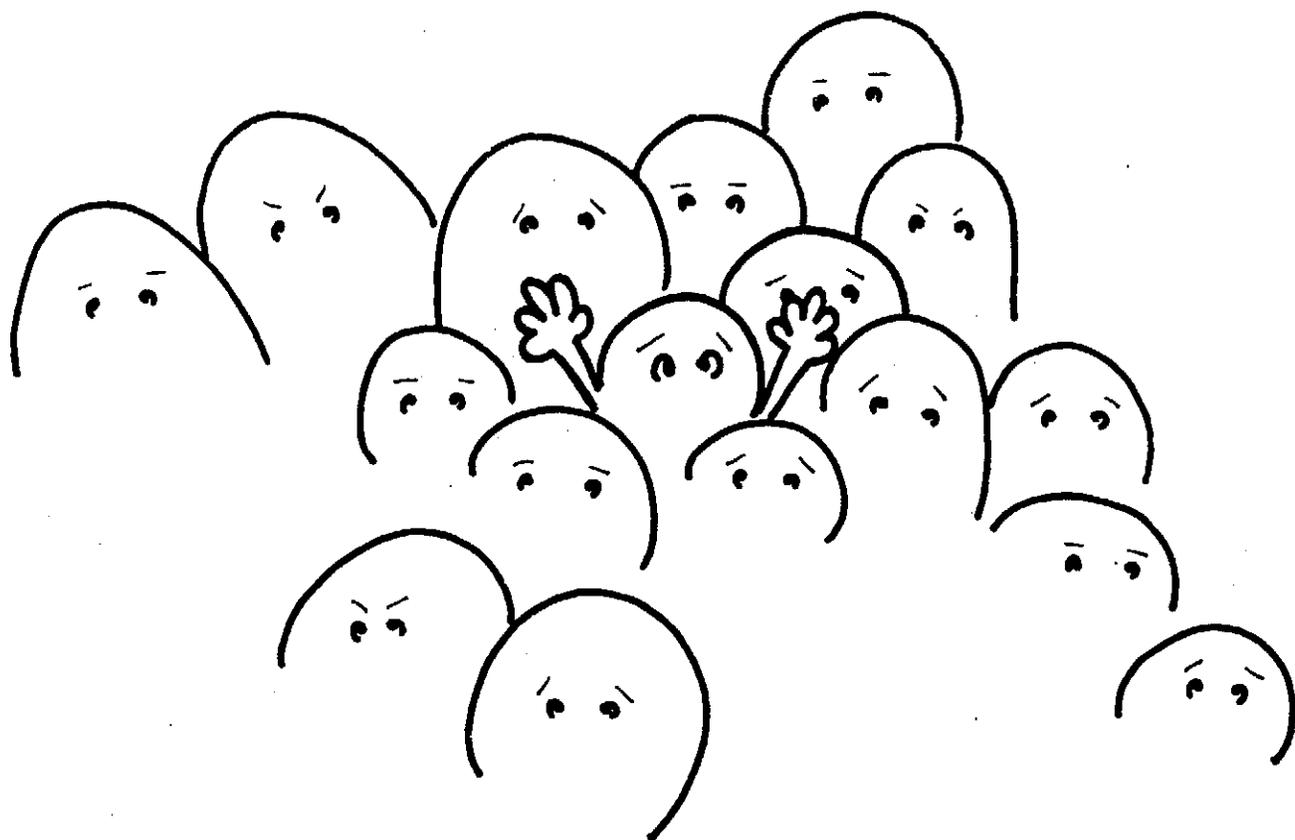
1. Older residents or former residents of Brownsville.
2. History of Linn County: W.P.A. Writers Program.
3. The Land of Linn, by Floyd C. L Mullen.
4. Brownsville, Margaret Standish Carey and Patricia Hoy Hainline.
5. The Brownsville Times, files (Local Newspaper).

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10. History of Linn County.

11. Ibid.

# CITIZEN INVOLVEMENT BACKGROUND STUDIES



## CITIZEN INVOLVEMENT

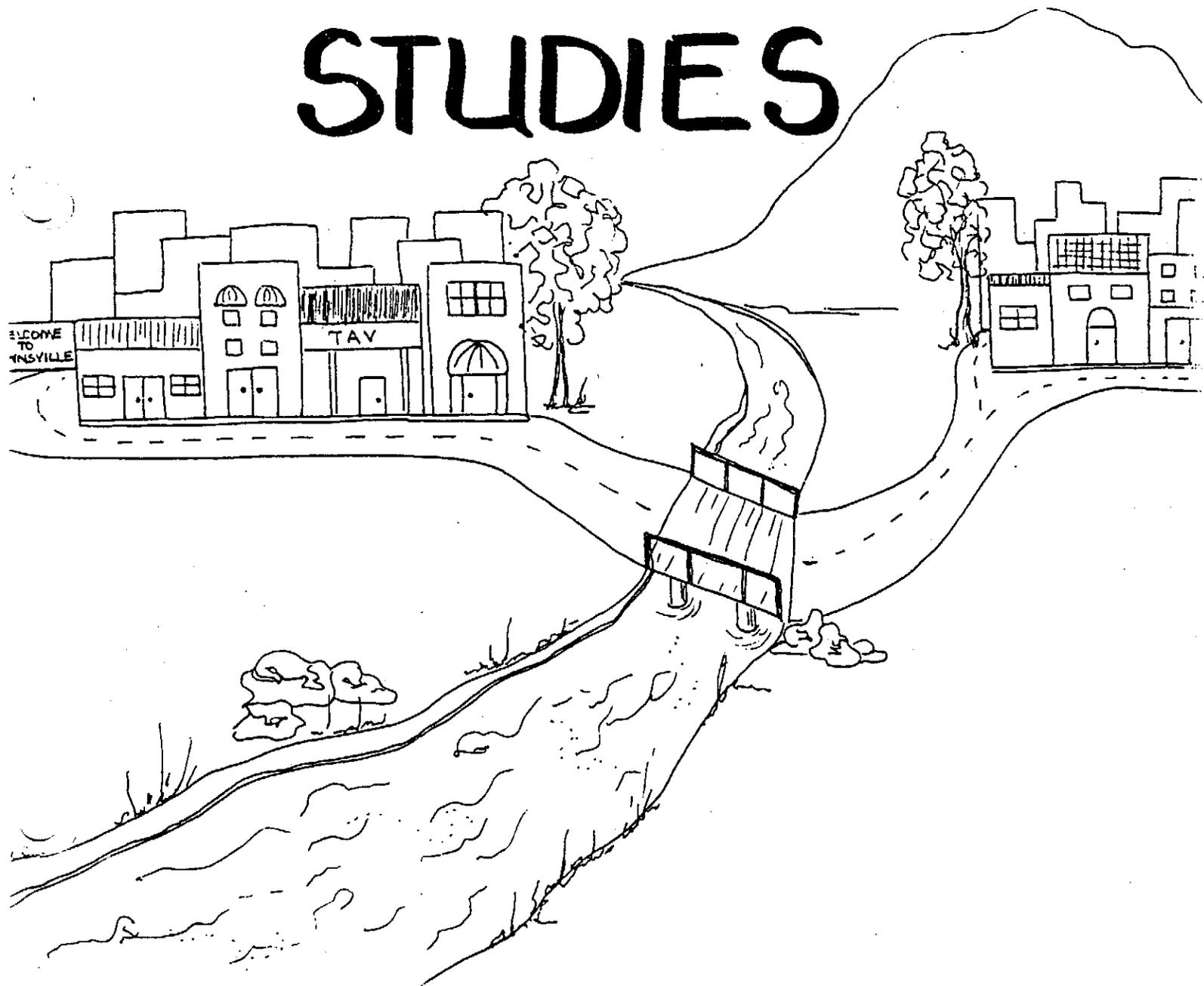
Goal No. 1 of the Statewide Land Use Planning Goals provides for citizen participation and involvement in all phases of the planning process. Citizen involvement is not new to Brownsville. When Linn County's government was first organized, "all of the county officers with the exception of John McCoy, resided in the immediate locality of Union Point and Brownsville. Irregularly scheduled meetings from the date of organization to the spring of 1851 were held at the Spalding schoolhouse or at the residence of Alexander Kirk." (Mullen, 1971)

Today the citizens of Brownsville are actively engaged in the planning process through the planning commission and are afforded the opportunity to voice opinions and concerns at planning commission meetings, council meetings, and at City Hall.

While direct communication between the citizens and local officials has always been available, the level of understanding and the ability for the city to fully assess community attitudes has been difficult. As in many communities, citizens do not always become involved until the bulldozers start rolling down their street.

One of the intents of this document is to provide citizens with an understanding of the direction the city is moving. With this understanding, and continued efforts by the city to improve communications, the citizens and the city should be more able and prepared to focus on the aspects of Brownsville which are good, those that need improvement, and those other aspects which will be necessary to meet the challenge of the future.

# LAND USE BACKGROUND STUDIES



## LAND USE BACKGROUND STUDIES

### Current Land Use: Figure 11.0

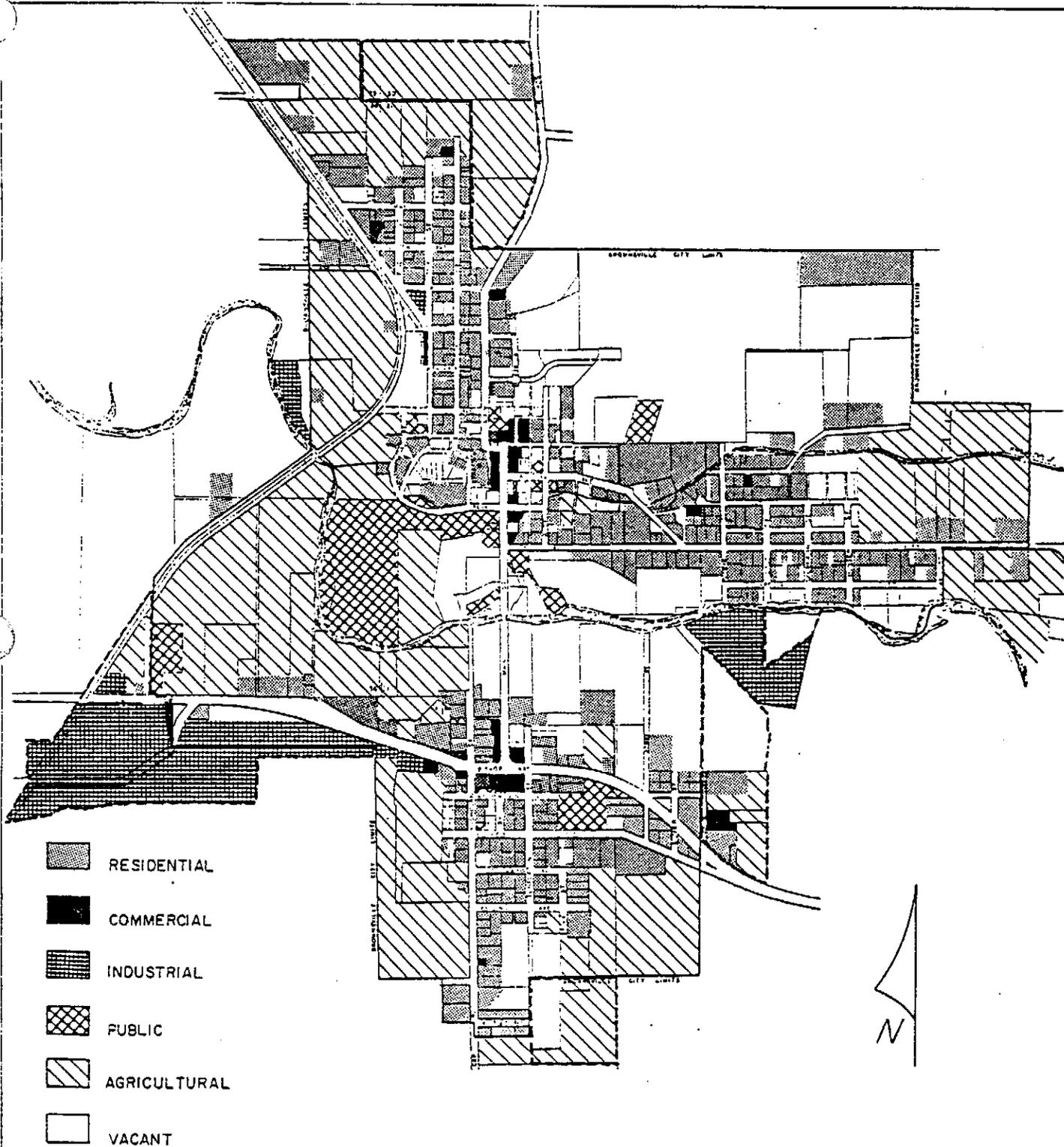
The City of Brownsville contains an area of 862.00 acres. There are currently seven (7) major land use categories. They are: Residential, Commercial, Industrial, Public, Transportation, Agriculture, and Vacant. (Table 3) A land use inventory conducted in 1976 shows the following breakdown:

Table 3  
1976 Land Use Inventory

LAND USE	ACRES	PERCENT OF TOTAL
Residential	158.00	18.29%
Commercial	9.06	1.05
Industrial	18.06	2.095
Public	35.19	3.74
Transportation	172.45	20.31
Agriculture	184.00	21.23
Vacant	286.17	33.19
<b>TOTAL</b>	<b>862.00</b>	<b>100.00%</b>

Figure 11.0

# CURRENT LAND USE



# BROWNSVILLE

SCALE: SCALE 1" = 1000'

Table 15

## Land Use Comparison of Existing and Proposed by Acres and Percent

Generalized Land Use				
Type	Existing Uses		Proposed Zoning	
	Acres	%	%	Acres
Residential	158	18%	39%	302
Commercial	9	1%	4%	38
Industrial	18	2%	12%	131
Transportation*	172	20%	20%	172
Agricultural	184	21%	N/A	N/A
Vacant	286	33%	N/A	N/A
Public	35	4%	4%	35
Special Development	N/A	N/A	21%	184
TOTAL	862	100%***	100%	862
NOTE: Total Developed**	392**	45%	N/A	N/A

Table 16

## Acres and Percent of Land by Proposed Zoning in Identified Floodway

Flood Hazard Areas as Identified from F.I.A. Data, July 1979			
Type	Acres in the Floodway* (by zone type)	Proposed Zoning not Including Floodway Areas	
		%	Acres
Residential	40	34%	262
Commercial	6	4%	32
Industrial	17	15%	114
Transportation*	N/A	22%	172
Agricultural	N/A	N/A	N/A
Vacant	N/A	N/A	N/A
Public	23	2%	12
Special Development	4	23%	180
TOTAL	90	100%	772

\*Approximation.

\*\*Developed land includes all land except agriculture and vacant.

\*\*\*May not add due to rounding.

## Industrial and Commercial Land Projections

Existing lands used for industrial and commercial lands amount to 27 acres: 9 commercial and 18 industrial. If these totals are divided by population, .7 acres per 100 population for commercial land and 1.4 for industrial, result.

These ratios are carried out to the years 1990 and 2000 populations, resulting in 12 commercial acres and 24 industrial acres forecast for 1990; 15 and 30 for 2000. This is shown in graphic form in the following table.

Table 17

### Lands for Commercial and Industrial Development

Land Use Type	Existing Acres in Use in 1978	Ratio of Acres to 100 Population*	Projected Land Needs in Year 1990**	Projected Land Needs in Year 2000***	Comprehensive Plan Designation in Acres	Year 1990 Acres to 100 Population Ratio****	Year 2000 Acres to 100 Population Ratio****	Land in Excess of Projected Need
Commercial	9	.7 Acres:100 pop.	12 acres	15 acres	38 Acres	2.23 Acres:100 pop.	1.76 Acres:100 pop.	23
Industrial	18	1.4 Acres:100 pop.	24 acres	30 acres	151 Acres	5.9 Acres:100 pop.	4.68 Acres:100 pop.	101
Total	27	N/A	36 acres	45 acres	189 Acres	N/A	N/A	124

\*Based on 1978 Portland State University population estimate.

\*\*\*Based on Comprehensive designation and total acres for specific use divided by 100 population projected for year 1990.

\*\*Based on 1978, acres to 100 population ratio adjusted to year 1990 population projection of 1700.

\*\*\*\*Same for year 2000.

\*\*\*Based on 1978, acres to 100 population ratio adjusted to year 2000 population projection of 2155.

The proposed zoning allows 38 acres for commercial and 101 acres for industrial development, fulfilling the projected acreage (as shown above).

The proposed zoning also allows 23 more acres of commercial land and 71 more acres of industrial land than is projected. The total areas zoned, if developed completely, would bring Brownsville up to the statewide average\* of 4% developed land for commercial and would be very close to the statewide average of 11% for industrial land.

\* Average figures were based on cities below 2500 population in Land Use in 33 Oregon Cities.

The Plan calls for more land for industrial and commercial uses than projected for the following reasons:

- 1) A need to have available land to provide a choice in the market as required by Goals 14, 2, and 9.
- 2) Locational factors related to both commercial and industrial land as identified in the Plan.
- 3) Energy consequences which have drastically changed. This change will result in one of two situations if not both:
  - a) People will move out of Brownsville to larger population centers where employment, commercial and other social services and activities are available, or
  - b) There will be an increase in the amount of employment, commercial and other social services and activities available in Brownsville.
- 4) Although uncertain at this time and also subject to energy constraints the county is planning to provide for rural residential development within the Brownsville sphere of influence. An increase in development of this type (rural residential) will increase the existing population of the region (Brownsville sphere of influence) resulting in increased commercial activity and the increased need for employment and social services and activities.
- 5) Both commercial and industrial zones allow other uses which although they may be conditional will remove a portion of the land for commercial or industrial use. This fact coupled with existing nonconforming uses, will reduce the overall amount of land.
- 6) All of the above factors can also be summed up by the community's awareness of the energy problem and their desire to become increasingly self-sufficient. The knowledge that if the city fails to provide land for the various uses, and also be ready with a plan to guide the development and growth of community, then many citizens of the community will be forced through economics to move.

### Residential Land Use

Residential land accounts for 18.29% of all land within the City of Brownsville. (Table 4) The residential land use category includes all housing types: single family, multiple family, and mobile home. A further breakdown of residential land shows the following:

Table 4

#### Residential Land Use in the City of Brownsville

<u>Residential Land</u>	<u>No. of Units</u>	<u>Acres</u>	<u>Percent of Total Residential Land (157.68 = 100%)</u>
Single Family	411	146.51	93.0%
Multiple Family	25	2.38	1.5
Mobile Homes	42	8.79	5.5
TOTAL	478	157.68	100.0%

There are three distinct residential neighborhoods in Brownsville. The neighborhoods correspond to the Old Town sites of Brownsville, Amelia and North Brownsville.

Most of the new construction has taken place in East Brownsville (Amelia) with framed single family dwellings the predominant housing type.

North Brownsville has also experienced an increase in new housing starts; the predominant type being framed single family dwellings.

Multiple family housing (duplex and up) has for the most part located around the old woolen mill site of East Brownsville. At present, there is a total of 25 dwelling units within the multiple family type. An increased demand in the housing market coupled with rising construction and land costs may bring about a rise in the numbers of multiple family dwellings constructed in the next twenty years.

Mobile homes (which include all factory fabricated living units) are being sited in Brownsville in increasing numbers. At present, there are 42 mobile homes. Approximately 25 mobile homes are located in two mobile home parks. The largest mobile home park with 21 living units is located in South Brownsville along the north side of Highway 228. The second mobile home park is located in North Brownsville along Linn Way; it has 4 mobile homes.

The remaining mobile homes are scattered throughout the three neighborhoods on individual lots.

Mobile homes provide many aspects which make them desirable as living units; they can be sited quickly, have low maintenance responsibility, and (to some extent) are economical.

Many of the residential structures in Brownsville are of a historic nature; built before 1920. An inventory compiled by local citizens identified 177 residential structures which were believed to predate 1920; many of these structures were built before 1880.

The community has shown a real interest in identifying and researching historic structures. Each structure identified in the inventory has a fact sheet where pertinent information regarding construction, occupants and local history is recorded. While some fact sheets are more complete than others, the overall effort should prove to be very beneficial.

### Commercial Uses

Commercial uses are all general business and service stores, including retail and wholesale outlets, service stations, garages and small workshops.

The largest concentration of commercial activity in Brownsville is in the Old Town commercial area; situated on the north side of the Calapooia River. The Old Town commercial area lines both sides of Main Street from Stanard to Kirk, both sides of Stanard Avenue from Main to Averill, Spalding Avenue to Averill Street, Park Avenue from Main Street to Averill Street and Averill Street from Stanard to Kirk.

The Old Town commercial area lends itself to the walking shopper as the density of commercial activity is rather high and parking can be viewed as limited even though a large parking lot is present between Stanard Avenue and Spalding Avenue.

Many of the commercial buildings in Old Town were constructed around the turn of the century. The City of Brownsville has for some time taken a special interest in preserving the historical charm of the Old Town commercial area. Several buildings have been restored in a style common to the early 1900's and late 1800's. Through resolution, the Planning Commission has the responsibility of reviewing all construction and improvements to determine if the work is in keeping with the community's desires towards historic preservation. The methods and controls used to date have been weak in that the Planning Commission could only advise. To assure the desired results, the City will need to establish guidelines.

A limited amount of commercial activity is also present along Highway 228 south of the Calapooia River; and also in North Brownsville removed from the Old Town area. Existing commercial land totals only 9 acres, with zoning allotting 38 acres.

The following is a list of commercial establishments presently located in Brownsville:

1. Ace Sporting Goods and Liquor Store
2. Blackie's Arco
3. Bob's Car Wash
4. Brownsville Feed and Seed
5. Brownsville General Store (Natural Foods)
6. Brownsville Meat Lockers
7. Brownsville Parts and Service (Auto Parts)
8. Brownsville Tavern
9. Brownsville Times (Newspaper)
10. Calapooya Drive-In
11. Carlson Hardware
12. Central Linn Insurance Agency
13. Citizen's Valley Bank
14. Community Drug Store
15. Donna Jean's Beauty Shop
16. Hair Mill (Men's and Women's Hair Fashions)
17. Joe's Deli
18. Johnny's Rocket (Gas Station)

- 19. Laundra Queen (Coin Laundry)
- \ 20. Norm Morgan Realty
- 21. Norm's Electric (Sales and Repair)
- 22. Pioneer Market (Grocery)
- \ 23. Potpourri (Sundries)
- \ 24. Sew What's New (Fabric Store)
- \ 25. Schaffer Shoe Repair
- \ 26. Then and Now Beauty Shop
- 27. Town Shop (General Store)
- \ 28. Victorian Cafe
- 29. Village Pantry (Grocery Store)
- \ 30. Wagon Wheel Realty
- \ 31. Western Auto (Hardware)

Home occupations provide some residents with income. While the commercial activity generated through home occupations is limited, the overall impact on the community has a positive economic effect.

#### Industrial Uses

Industrial activities include the assembly, fabrication, milling, processing, manufacturing, storing, and warehousing of materials both raw and partially processed or recycled, and any related activity. Currently, industrial activities in the city occupy 18 acres, with a total of 101 acres being zoned for industry.

Industrial uses within the City of Brownsville are limited. A small electronics assembly plant, Qualtiy P.C., has recently opened in Brownsville, and another industrial use includes fuel storage. Major industrial activities are located along the Southern Pacific Rail line which passes through the City. These major industries which are outside the city limits all involve wood products to some extent, however, the nature of the industries are somewhat diversified. Bohemia, Inc., the largest industrial employer, mills lumber and other wood products. Woodex utilizes wood waste and bio-mass to manufacture fuel pellets, an alternative energy form. Linn Plyboard uses veneer and wood chips to manufacture a unique type of building material similar to plywood or particle board.

The physical landscape and land use patterns in Brownsville make certain areas of town more desirable for industrial location than others.

The Southern Pacific Railroad which passes through Brownsville provides a transportation link which can be desirable to many industrial activities. Highway 228 provides direct links to Sweet Home, Halsey and to some extent Harrisburg; but the most important link that 228 provides is to Interstate Highway 5.

The location of Highway 228 south of the Calapooia River can provide industrial activities with access that does not pass through the major residential or commercial areas of Brownsville.

### Semi-Public

Brownsville is the home of seven churches. They are: Assembly of God, Baptist, Christian, Latter Day Saints, Lutheran, Mennonite, and Presbyterian.

Other semi-public clubs and organizations include: Friends of the Library, Pioneer Association, Womans Club, Pollyanna, Wind-Jammers (C.B. Radio), Chamber of Commerce, Garden Club, Senior Citizens, Lions Club, Alcoholics Anonymous, History Club, T.O.P.S. (taking off pounds sensibly), Pioneer Saddle Club, Medical Board, Recreation Center Board, Masons, Eastern Star, Rainbow, Womans Study Club, IOOF, Four-H, Boy, Girl Scouts, and Blue Birds.

### Public Uses

Public uses include the Library, City Hall, Fire Department, Post Office, Linn County Museum, Moyer Historic House, Brownsville Elementary School, Brownsville Recreation Center, Pioneer Park, Tennis Court-Playground Park, Blakely Park, Monument-Library Park, Pioneer Cemetery, Corner Park, and city streets. Public uses occupy 35 acres in Brownsville, with zoning not proposing any change in amount.

Public uses provide the residents of Brownsville with access to government, education, information, recreation and open space.

### Transportation

Transportation facilities are the third largest use of land in Brownsville. The major land requirement for

transportation is street right of way. Street right of ways are somewhat confusing in that a right of way may be 40 or 60 feet wide, while the actual street may be rather narrow and in many cases the actual street is not in the center of the right of way. Lands devoted to transportation are estimated to occupy approximately 172 acres.

The right of way is designed to provide the area for the street, sidewalk and utilities. Often the right of way is wider than the street. Right of ways are also important when a street is widened, providing the additional area without necessitating costly land acquisition.

### Agricultural Use

Within the city limits of Brownsville, several parcels of land are being productively farmed. In some cases, the city limits divide a parcel with much of that parcel lying outside the city limits. Brownsville is surrounded by agricultural land (particularly on the south, east and north) which makes it difficult for the casual observer to determine where the city ends, and agriculture land begins. Agricultural land occupies approximately 184 acres in the city.

Many residents of Brownsville raise livestock, have large gardens, and grow fruit trees. For all intent and purpose, Brownsville can be considered an agricultural community. The lifestyle which both small and large scale agriculture provide is important to many residents of Brownsville. To a large extent, this mix of agriculture and community living contributes to the character of Brownsville.

### Vacant Land: Figure 12.0

Vacant land includes all parcels which have not been developed or [for] which no use is now present and no structure exists. Vacant land was also viewed as over-size parcels (1 acre) with a structure. Under these situations the structure was excluded along with 10,000 square feet. The remaining land was then considered vacant. A third type of vacant land was also considered. The third type is those parcels which are too small to meet the minimum lot size of the zone in which they are located.



Vacant land accounts for 33.19% of all land in Brownsville (286 acres). Vacant land is not confined to any one area of Brownsville although large tracts of vacant land form significant blocks on the hill north of Old Town, in the northern portion of the city between Linn Way and the Brownsville-Lebanon Road, in the southern portion of Brownsville to the west of Gap Road, and along the Calapooia River.

Brownsville Planning Area: Figure 13.0

As part of the planning process, the area outside the Brownsville city limits was also inventoried, using the same land use classifications as were used inside the city. The following breakdown is presented:

Table 5

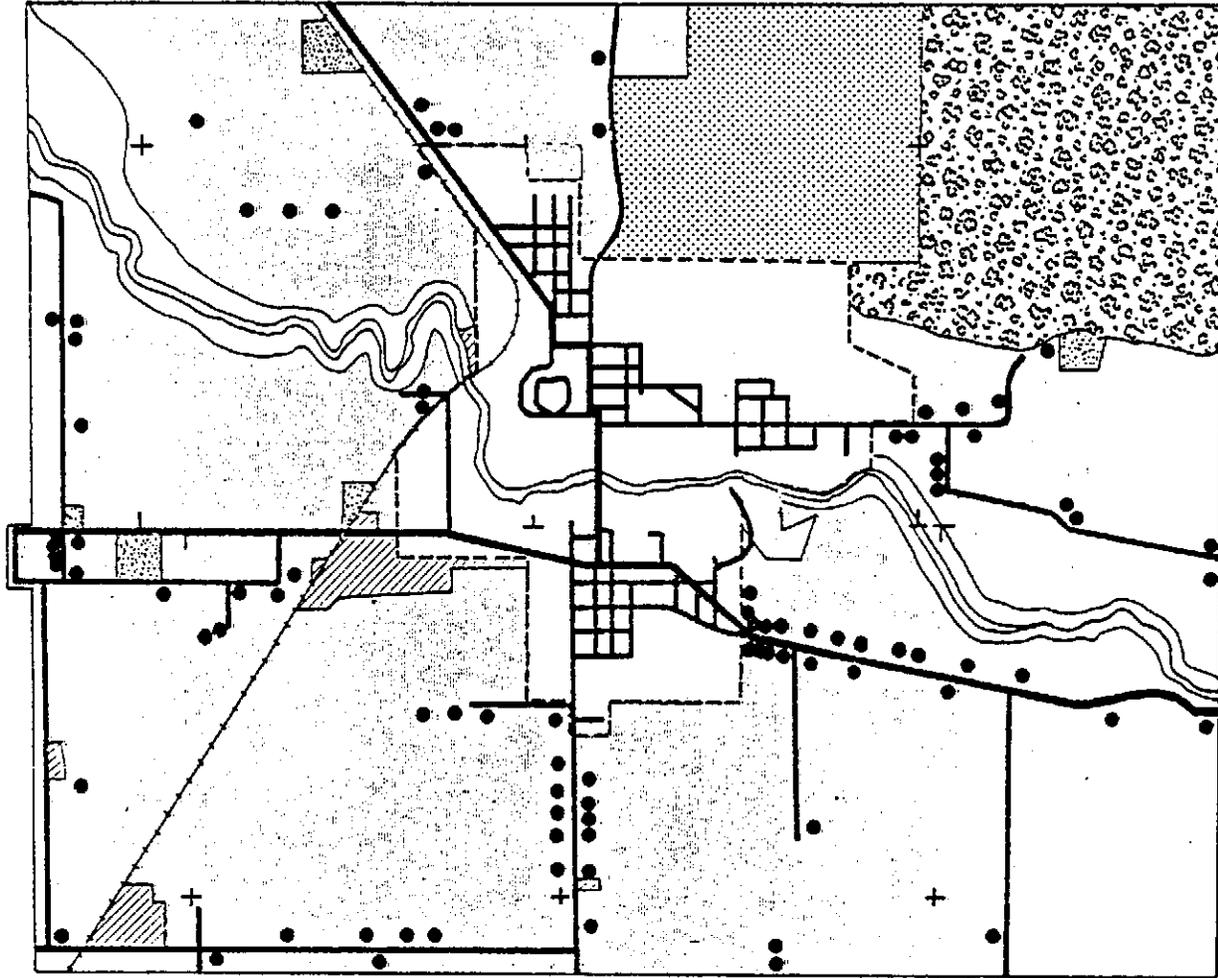
LAND USE IN THE PLANNING AREA

<u>Land Use</u>	<u>Acres</u>	<u>Percent of Total</u>
Residential	377.09	7.65%
Commercial	10.92	.22
Industrial	90.15	1.83
Public	45.20	.92
Transportation	278.08	5.64
Agriculture	2484.72	50.45
Vacant	1639.09	33.28
<b>TOTAL</b>	<b>4925.25</b>	<b>100.00%</b>

Residential land uses in the Planning Area are of two types: farm related residence and non-farm related residence. By far there are more non-farm related residences in the Planning Area. The largest concentration of non-farm related residences are located in the Oak View Park Land Division (platted Oct. 1968 Survey #10047) adjacent to the northern city limits of Brownsville. Oak

Figure 13.0

# LAND USE OUTSIDE CITY LIMITS



-  AGRICULTURE
-  RURAL RESIDENTIAL
-  FOREST
-  INDUSTRIAL
-  PUBLIC & SEMI - PUBLIC
-  RESIDENTIAL UNITS

## BROWNSVILLE PLANNING AREA

SCALE: 1" = 1/2 MI.



View Park consists of 63 parcels ranging in size from two (2) to seven (7) acres. All residential uses in Oak View Park are on individual well and sewage systems (septic).

Other non-farm related residences are scattered along Gap Road, and Highway 228. For the most part it can be said that the remaining residences which are present in the planning area are farm related.

Mobile homes appear to be the leading new housing type locating in the planning area. The reason for this is unknown but may be related to the cost of land being high.

Commercial activity in the Planning Area is limited to home-operated service outlets. The City of Brownsville is fortunate that more commercial activity has not located along the major roads leading to the city. Commercial development along major highways such as 228 is not in the best interest of the community as this type of development makes it difficult for local shoppers to walk between stores and necessitates shopping by car - an energy intensive activity. The presence of commercial activity will increase the amount of local traffic and damage the function of the Highway, which is to move traffic through an area.

Industrial activities in the Planning Area are for the most part located in the southwest. Bohemia, Inc. wood products is located adjacent to the south city limits along the south side of Highway 228. Bohemia, Inc. has direct access to Highway 228 and the Southern Pacific Railroad. Woodex (fuel pellets) is located in the southwest corner of the Planning Area. Woodex has indirect access to Highway 228 over County Road 507, and direct access to the Southern Pacific Railroad. Linn Plyboard is located on the same 25.41 acre parcel as Woodex and shares the same access. Both Woodex and Linn Plyboard are removed from the city by a distance of just over one mile.

The active gravel operations which were discussed in the Natural Resources section were included in the Industrial inventory when compiled in 1976.

Public and Semi-Public uses in the Planning Area are The city's north and south sewage lagoons, Pioneer Cemetery, and Pacific Power and Light's Substations.

The north sewage lagoon is located approximately 1/4 mile northwest of the city along Linn Way. The south sewage lagoon is located west of the city limits along the north side of Highway 228 and west side of the Southern Pacific Railroad.

Pioneer Cemetery is owned by the City of Brownsville but is located about a 1/4 mile east of the city limits.

The Pacific Power and Light Substations are located west of the city on both sides of Highway 228.

Transportation uses include State Highway 228, County Roads 425, 427, 428, 504, 505, 506, 507, 509, 767, 768, 770 and Market Road 11. The Southern Pacific Railroad also passes through the Planning Area and adjacent to the west city limits.

Agriculture uses in the Planning Area include rye grass and related grass seed and pasturing. Although these types of agriculture activities are low intensity for a large part of the year, related agriculture practices such as field burning can impact the local environment rather strongly.

On several occasions smoke from field burning fills the city air. Field burning smoke is not only generated from fields within the Planning Area but comes from as far away as the Halsey-Harrisburg area.

Another related grass seed farming activity is winter sheep grazing; while sheep grazing does not impact the city, the proximity of the city can be hazardous to the sheep. Dogs owned by city residents can cause injury and death to sheep. However, no incidents of sheep being killed by dogs have occurred in the Brownsville Planning Area, though they have happened in other areas of Linn County.

Vacant land was considered to be all land not being farmed or used in any other manner. As a result, forest land fell into the vacant land classification by default.

Forest land is concentrated in the northeast section of the Planning Area. By its nature, forest land takes many years to be productive, with productivity increasing for as many as 40\* to 80\*\* years. To maximize the forest resource, potential forest lands should be allowed to grow to maximum productivity.

For the most part, vacant land is nonproductive to man, or its potential has not yet been realized. Most vacant land in the Planning Area is found along the Calapooia River where seasonal flooding makes it undesirable for use. However, vacant land is a resource as it provides habitat for wildlife, and should be considered as habitat.

### The Impact of Land Use on the Environment

It is important to realize that human activities and land uses have an impact on the natural environment; conversely, the natural environment can have an impact on human activities and land uses.

A byproduct of human activity is pollution. Air pollution is most noticeable in Brownsville where the air is usually clean and fresh. Air pollution can come from several sources such as automobiles, field burning, slash burning and even wood stoves. At present industrial air pollution is not a problem in the Brownsville area.

The air flow in the Willamette and Calapooia Valleys can usually be counted upon to move any pollutions out of the area. However, because of the physical shape and dimension of the valleys, periods of poor air circulation brought on by inversions and other weather phenomena can cause pollutions to become trapped, resulting in slow dissipation and less than clean fresh air.

Under the U.S. Environmental Protection Agency (E.P.A.) regulations, clean air regions are designated in one of three classes known as Prevention of Significant Deterioration classes (PSD). Brownsville is located in a Class II P.S.D., as is most of the Willamette Valley.

Significant deterioration is caused by air pollution. In the Brownsville area field burning is the leading cause

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\* State of Oregon Department of Forestry growth cycles.

\*\* United States Forest Service growth cycles.

of reduced air quality. The method used in judging significant deterioration considers the cumulative effect of the pollution. Increase in the number of acres allowed to be burned will reduce or eliminate the chance of new industry obtaining pollution permits. Therefore, the continued practice of field burning may result in only non-air-polluting industries locating in the area.

The Oregon Department of Environmental Quality (D.E.Q.) is responsible for implementation of the 1972 Clean Air Implementation Plan. The Oregon Environmental Quality Commission (E.Q.C.) has legal authority to adopt administrative rules concerning environmental quality. The D.E.Q. as the administrative body of the E.Q.C. solicits comments on proposed regulations of the E.Q.C. Notice of all applicable proposed rule-making action is sent to the City of Brownsville for comment.

### Noise Inventory

There are no significant generators or sources of noise in the City of Brownsville. Noise levels are low enough not to exceed D.E.Q. standards. Occasionally there are background noises from passing automobiles, trucks, and train traffic. Observance of applicable D.E.Q. regulations for any future development of potential noise sources should maintain the low noise level currently around Brownsville. ["Noise Inventory" added by Ord. No. 524, §4, passed September 8, 1981.]

### Energy

The City of Brownsville, as most of the country, is at the mercy of external energy supplies for everyday activities. The leading types of external energy are fossil fuels (oil and gas), electricity (hydro and nuclear), and wood.

With the exception of wood, Brownsville must import all its energy. This has not always been the case. Prior to the 1920's, electricity was not available to many rural areas from power companies. (Mullen 1970) Brownsville's first power source for commercial and industrial use was water power, supplied by the Brownsville ditch constructed by James McHarg. Water power ran a grist mill and later the Brownsville woolen mill. (History of Linn County, p. 33)

During the winter the stream flow of the Calapooia is substantially increased. The potential is therefore available to produce seasonal energy from the Calapooia. Other sources such as solar and wind could also be utilized to generate electricity and reduce dependence on external energy.

An energy audit would be required to understand where (and how much) energy is being used in Brownsville. Such audits are available through Pacific Power and Light (P.P.&L.) for homes and businesses under P.P.&L. Weatherization Program, and through Northwest Natural Gas Weatherization Program. Both weatherization programs are in part financed by the State of Oregon in that if a person wishes to improve their weatherization through P.P.&L. or Northwest Natural Gas, they may apply for a loan at 6 1/2% interest over a 10 year period. Weatherization, which is primarily improved insulation, can save energy and money through time.

The following diagrams (Figure 13.5) show how energy is used on a statewide basis. Knowing where the major energy use is can be helpful in targeting conservation measures.

In an effort to utilize all electrical energy potential, Pacific Power and Light Company was granted permission from the State Public Utility Commission to buy electricity from any and all generating sources. Pacific Power and Light will now buy electricity at the same standard rate per kilowatt hour which it charges its customers.

Energy used in transportation accounts for 56.42% of all personal energy used in Oregon. Because of Brownsville's location and low employment and commercial opportunities, residents travel to larger centers for a wider and more competitive range of goods and services.

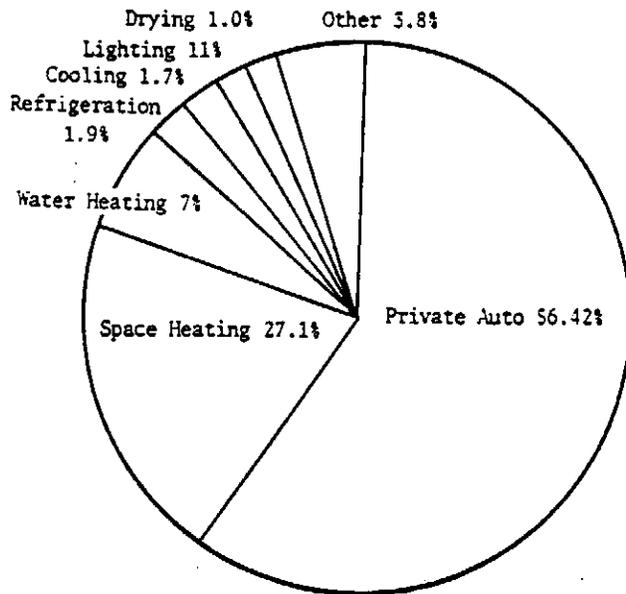
Unless Brownsville, as a community, is successful in attracting more commercial and employment opportunities, energy for transportation will continue to cut deep into the total energy picture.

It should, however, be pointed out that Brownsville can take positive action in the reduction of energy from external sources. The key to reducing energy is knowing where and how much energy is used. In other words: Patching up the leaks will save energy.

Figure 13.5

# ENERGY USES

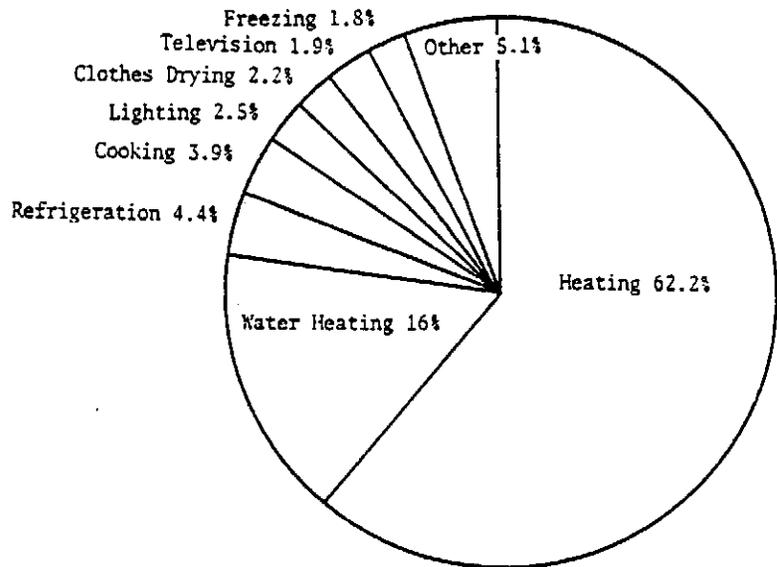
## PERSONAL USE OF ENERGY IN OREGON



Personal consumption was 45% of total direct energy used. 100 million Btu's per capita.

Source: Community Energy Planning, Oregon Department of Energy

## OREGON'S RESIDENTIAL DIRECT ENERGY USE 1977



Source: Community Energy Planning, Oregon Department of Energy.

History Inventory: Figure 14.0

A requirement of Goal #5 of the Statewide land use planning goals is inventory the location, quality and quantity of historic areas, sites, structures, and objects.

To aid in this inventory, the State Historic Preservation Office has developed the Statewide Inventory of Historic Sites and Buildings. However, no structures, sites or objects for Brownsville are identified in the State inventory.

The National Register of Historic Places identifies the Moyer House, built in 1881 by John M. Moyer. The Moyer House exists today as an example of Italianate architecture and is located at 204 Main Street, Brownsville.

The C. J. Howe Building located on the southeast corner of Main and Spalding has been nominated to the National Register of Historic Places. The C. J. Howe Building is a two story brick commercial building, circa 1900.

The home of John and Amelia Brown located about one mile east of Brownsville on Highway 228 is also identified on the National Register of Historic Places. The Brown home, currently named "Atavista Farm", is an example of Italianate architecture built in 1876. It is restored and is now owned by Nelson Jones and Jack Swearingen.

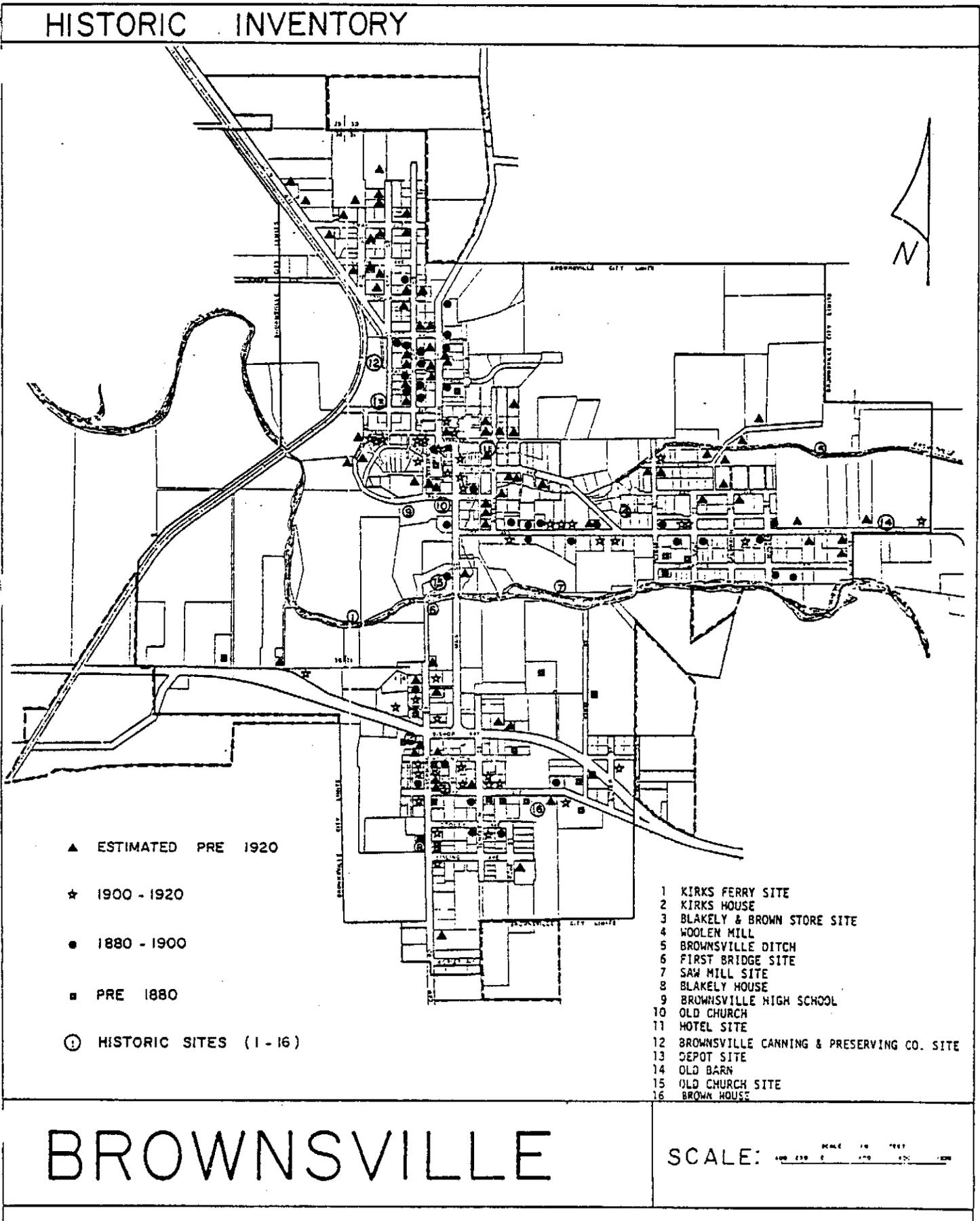
In an effort to identify and inventory historic structures, sites, and objects in Brownsville a group of local citizens volunteered their time and set out to inventory and investigate the history of Brownsville. Aided by Phil Dole (Historic architect) the group developed a method and began the survey. To date, 177 residential structures and 15 historic sites have been identified. The survey is by no means complete, as Brownsville has a wealth of historic resources. The surveys are on file at the City Library and at City Hall.

Several federal and state laws address historic sites, structures and objects. The following is a list of existing federal and state legislation:

Federal:

1. Historic American Sites Act (1935) made protection of historic resources a national policy and established the National Register of Historic Places.

Figure 14.0



2. National Trust for Historic Preservation (1941) is a private, nonprofit organization intended to educate the public about historic preservation.
3. National Historic Preservation Act (1966) established a program of matching grants-in-aid to states and the National Trust and established cooperation with the state for administration within their jurisdictions of the National Register program.
4. Transportation Act (1966) provides for protection of historic sites threatened by highway construction.
5. National Environmental Policy Act (1969) requires consideration of federal project impact on cultural resources as part of the overall environmental assessments.

State:

1. H.B. 2476 provides for special tax relief on buildings listed in the National Register of Historic Places.
2. H.B. 2333 encourages retention of single-family residences in industrial or commercial zones by assessing property value as a residence.
3. H.B. 2342 allows for a tax exemption on improvements made on rental properties that are 25 years of age or older.
4. H.B. 2344 exempts from assessment increased maintenance repairs or replacement work done on an existing dwelling.

Local Ordinances

To further encourage preservation of historic sites in Brownsville the City can adopt an ordinance which would encourage historic preservation.

Water Resources

As it has been stated, the Calapooia River is the major water body within the Brownsville Planning Area. The

water supply for the City of Brownsville comes from the Calapooia River. Presently an infiltration gallery is functioning and in the future five (5) shallow wells adjacent to the river in Pioneer Park will supply city water.

Concern has been voiced about the amount and quality of water within the Calapooia River. Although the Calapooia provides year round water, seasonal fluctuation can be great.

The Water Resources Board of Oregon under authority of ORS 536.300 has completed a study of the Middle Willamette River Basin, of which the Calapooia River is a part. As a result of the study, the following resolution was adopted June 22, 1964:

For the purpose of maintaining a minimum perennial streamflow sufficient to support aquatic life, and of attaining the highest and best use of waters released from storage, no appropriations of water except for domestic or livestock uses or waters to be legally stored or legally released from storage shall be made or granted by any state agency or public corporation of the state for the waters of:

- 1a. The Calapooia River or its tributaries above USGS Gage No. 14-1720 (SE 1/4, Section 15, Township 14S, Range 1W.) at Holley, Oregon for natural flows of the Calapooia River below 30 cubic feet per second plus waters released from storage of up to 340 cubic feet per second measured at the aforementioned gage.
- 1b. The Calapooia River or its tributaries above USGS Gage No. 14-1735 (NW 1/4, Section 13, Township 11S, Range 4W.) at Albany, Oregon for natural flows of the Calapooia River below 30 cubic feet per second plus waters released from storage of up to 340 cubic feet per second measured at the aforementioned gage.

Other groups and agencies who are actively involved and interested with the waters of the Calapooia are:

1. The Calapooia Irrigation District (Figure 15.0).
2. The Division of State Lands.
3. The Department of Fish and Wildlife.
4. The Department of Commerce: Building Codes.
5. The Public Utilities Commission.
6. The Department of Environmental Quality.
7. The U.S. Army Corps of Engineers.
8. The Federal Insurance Administration (Flood Hazard Mitigation).
9. The U.S.D.A. Soil Conservation Service.

At present, the Calapooia River is classified by the U.S. Army Corps of Engineers as a non-navigable river (waterway). This classification lessens the degree of controls and the number of Federal agencies involved in activities of the River. However, the Calapooia River is addressed under Section 4 of the Clean Water Act.

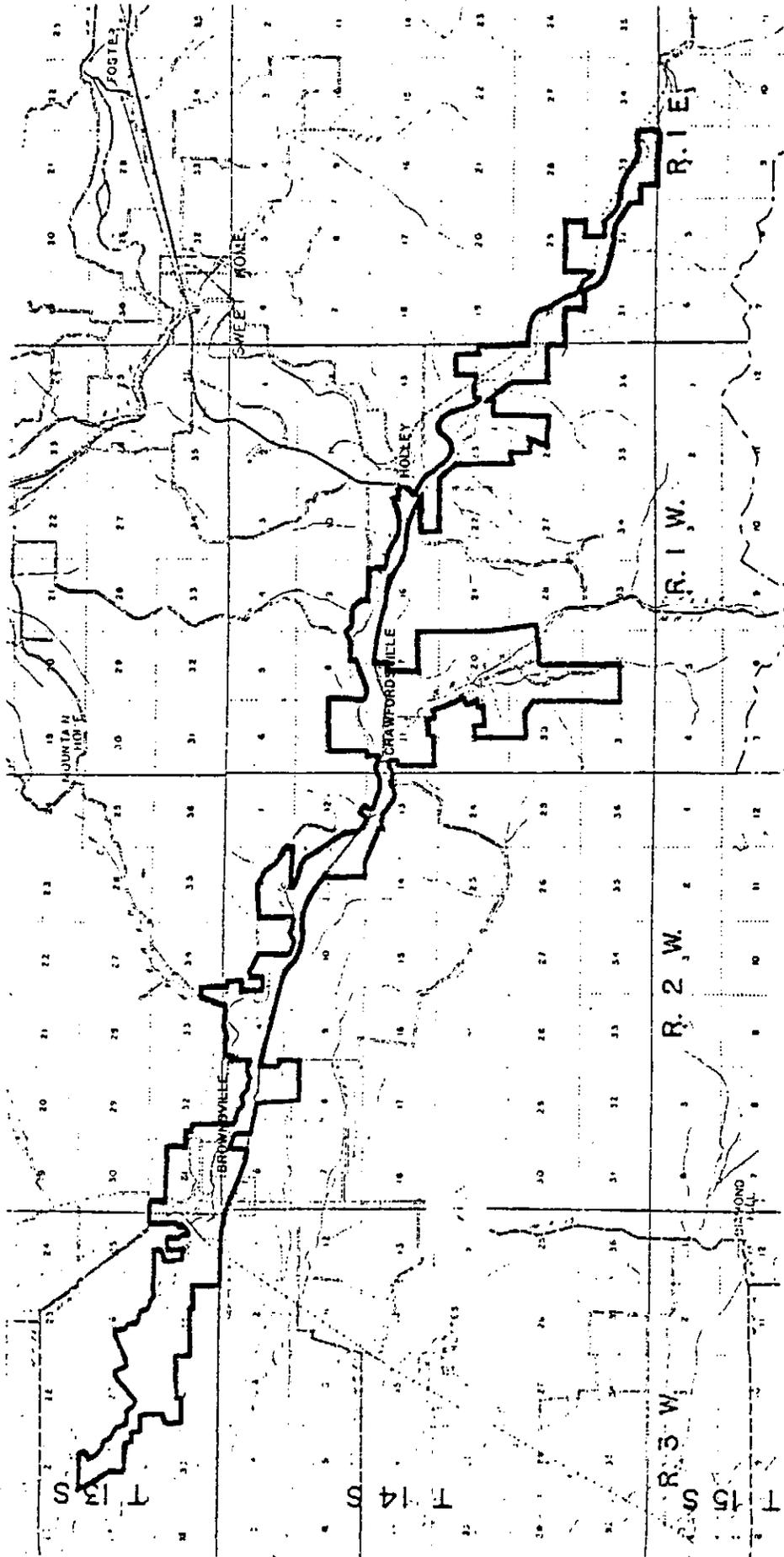
The Division of State Lands is currently studying the history of the Calapooia River to determine if under state classification (different than Federal) the Calapooia should be classified as navigable. Such a determination would change requirements related to resources and activities within the high water line of the Calapooia River. Although no official determination has been made to date, it is likely that the Calapooia River will be recommended for the navigable classification by the Division of State Lands. The key to the recommendation is based on historic information that the Calapooia River was used to raft logs from river mile 156 (near Dollar) to Albany.

**Comprehensive Plan Designations: Figure 15.5**

In developing the Comprehensive Plan for the City of Brownsville, the natural environment and human environment were studied. The results of these studies are manifest in the Comprehensive Plan Map and in the goals and policies.

Figure 15.0

REVISED CALAPOOIA IRRIGATION DISTRICT



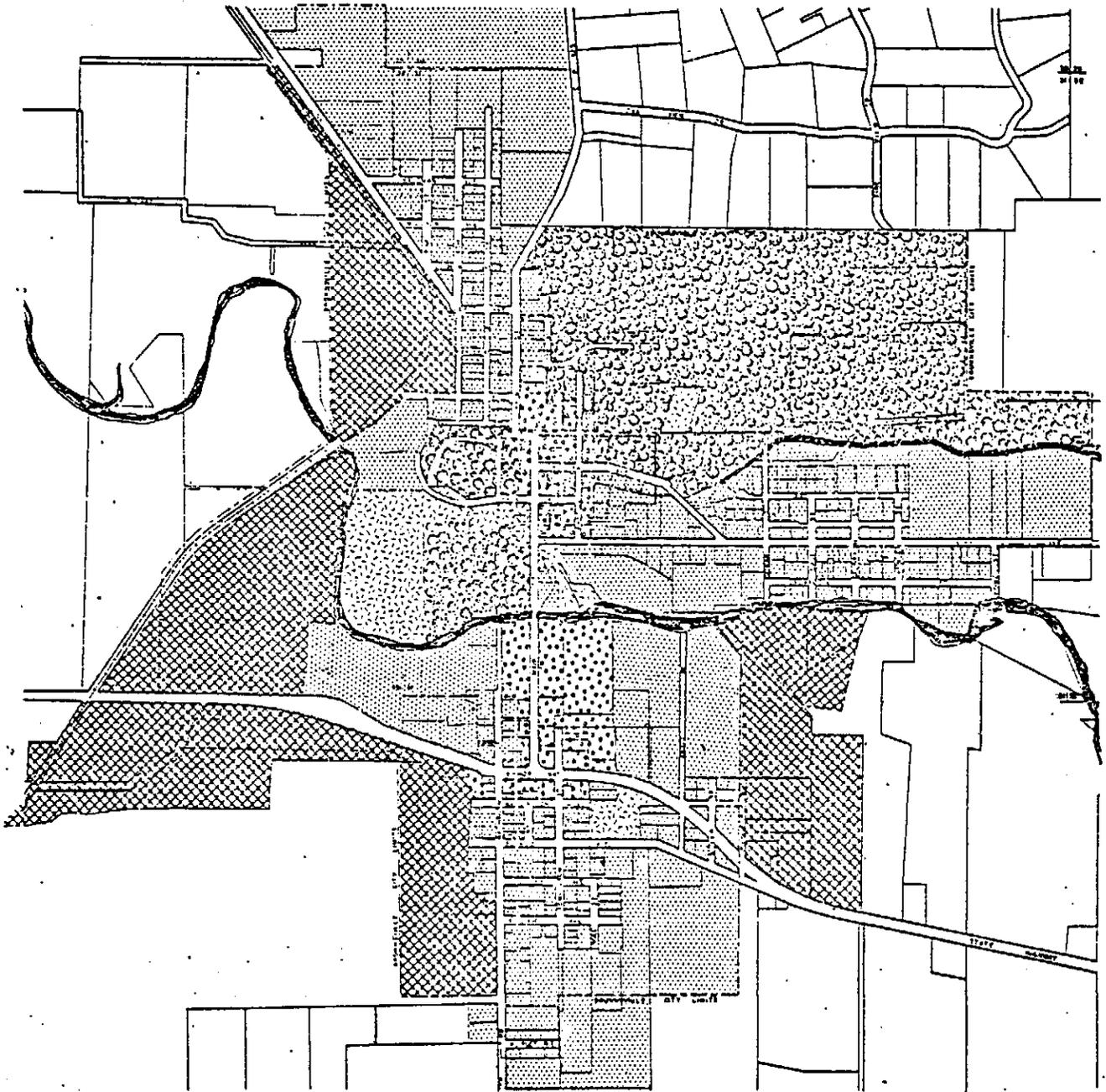
BROWNSVILLE



SCALE 1/2" = 1 MI.

Figure 15.5

COMPREHENSIVE PLAN MAP



[Figure 15.5 amended by Ord. No. 524, sec. 10, passed Sept. 8, 1981.]

# BROWNSVILLE

SCALE: 1/2 MI. = 2.8"

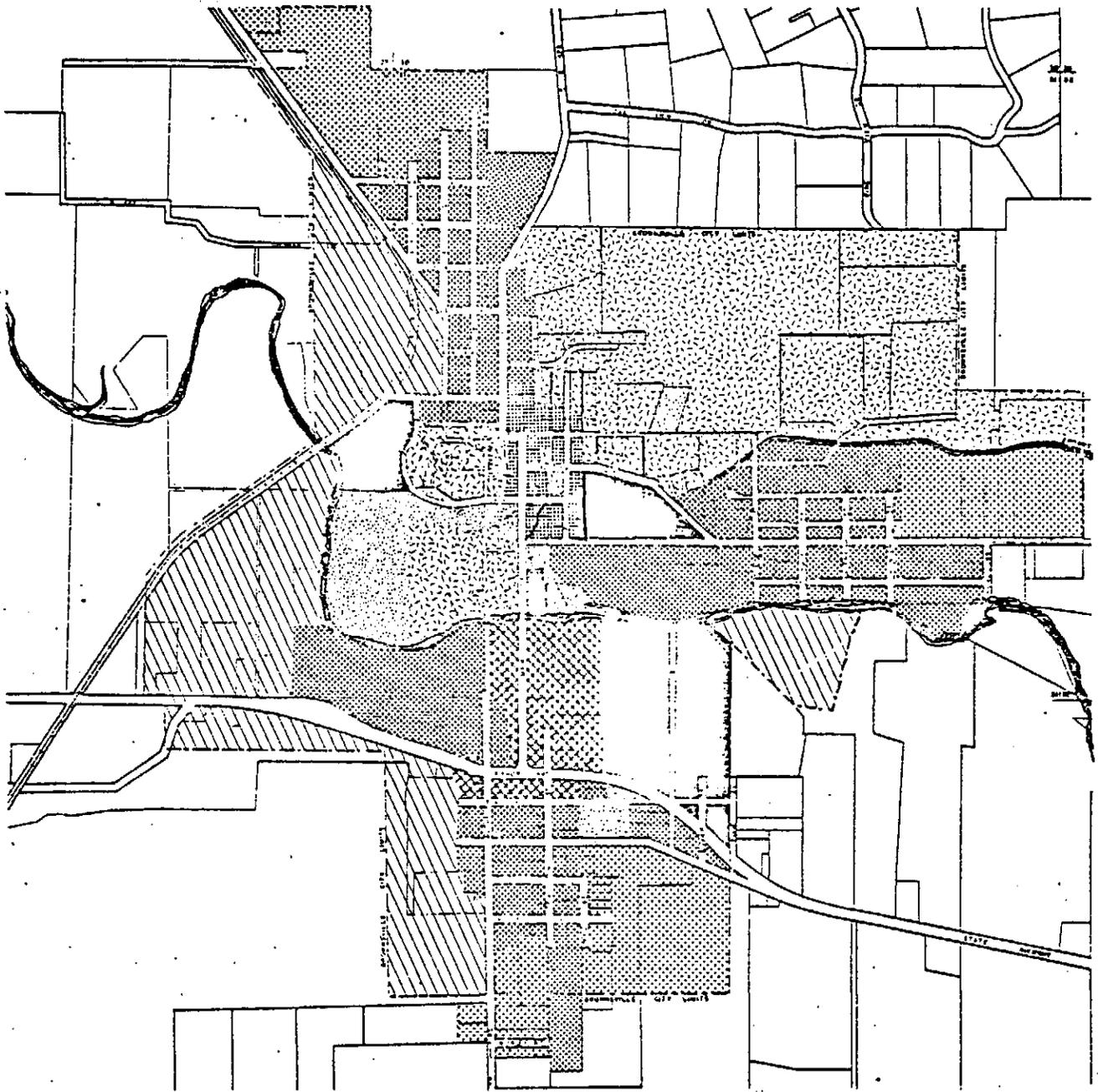


## LEGEND

-  SPECIAL DEVELOPMENT
-  RESIDENTIAL
-  COMMERCIAL
-  INDUSTRIAL
-  PUBLIC

Figure 15.6

# ZONING MAP



[Figure 15.6 added by Ord. No. 524, sec. 11, passed Sept. 8, 1981.]

# BROWNSVILLE

SCALE: 1/2 MI. = 2.8"



## LEGEND

-  PUBLIC
-  LT. INDUSTRIAL PARK
-  SPECIAL DEVELOPMENT
-  VOLUME COMMERCIAL
-  OLD TOWN COMMERCIAL
-  LOW DENSITY RESIDENTIAL
-  MEDIUM DENSITY RESIDENTIAL
-  HIGH DENSITY RESIDENTIAL

In an effort to aid the reader and the citizens of Brownsville, a brief discussion of the Comprehensive Plan designation is in order.

The Comprehensive Plan Map\* shows five (5) use designations. They are: Public, Special Development, Residential, Industrial, and Commercial. In addition to these designations, two (2) overlay designations are also included. They are: Flood Hazard and Resource.

**Public:** The Comprehensive Plan identifies areas as public. Public areas are those areas which are now owned by the City of Brownsville, Linn County, School District #552 or the State of Oregon. Public areas identified on the map are used for the benefit of the citizens by the citizens. They include City Hall, Parks, the Moyer House, etc.

The importance of identifying these areas on the map is to promote their continued use by the public and to aid in their quick identification when projects are proposed in the area.

**Special Development:** The Comprehensive Plan Map identifies areas of Special Development.

Within the city limits of Brownsville are three unique areas that require special land use planning attention and consideration in order to prevent future land use conflicts or hazards and promote proper standards of health, safety, and welfare. These areas consist of approximately 184 acres and are designated in the Comprehensive Plan and Zoning Ordinance as Special Development (SD). The smallest contains approximately 9 acres and is called Holloway Heights. The second area is about 20 acres and is bordered by City Hall to the north, the City Park to the west, the Calapooia River to the south, and Main Street to the east. The third and largest area, occupying about 155 acres, is located on the hills above "Old Town." These areas have five characteristics in common: steep slopes, extensive woodlands, all environmentally sensitive, adjacent to the center of town, and aesthetically appealing.

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\* The official map is on display at City Hall in Brownsville.

In planning for these areas, the city determined that major portions of the two largest are not physically capable of handling development at normal urban densities. Combined effects of steep slopes and adverse soils cause these areas to be potentially hazardous. These hazards could appear in three forms: mass movement, erosion, flooding.

\* In western Linn County mass movement occurs in areas underlain by the Little Butte Formation on slopes greater than 15 percent. Almost all of Brownsville's Special Development acreage is underlain by materials associated with the Little Butte Formation and with slopes between 10% and 50%. Mass movement is also associated with soils that contain a heavy concentration of clay. About ninety-five percent of the soils in the Special Development Zone have a high clay content. Clay soils also create building foundation and slump problems due to their high shrink-swell potential and low bearing strength when wet.

Most of the City's Little Butte Formation areas also contain mixtures of sandstone. When vegetation is removed from steep areas containing sandstones, erosion can begin removing precious topsoil and eventually lead to gullying and an accumulation of the topsoil in fan formations at the bottom of a hillside. Erosion problems can begin occurring where slopes exceed 15%.

Brownsville's S.D. areas contain extensive wooded areas which provide protection to the city's drinking water, supplied by five wells. With the existing woodlands on steep slopes, runoff from precipitation is decreased dramatically by the absorptive qualities of vegetative litter on the forest floor. \*\* These absorptive qualities also greatly slow down the flooding process. If high density development were to occur in the city's hillside areas, without protecting existing woodlands, increased siltation of the city's water system could create water quality problems.

In determining buildable acreage for vacant areas within the 184 acre Special Development Zone, the city made a detailed analysis of the three areas. Lands suitable for development were determined using the following assumptions: 1. Identify areas that are already committed; 2. are unbuildable due to slopes of 25% or more; 3. are inaccessible because of potential access roads being too

steep; 4. are within a floodway of 100-year flood plain; and 5. the total development costs would be excessive.

In determining how large the committed portion of a parcel should be, the city allowed for size differences according to whether a parcel was connected to city services. If a parcel was connected to city services, the size of the committed portion was determined according to the following standards: 1. The entire parcel shall be considered committed if it is vacant and substantially less than one-half acre in size; 2. if the parcel is one acre or larger with an existing house, one-half acre shall be considered committed. If a parcel was not connected to city services, the size of the committed portion was determined according to the following standards: 1. The entire parcel shall be considered committed if it is vacant and substantially less than one acre in size; 2. if a parcel is one acre with a house, the entire parcel is considered committed; 3. if the parcel is two acres or larger with an existing house, one acre shall be committed.

In determining that unbuildable conditions should be related to excessive development costs the city used information contained in a 1976 report submitted to the Council of Governments by the Oregon Home Builder's Association and included in the D.L.C.D. Housing Handbook, and policies described in the City's Comprehensive Plan to draw this assumption. In that report the Association described that development on steep sloped areas required extreme cost increases. According to the data presented, it was shown that new development costs per dwelling on hillside areas having hazardous geologic and soil conditions with slopes of only 15% to 18% will normally raise the cost of a new home by as much as 50% to 100% or more. These are costs that the city feels are exorbitant to the average home buyer in Brownsville. Certainly doubling the cost of a home does not render a parcel totally unbuildable but it goes a long way towards discouraging development, because of marketability factors, which the city feels is another way of interpreting what is unbuildable.

Why these increased costs would be relevant to Brownsville's Special Development areas can be recognized by understanding how certain policies in the city's comprehensive plan actually commit the costs of extending services for new development to the builders. On page 189

of the plan, policy 58 describes that "the City of Brownsville shall establish a systems development charge for all new development. The systems development charge will go towards providing over-sized public facilities (such as water lines, sewer lines, streets, etc.) in developing areas of Brownsville so that the facility will be able to meet future needs without being re-engineered and improved at a later date and at a higher cost." On page 181 of the plan policy 21(E) states that "new street development and extension shall be the financial responsibility of the principals behind the development project for which the street is being built or extended to serve. A systems development charge will be used to oversize a street such as a collector." On page 201 of the plan, policy 2(C) points out that the city will "require the developer to absorb the cost of facility extension."

In analyzing the Holloway Heights area of about 9 acres, the city determined that only about two acres are vacant and buildable. Most of the area is already physically committed because of 17 existing residences connected to city sewer and water. With the area's density averaging about one-half acre for each dwelling, there is probably only enough buildable room for 2 or 3 more houses. There may be 2 or 3 additional building sites on the northern end; however, the slopes on these particular sites would run between 25% and 30%. The city feels that if any building permits are issued to this area in the future they should be for single family dwellings (low density development) because existing city services in the area are not capable of handling heavier densities. The loop road which serves the area is in extremely poor condition.

The second area located between the river, city park, City Hall and Main Street consists of about 20 acres and for identification purposes will be entitled South Hill. This area has an old established church and adjoining grounds occupying about 2 acres. Properly sized feeder lines for city sewer and water are in close proximity to South Hill, but only serve the church site. The buildable lands analysis indicates that most of the area is unbuildable. Two acres are committed to the existing church. About eight acres are unbuildable because they lie within the floodway or 100-year flood plain of the Calapooia River. In addition about 5 acres are unbuildable due to prohibitive costs to a developer where slopes

range from 15% to 30%. Approximately 5 acres located on slight to moderate slopes of 2% to 12% could be considered buildable if sewer and water lines were extended and access created; but the cost of these extensions would have to be absorbed by the developer. The city considers these 5 acres buildable on the basis that their slopes are probably gradual enough to allow for reasonable building costs, including costs for extending services.

The largest Special Development area consists of approximately 155 acres and is situated on the hill above "Old Town." "Old Town" Hill has 20 dwellings; 19 are receiving sewer and water services and 1 is not receiving services. From these existing dwellings approximately 11 acres were determined to be committed. The city's analysis revealed that approximately 35 acres are unbuildable because of 25% to 50% slopes. The only improved roads serving "Old Town" Hill are along its western and southern boundaries, where the area's only existing development is also situated. An accessible road to the south, Spaulding Avenue, gives access to several vacant parcels containing slopes between 3% and 10% that could be developed to urban densities. City sewer and water lines are properly positioned for extension to these parcels, which are situated in the northeast corner of the city limits and comprise about 24 acres. The costs, however, of extending services would have to be paid by the developer, but probably at reasonable costs. Of the 24 acres considered buildable, approximately 30% or about 7 acres would have to be considered committed to future streets and parks which would leave a total of approximately 17 buildable acres.

The remaining 85 vacant acres occupy the central portion of the hill and are surrounded by an escarpment containing 20% to 30% slopes. This whole central section is heavily wooded with a few pockets of fairly level ground along the top of the hill. Even though these flatter sections, containing slopes of 3% to 12%, appear to have development potential there are a number of constraints that would impede their conversion from rural to urban. There are no existing roads, sewer or water lines extending into these central portions of the hill. The only possible way of extending services would be for a developer to pay the costs. The city feels the costs of these extensions would be excessive due to the steep slopes along the escarpment and the total length and area of the extensions. The costs, therefore, of building affordable

housing at normal urban densities in these flatter central sections would be unreasonable and to the point of being exclusionary to the average home buyer in Brownsville. Therefore, the city feels that these isolated 85 acres will remain unbuildable to normal urban densities to the year 2000.\*\*\*

In counting the buildable lands in all three Special Development areas the city concludes that only about 23 acres are buildable. All of the parcels are probably buildable to urban densities because they contain slight to moderate slopes and are in close proximity to city services, which should keep extension costs to a developer within reason. The city further believes that including more than 23 acres as buildable would be incompatible with its present ability to extend services for new development. Extension of these services through the city's financial efforts is expressly limited by Comprehensive Plan policies which were mentioned early in this analysis.

In recognizing that some of the S.D. areas are buildable, they are also small and separated and the city feels that the best future uses of these vacant buildable parcels would be residential. This type of use would also insure that the city is maintaining consistency with all relevant Comprehensive Plan goals and policies. Policy 25(F) on page 160 of the Comprehensive Plan states that "in Special Development areas where the dominant surrounding use is residential, residential use shall be encouraged." All existing buildable portions of the three Special Development areas are surrounded by a predominance of either open space or existing residential uses.

#### SUMMARY TABLE

Analysis of the Buildable and Unbuildable Lands of the Brownsville Special Development Areas.

<u>Area Name</u>	<u>Total Acres</u>	<u>Committed Acres</u>	<u>Acres in Floodway or 100 year Floodplain</u>	<u>Acres Unbuildable with 25%-30% Slopes</u>	<u>Acres Unbuildable due to Extreme Costs</u>	<u>Acres Buildable</u>
Holloway Heights	9.0	7.5	.0	.0	.5	1.0
South Hill	20.0	2.0	8.0	.0	5.0	5.0
Old Town Hill	<u>155.0</u>	<u>18.0</u>	<u>.0</u>	<u>35.0</u>	<u>85.0</u>	<u>17.0</u>
Totals	184.0	27.5	8.0	35.0	90.5	23.0