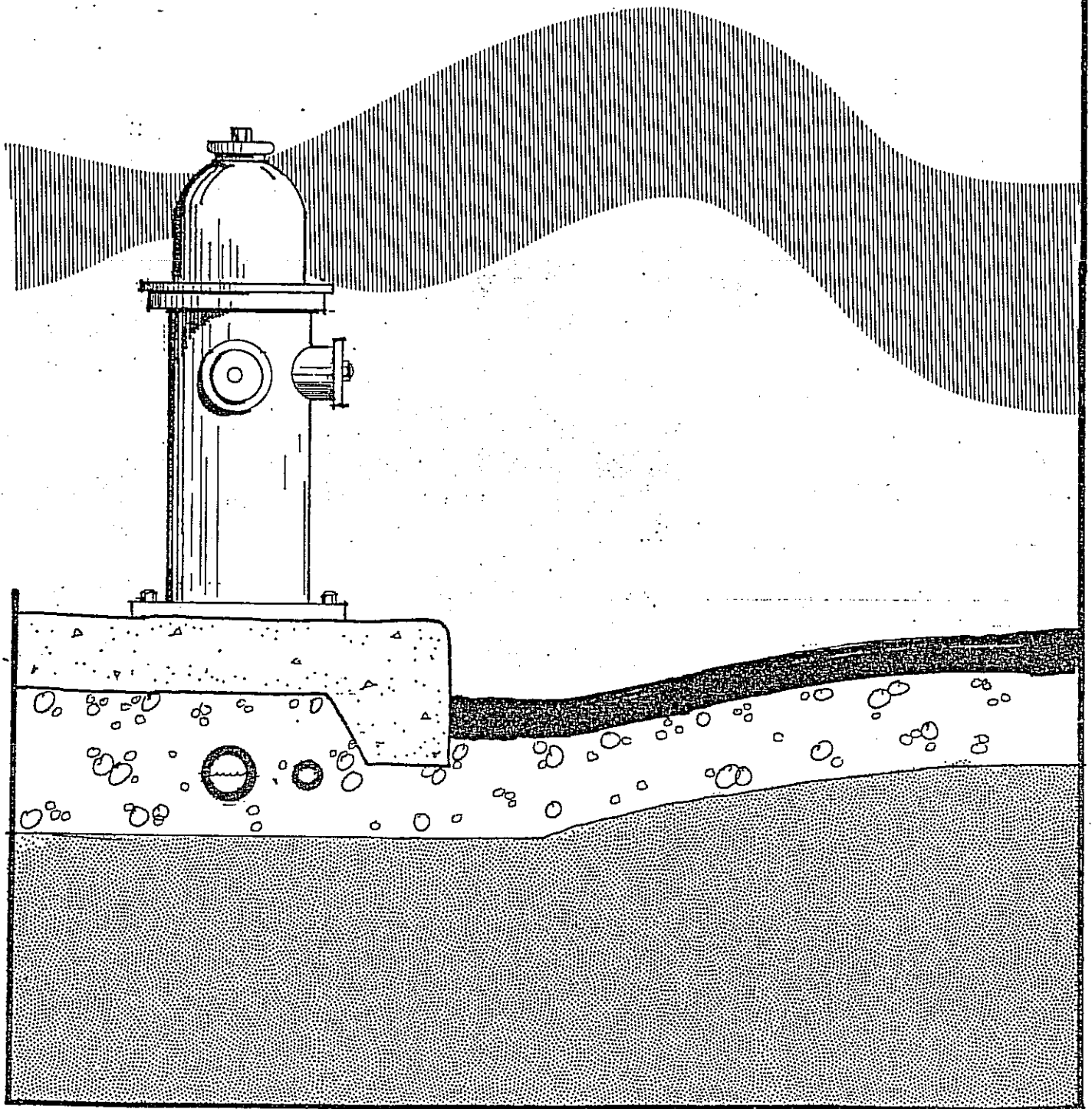


## Goal 11

**CLATSOP COUNTY  
GOAL 11  
COUNTY-WIDE ELEMENT**

---

**PUBLIC FACILITIES and SERVICES**



COUNTY-WIDE ELEMENT

Goal 11

Public Facilities and Services

Adopted July 23, 1980  
Ordinance 80-7

Revised by Amendment Ordinance 84-9, dated May 23, 1984

## INTRODUCTION

Public facilities and services affect a community in two ways: (a) through the costs involved in their financing and (b) through their influence on land use patterns. The nature and level of these services due much to define a community, clearly making the differences between urban and rural land usage by their presence or absence.

The 5 cities and 1 town in Clatsop County provide differing levels of public facilities. Almost all of the urban areas provide police and fire protection, sewer, water and library services. As the size of the city increases, the services provided become more varied.

There are limited public facilities and services provided in rural Clatsop County. This is due to the low density development characteristics and the lack of need to serve open farm and forest lands. Most rural land use is sufficiently dispersed so as not to require public facilities such as a sewer.

## BASIC FINDINGS

### Diking and Drainage Districts

There are 7 active diking districts, 7 inactive diking districts, 2 drainage districts and 1 water control district in the County. Most of the dikes and water control structures were constructed prior to the 1940s. By far the largest land use of diked lands is for farming. Many of the dikes are in serious states of disrepair and could possibly be breached during flood stages.

### Water Supply

Most of the County's rural residents obtain their water from a community water system. Other residents utilize a surface source, a spring or a well. Drilling for potable water in sedimentary rock formations of the County appears to be the least reliable source. Some of the well water found has been brackish while other wells drilled have proven adequate for domestic use.

At least 5 of the 20 community water systems in the County are at or close to capacity, while 6 other systems are unsure of their capacity. Several of the community systems are inadequate in present supply, storage and distribution system capacities.

Within RSAs, UGBs and municipalities, a community water system is considered a basic service required for development. In Rural and Conservation Plan designations, this level of service is not required for development. However, construction of residences, commercial or industrial structures, where appropriate must show proof of water from some source.

All of the cities within the next 20 years will have to find additional sources of water. Some of the cities and rural water systems are, or may in the future be, at odds with the Environmental Protection Agency over the issue of the federal turbidity standards. The Clatsop Plains and Gnat

Creek aquifers might have a greater potential as future water sources than existing or potential sources from springs or rivers. This is due in part to the cost of treating and distributing surface water. Studies need to be made on the possibility of a regional water supply system which could use the Columbia River as a source, filter it for purity and deliver it to the municipal and community water systems in Clatsop County.

### Waste Disposal

In most parts of the unincorporated County and within the City of Gearhart sewage is handled through the use of on-site sewage disposal systems. The proliferation in the early 1980's of alternative Department of Environmental Quality (DEQ) regulations for on-site systems has led to much greater areas of the County where residential development may take place, based on soil types and groundwater characteristics. This is no longer the severe limitation in some areas that it once was.

The Westport area is an area served by on-site sewage disposal systems and a collection system that discharges untreated sewage directly into a surface water stream. Recently a portion of the area has been declared a health hazard by the State of Oregon. A sewer district is expected to be formed by June 1, 1984. Tentative approvals from DEQ and a Community Block Grant for installation of a sewer system in the Westport area have been received. Construction on the system could begin as soon as September 1984.

The City of Seaside is exploring methods to expand their treatment capacities. Warrenton will need to look at expansion around 1990, if the growth of the late 1970's again occurs. The City of Cannon Beach has installed an innovative marsh treatment system to augment their sewage lagoons (for further information see respective Urban Growth Boundary Plans).

Over the last several years, the solid waste sites in Clatsop County has either filled up or closed due to new environmental standards developed by the federal government. Several potential new landfill sites have been rejected due to water pollution problems, steep slopes or remoteness from populated areas. Clatsop County is in the process of reexamining potential landfill sites and should be developing a site by the mid 1980's.

### Governmental Structures and Other Public Facilities and Services

Within Clatsop County there are 51 different types and sizes of service districts and associations. The level of rural fire protection provided by the 9 rural fire districts varies from a fire insurance rating of 6 to 9. Police protection provided by the County Sheriff's Department is inadequate for areas remote from population centers.

All school districts within the County has some capacity for additional students, although some schools are nearing capacity. Warrenton built a new elementary school in 1980, consolidating the old grade school and junior high.

Within the County, postal delivery and location of homes for emergency services has become an increasing problem with approximately 400 different house numbers for each of the 6 rural mail routes. The situation grows more complicated as time passes and the population of rural areas of the County increases.

## PUBLIC FACILITIES GOALS

1. Urbanizable Areas - To provide public facilities in accordance with coordinated land use and transportation systems in a manner which encourages the orderly conversion of land from rural to urban use.
2. Outside of Urbanizable Areas -
  - a. To support the provision of needed public facilities for rural areas at levels appropriate for rural densities;
  - b. To discourage the development of inappropriate public facilities on resource lands which would result in pressure for conversion to more intense use.

## OVERALL POLICY REGARDING APPROPRIATE LEVELS OF PUBLIC FACILITIES IN THE COUNTY

Six different Plan designations exist for lands in the County. Differing levels of public facilities and services are appropriate for the different types of development planned for the County. Certain facilities and services are available to all County residents, such as County health services, Sheriff's protection and many other social services.

1. Development - This is a Plan category for estuary and shoreland areas appropriate for commercial and industrial use. Consequently, a level of public facilities sufficient to carry on that type of use is appropriate. Public water and sewer services would be appropriate but may not be necessary depending on the type of development. Public fire protection is appropriate. Development here will not directly affect school services, although increased employment may result in increased housing in the vicinity which would impact schools. Those impacts will be considered in terms of the residential effects, not at the point of commercial or industrial development.
  - A. Urban Growth Boundary (UGB) - Appropriate levels of services for UGB areas are discussed in the Comprehensive Plans of the individual cities.
  - B. Rural Service Area (RSA) - The RSAs in the County are Arch Cape, Fishhawk Lake Estates, Shoreline Estates and the old Naval Hospital site. All currently have public water, sewer and fire protection although the current water supply for the old Naval hospital is inadequate. Public water or sewer services and fire protection are appropriate in RSAs and further development must be based on the capacities of the systems. Development in RSAs can have significant impacts on schools. Applications for subdivisions within RSAs will be referred to the appropriate school district. The development will be allowed only if the schools are capable of handling the increased capacity expected to be generated from the proposal.
2. Rural Lands - Most of the areas built upon or committed to non-resource use in the County are in this Plan designation. Much of the area is currently served by community water systems. As the background report indicates, several of these water systems currently have, or very well

may in the future, experience shortages. The City of Astoria provides water to the John Day and Fern Hill Water Districts, both of which are nearing their capacities. The Astoria trunk line is sufficiently sized to provide both of the districts with additional water. John Day needs to negotiate with Astoria for additional water. Fern Hill's system, however, is old and is in need of repairs.

Knappa Water Association currently has a moratorium on new hookups. The distribution system is adequate but an additional source(s) is needed. In an effort to correct the situation and lift the moratorium the District has:

- (1) revised its water rate schedule to increase the per unit water cost as consumption increases and to increase revenues to assist in system improvements; and
- (2) contracted for test well drilling for summer of 1984 with the intention of having additional wells on line in summer of 1985.

Wickiup, Youngs River/Lewis & Clark, Falcon Cove and Arch Cape water systems are all near their capacity. All have contracted with engineering firms to help upgrade their systems.

Clatsop County is concerned that development not outstrip the capacity of the districts to serve their service areas. Clatsop County requires that a proof of an adequate source of water be available before any development permit (e.g. residential, commercial or industrial), excluding land divisions, is approved. Also Clatsop County will coordinate with each of the affected Districts and Associations to determine if County policies will issue a report, and if necessary, amend its Plan and Implementing Ordinance prior to its first Periodic Review before LCDC.

Public water supply is an appropriate public facilities in this Plan designation, but is not essential for development.

Rural fire protection districts are present in many of the areas in this Plan designation. This is often a desired rural service and is appropriate in this Plan designation but is not a prerequisite for RA zoning. Some rural residents are more willing to pay high fire insurance premiums than taxes to maintain a local fire district. Development is scattered enough in this Plan designation, as compared with RSAs or cities, that fire protection is not a requirement for development.

Community sewage systems are not appropriate in this Plan designation.

Partition and subdivision proposals in this Plan designation will be referred to the local school district for comment.

3. Rural Agricultural Lands - These are lands preserved for agricultural use. Generally, residences are allowed only in conjunction with farm use. Some parcels in this Plan designation are served by community water systems but generally water supply is on an individual basis. Since parcel size and use are controlled by the Exclusive Farm Use (EFU) zoning district, it is not appropriate to extend community water to parcels in this Plan designation since it would not lead to pressure to

further develop land for residences. The primary function of Rural Agricultural Lands is for agricultural use. Any extension of public water will only be to support a development in conjunction with resource use and will not be the basis for future conversion to non-resource use.

As with the Rural Lands Plan designation, public fire protection may be present here, and is appropriate, but is not necessary for development.

Community sewage systems are not appropriate in this Plan designation.

4. Conservation Forest Lands - The primary purpose of this Plan designation is to conserve lands for commercial timber production. Generally, residences are in conjunction with a forest use, but in many areas with this designation residences on substandard parcels are common. Therefore, community water systems are often present already. As with agricultural lands, the parcel size and use are controlled by the zoning present. Therefore it is not inappropriate to extend community water to residences. The large minimum parcel sizes and distances of lines will limit extensions, and the Plan designation removes the ability to develop land just for residential purposes. The primary function of Conservation Forest Lands is forest use. Any extension of public water will only be to support a development in conjunction with a resource use and will not be the basis for future conversion to non-resource use.

Public fire protection may be present here, and is appropriate since so many residences currently exist, but is not necessary for development and is not encouraged in sparsely settled forest areas.

Community sewage systems are not appropriate in this Plan designation.

5. and 6. Conservation Other Resources and Natural - These Plan designations are for important resource areas and for recreation areas. For areas such as the estuary and wetlands, no public water, sewer or fire protection is appropriate. For developed recreational areas, these facilities are appropriate but may not be necessary.

#### GENERAL PUBLIC FACILITIES POLICIES

1. Clatsop County recognizes the level of public facilities and services described in the section "Overall Policy Regarding Appropriate Levels of Public Facilities in the County" above, as that which is reasonable and appropriate for development in different Plan designations in the County. Development of facilities and services in excess of those levels and types shall not be approved by the County.
2. The level of urban services provided within urban growth boundaries shall be determined by policies mutually adopted by the Board of County Commissioners and the affected city.
3. Development permits (excluding land divisions) shall be allowed only if the public facilities (water and sanitation, septic feasibility or sewage capacity) are capable of supporting increased loads. The County shall consider prior subdivision approvals within the facilities service area when reviewing the capabilities of districts.



4. The creation of new community water systems and fire districts shall be discouraged in those areas designated Conservation Forest Lands and Natural.
5. Water and sewer districts shall be encouraged to cooperate with the County in changing district boundaries. Before a public facility (i.e. water, sewer) extends its service area, it should demonstrate the ability to service vacant lands currently served by that public facility.
6. All new planned developments and subdivisions shall install underground utilities. Efforts should be made to place existing overhead lines underground in already developed areas.
7. Utility rights-of-way, where not located within road rights-of-way, should be considered for future utilization as part of a green belt or pathway.
8. All utility lines and facilities should be located on or adjacent to existing public or private rights-of-way to avoid dividing existing farm units.
9. When a Comprehensive Plan or Zone Change or both are requested that would result in a higher residential density, commercial or industrial development it shall be demonstrated and findings made that the appropriate public facilities and services (especially water, sanitation (septic feasibility or sewage) and schools) are available to the area being changed without adversely impacting the remainder of the public facility or utility service area.

#### DIKING AND DRAINAGE DISTRICT POLICY

1. Clatsop County should assist diking districts in reorganization as well as providing assistance in obtaining funds for improvement of the diking district.

#### WATER SUPPLY SYSTEMS POLICIES

1. If a community water system is to be utilized, either in the development of a subdivision, planned development, or the building of individual residences, commercial or industrial structures requiring water or subsurface sewage disposal, the County shall require proof that a year-round source of potable water is available.
2. If water supply for building permits is from a surface source, including a spring, proof of water rights from the State must be presented.
3. When water supply to a subdivision or planned development is to be from a source other than a community water system, the developer shall provide evidence of a proven source of supply and guarantee availability of water to all parcels of land within the proposed development.
4. Clatsop County shall encourage existing community water supply systems to be improved and maintained at a level sufficient to:

- a. provide adequate fire flow and storage capacity to meet the service area requirements,
  - b. meet the anticipated long-range maximum daily use and emergency needs of the service area, and
  - c. provide adequate pressure to ensure the efficient operation of the water distribution system.
5. Clatsop County shall cooperate with the various cities in examining the feasibility of developing some type of regional water system to provide municipal and community water.
  6. Clatsop County should work with State agencies to conduct a study of the Gnat Creek aquifer to determine the potential to provide a water source for residents of the area.
  7. Clatsop County shall monitor the number of land partitions in the Fern Hill, John Day, Wickiup, Knappa, Youngs River/Lewis & Clark, Falcon Cove and Arch Cape water system areas to determine if the County land partition policy is adversely affecting their District or Water Association. The County will develop, in conjunction with the above Districts and Associations, a report, and if necessary, amend the Comprehensive Plan and Land and Water Development and Use Ordinance to rectify the problem prior to its first Periodic Review before LCDC.

#### WASTE DISPOSAL POLICIES

1. Clatsop County considers sewer services only appropriate for urbanizable lands and RSAs. The intensity of land use facilitated by provisions of sewer is not appropriate for Rural areas. Clatsop County may permit the creation or extension of sewer services outside UGBs and RSAs in the event of a health hazard or water pollution problem identified by DEQ.
2. Clatsop County shall cooperate with cities in developing a phased growth plan to guide the provision of municipal services to urbanizable areas.
3. Clatsop County shall encourage alternative methods of sewage disposal when such methods are economically, legally, and environmentally feasible.
4. Clatsop County should consider the use of solid waste and forest lands waste to generate electricity.
5. Clatsop County shall continue to cooperate with the various cities in the establishment of a regional landfill site.

#### GOVERNMENTAL STRUCTURE AND OTHER PUBLIC FACILITIES POLICIES

1. Clatsop County shall encourage schools that most economically serve the population of the County and consideration should be given to development of a consolidated district.
2. Clatsop County shall rely upon the various school districts in the County for the provision of public education.

3. Clatsop County shall notify the appropriate school district of all subdivisions, planned developments and mobile home park applications
4. Clatsop County shall continue to cooperate with all appropriate governmental jurisdictions, agencies, and special districts (including water, sewer, roads, etc.) in developing a coordinated approach for the planning and delivery of health and social services.
5. Clatsop County shall continue to encourage the upgrading of the level and quality of the County Sheriff's Department as funds become available.
6. Clatsop County should work with local residents as well as with the rural fire protection districts in examining various methods to improve fire protection. One method which could be used is to require subdivisions and planned developments to dedicate a site, funds, equipment, and/or construction materials for a fire station.
7. Clatsop County should work with the U.S. Postal Service in developing a new address system to facilitate the immediate location of buildings by emergency and support services in Clatsop County.
8. Rural fire protection districts shall be encouraged to expand service boundaries to include lands designated Rural Lands.

CLATSOP COUNTY COMPREHENSIVE PLAN

Background Report

PUBLIC FACILITIES AND SERVICES

September 1979

Prepared by

John P. Pace, Planner  
Clatsop County Department of Planning and Development

Adopted July 23, 1980 by  
Clatsop County Board of Commissioners

Funding assistance was provided by the Oregon  
Land Conservation and Development Commission.

## TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
Growth Shapers	1
Urban Services	4
Rural Facilities	5
DIKING AND DRAINAGE DISTRICTS	6
WATER SUPPLY SYSTEMS	14
Municipal Water Systems	14
Community Water Systems	16
Individual Wells	27
Potential Water Supply for Clatsop County	28
WASTE DISPOSAL	34
Municipal Sewer Systems	34
Community Sewer Systems	36
Septic Systems	38
Solid Waste	42
Introduction	42
Recycling	46
Energy Recovery	47
GOVERNMENTAL STRUCTURE AND OTHER PUBLIC FACILITIES AND SERVICES	49
Local Government	49
Education	49
Health Care	52
Public Assistance	53
Police Protection	53
Fire Protection	54
Administrative - Institutional	56
Government Finance	60

BIBLIOGRAPHY	62
--------------	----

## INDEX TO TABLES

	<u>Page</u>
TABLE 1.. Flood Control Districts.	13
TABLE 2.. Clatsop County Water Systems.	18
TABLE 3.. Primary Sources of Potential Domestic Surface Water Supplies.	31
TABLE 4.. Solid Waste Generation.	42
TABLE 5.. Clatsop County Solid Waste Disposal Sites.	43
TABLE 6.. School Districts in Clatsop County.	51
TABLE 7.. ISO Ratings.	54
TABLE 8.. Fire Protection Rating.	55

## INDEX TO MAPS

MAP 1.. Location of Diking Districts.	6
MAP 2.. Clatsop County Water Systems.	17
MAP 3.. Clatsop County Generalized Hydrology.	32
MAP 4.. Well Yield Capability.	33
MAP 5.. Clatsop County Governmental Districts.	50
MAP 6.. Clatsop County Public Facilities.	57
MAP 7.. Clatsop County Public Utilities.	61

## INTRODUCTION

Certain facilities and services are required to support the various levels of development in Clatsop County. The type and intensity of development determine the level of needs for these facilities.

On the other hand,

the availability of public facilities and services is a very significant determinant of the land use pattern. The existing pattern is primarily due to the location and level of public services available. The County and State highway system, for example, has had a dominant affect on the establishment and extent of development. With the ease of auto travel, individuals no longer need to live near their work or goods and services.

Public facilities are usually built to satisfy an existing or anticipated need for the services. When provided, these facilities can also have the effect of encouraging or making possible additional more intensive development within their service area. They also usually increase value and add benefits to each property served.

Within urban areas, the provision of public services is a necessary requirement for urban density development. In rural areas, however, the establishment of public facilities can have a detrimental effect of encouraging urban sprawl which destroys the rural character by overdevelopment. Basic facilities include sewage disposal, water, police protection, fire protection, schools, roads and utilities. The level of provision of these facilities varies from minimal provision of the basic services in rural areas to the more elaborate and complete provision of public facilities and services in incorporated cities.

Public services are provided either by an incorporated city government, by special purpose private districts, or by County service districts. The revenue to support these facilities is usually gained by levying user fees and property taxes. Providing public facilities is expensive. Therefore, the provision of public services is much more cost effective in the more intensely developed urban areas than in lower density rural areas.

### GROWTH SHAPERS

Public Facilities affect local growth by influencing the location and costs of new construction, and can have a powerful affect on the density, timing, and amount of new development. It is important that public facilities be designed to enhance the positive features of new trends in development. At the least, local decision makers should be aware of the land use implications of their public facilities decisions, and the economic and environmental impacts likely to follow.

The following information taken from The Growth Shapers: The Land Use Impacts of Infrastructure Investments, discusses further the relationship between public facilities and land use planning.

"The link between infrastructure\* investments and land use changes has long been recognized in a general way, but little has been done to control the design and location of new infrastructure.

\*Infrastructure means public facilities.

Instead, the tactic has been to attempt to reduce the negative impacts of unplanned growth with tools such as zoning, subdivision controls, and local planning. These techniques often fail, particularly when land use is changing rapidly, as it often does following construction of new infrastructure. Changing the design of the infrastructure itself can be an effective additional control method, reinforcing the effectiveness of the other land use controls.

"Economic impacts of development are separated into costs that are privately borne and costs paid by the government. The private costs of development depend primarily on the type of dwelling unit and the amount of amenities provided by the developer. In general, single-family housing is much more expensive in its capital and operating costs than multi-family housing.

"The evidence on how public costs are affected by population growth is conflicting. It seems to depend very much on the particular characteristics of both the community involved and the growth that occurs. For large communities, several studies have indicated that most per capita service costs rise rather than fall as the communities get larger.

"For smaller communities, on the other hand, average costs may fall with further development as facilities become used to capacity. One police car or fire station may be able to handle more people without reducing service quality, while splitting the costs over the larger population. With extensive growth, however, the additional people are likely to require new schools, fire houses, police stations, and the like, and tax rates are likely to rise. Existing residents may wind up paying more money for the same level of service they received before because they are paying for facilities built to serve future populations.

"New development may bring in residents of a different socioeconomic status than existing residents with resulting benefits and costs. A common example is where a new highway turns a rural community into an affluent suburb of a metropolitan area. In such cases, the new residents may demand additional public services such as libraries, sport facilities (golf courses, tennis courts), recreation centers, parks, and public parking lots. The costs and the benefits must be shared by the existing residents."<sup>1</sup>

<sup>1</sup>Urban Systems Research and Engineering, Inc., The Growth Shapers: The Land Use Impacts of Infrastructure Investments. Council on Environmental Quality, May 1976.



Development induced by public facilities, such as a new county road or water line, frequently occurs in scattered locations away from already developed areas. The "leap frog" development, as discussed in The Growth Shapers, creates many problems.

"This 'leapfrog' development pattern carries high public costs, since utility lines, streets, and services must be extended long distances through vacant land. Even if the intervening land is ultimately filled in, the community must bear unnecessarily high service costs in the interim. It also finds itself locked into sprawled out low density development patterns for the long term, with all its implications for higher public service costs.

"If development occurs at a rapid rate, as is often the case where infrastructure changes are made in a region with strong economic growth, another group of economic impacts may be felt. In an area where a great deal of single-family housing is built over a short time, most of the residents moving in will be about the same age, as will their children. It will be necessary to build schools to serve this large group of children, but after they pass through the number of school age children in the community will drop suddenly. A large portion of the school space may then be useless."

Because the economic impact of new development depends so much on the particular characteristics of the situation, any conclusions about a specific development have to be based upon specific analyses. Below are some general conclusions on the impacts of growth taken from Impacts of Urban Growth on Local Government Costs and Revenues prepared by Oregon State University Extension Service, 1974.

#### GENERAL CONCLUSIONS

Three overall conclusions were drawn from this study:

1. Impacts of residential growth on municipal government expenditures depend upon location and density of development. Expenditures per home on streets, water lines and sewer lines are related to mileage of streets and utility lines. Initial investment in extending utility lines and streets into urbanizing areas is partly paid for by property owners benefiting from new services provided. Local government, and hence all taxpayers, pay for annual maintenance and operating expenses plus some construction.
2. Effects on city or school expenditures appear small when streets, water and sewer systems, school buildings, etc. have enough capacity to accommodate growth. In these cases, no major capital outlays are needed for urban expansion to occur. However, even though the investment in these major facilities has already been made, it is still a cost of urban expansion.
3. Comparison of expenditures and revenues per capita in different cities and in areas outside cities are not

always meaningful because of differences in municipal services offered. Changes in expenditures and revenues caused by urban growth in different places are difficult to compare for the same reason.

Larger cities offering a more complete range of urban services, including parks and recreation programs and a public transit system have higher expenditures per capita.

Different sources of revenue and use of volunteer help for services such as fire protection also distort comparisons from one place to another.

## URBAN SERVICES

The 5 cities and 1 town in Clatsop County provide differing levels of public facilities. Almost all of the urban areas provide police and fire protection, sewer, water and library service. As the size of the city increases, the services provided become more varied.

The growth and development of urban areas is dependent upon their ability to provide the basic urban services. Urban growth boundaries should be developed on the premise that an efficient means of supplying needed services are planned, can be achieved and can be financed. The provision of urban services should be designed to maximize the efficiency of developing urbanizable lands according to each city's land use plan.

As urban growth policies recognize, urban services should not extend beyond the urban growth boundary of each city. This not only limits the development potential in rural areas, it also maintains the integrity of the urban growth program.

## RURAL FACILITIES

There are limited public facilities and services provided in rural Clatsop County. This is due to the low density of development characteristics and the lack of need to serve open farm and forest lands. Most rural land use is sufficiently dispersed so as not to require public facilities such as sewer systems. Various types and sizes of community water systems, Rural Fire Protection, Schools, and septic tanks provide the service needs. In some cases, the major difference between urban and rural facilities and services is the quality of services being provided. Rural facilities and services are provided on either a general County-wide basis or by special districts.

The provision of public facilities and services in rural Clatsop County should be limited to those necessary to support the level of rural activity. The development of rural areas should consider the impact on existing services and the anticipated need for additional facilities.

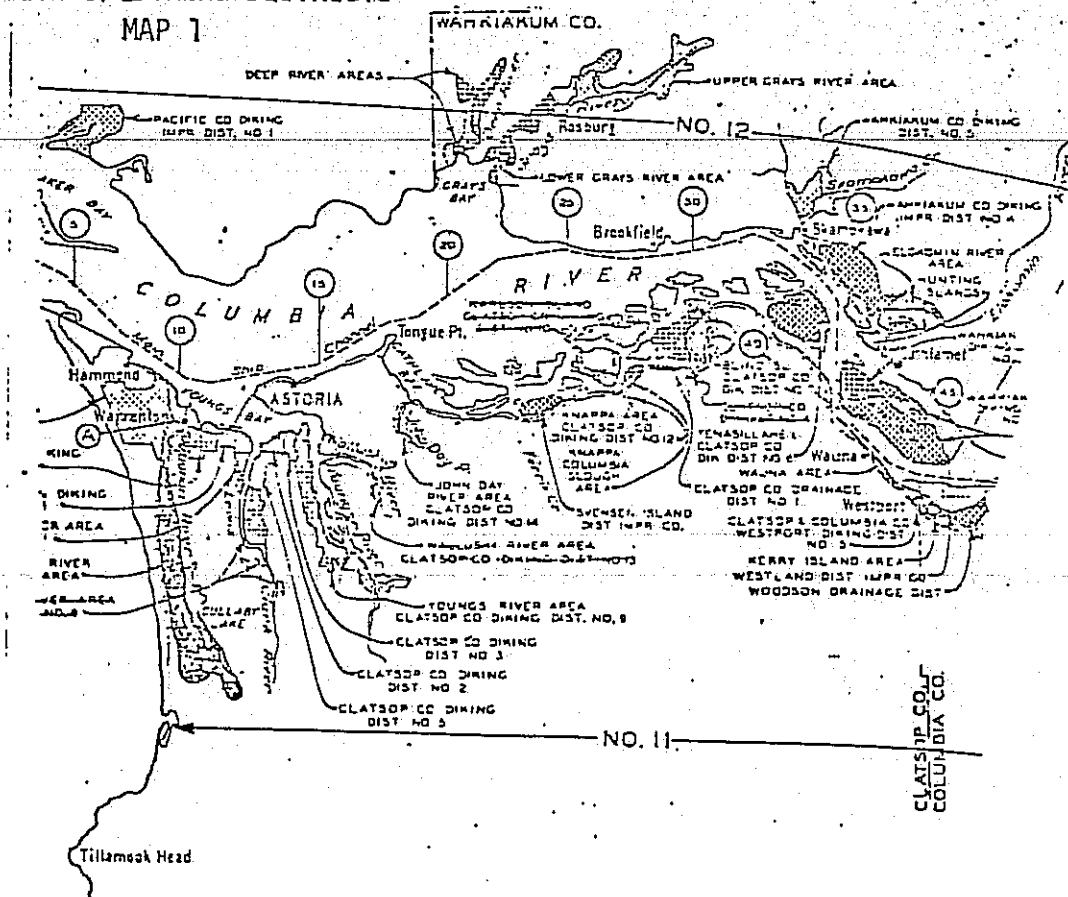
It is the intent of Clatsop County to maintain the character of rural areas by limiting their need for urban type services. Only those facilities and services that are necessary to accommodate projected rural land use activities should be provided. The demand for rural facilities and services should be expected to increase within areas designated for rural development. The provision of additional public facilities and services should not significantly increase in agriculture and forest designated areas.

## DIKING AND DRAINAGE DISTRICTS

The alluvial lowlands forming the floodplain have been used for raising and grazing for many years. As early as the 1900s, the floodplain has been used for agricultural activity, which required dikes to protect the land from annual floods. Most of the existing flood protection facilities in the area were constructed prior to the 1940s. Land uses in these diked areas range from farming to industry. By far the largest land use of diked lands is agriculture.

Within the County there are 7 active diking districts, 7 inactive diking districts, 2 drainage districts and 1 water control district. (See Map 1) The administration positions within these districts are elected. The districts are considered political entities, and as such, have taxation powers. The dikes are sufficient in height to withstand the previous high water. But many of the dikes are in serious states of disrepair and could possibly be breached during flood stages.

### LOCATION OF DIKING DISTRICTS



In 1974, a committee consisting of Directors from each diking district was appointed to provide a list of the advantages and disadvantages of reorganizing diking districts to drainage districts and to consolidate districts. Little or no progress was made by the committee in reorganizing and consolidating the districts.

Part of the reason little or no progress was made by the committee was the concern that some diking districts would have to subsidize the poorly maintained diking districts.

The following are the committee's findings:

#### MAINTAINING DIKING DISTRICTS

##### Advantages

1. Restricted to operation and maintenance of tidegates and dikes.
2. Less area of responsibility (smaller area to govern).
3. District sets assessment with landowner approval given to County Commissioners as suggested assessment to be placed on tax roll. Bills presented to County Commission for payment. Directors need to be bonded.

##### Disadvantages

1. There is no way or responsibility to get water from flooded lands to outlets at tidegates.
2. One landowner at outlet can plug up or flood several landowners upstream from him by not maintaining drainage through his property.

#### REORGANIZE AS A DRAINAGE DISTRICT

##### Advantages

1. Has control over main internal ditches (one that benefits two or more landowners) for maintaining water level as well as control over dikes and tidegates.
  - a. Better water table control in areas of septic tank drainfield.
  - b. Water won't stand on fields as long - earlier and longer growing season.
  - c. Grow larger variety of plants or crops.
2. Wider assessment base (assessment per acre plus possible set assessment per building) not based on ad valorem tax.
3. Landowner at outlet of main ditch or slough couldn't plug water outlets to people upstream by poor maintenance.

4. District Directors and landowners set assessments, make up assessment rolls, deliver to County for collection on property taxes, County returns tax money to Drainage District for payment of bills. Bills can be paid faster so advantage could be taken of discounts if paid by 10th of month, etc. Money can be maintained in savings account to draw interest until needed.
5. Landowners who are totally protected by their own diking system and who do not desire or need protection can be excluded from drainage district during reorganization.
6. Could join the Statewide Drainage District Association for getting increased assistance and information for improved maintenance.

#### Disadvantages

1. Higher cost to landowner over Diking District if additional internal drainage is done.
2. Probably no larger area of assessment than Diking District.

#### CONSOLIDATION OF DIKING OR DRAINAGE DISTRICTS

1. Spread the cost of repairing or improving small critical areas over larger tax assessing areas.
2. Larger districts could economically afford to own and operate specialized equipment (spray equipment, mowing equipment) where small districts could not.
3. Larger districts could hire someone to inspect dike areas or oversee construction work whereas small districts cannot always depend on someone being able to volunteer this much time.
4. A large district would have a better chance to elect a landowner with good leadership ability.
5. Larger districts may have more influence (voter power) to encourage State and Federal agencies to provide help on projects.
6. Consolidate all districts into one unit that could be effected if a dike should break. (Possibilities - Districts 3, 9 and 13 and 2, 5, 8 and 11).

The following is some information on the various diking and drainage districts within the County by planning areas.

## CLATSOP PLAINS

### Skipanon Water Control District

Location: Skipanon River Area - Warrenton - Cullaby Lake  
Size: 1,860 acres - assessment units  
Length of Dikes: 150 feet  
Tideboxes: 2 water control structures  
Date Organized: 1959  
Comments: None

## LEWIS & CLARK/WALLOOSKEE RIVER VALLEYS

### Diking District #2

Location: South of Youngs Bay, East of Lewis & Clark River  
and North and West of old Highway 101  
Size: 185.6 acres  
Length of Dikes: 1.3 miles  
Tideboxes: 2  
Date Organized: 1937  
Comments: From the Corps of Engineers' Report and other  
information, the tideboxes and dikes appear to  
be in good condition.

### Diking District #3

Location: Along the Wallooskee River, 2 miles South of  
Astoria along Youngs Bay.  
Size: 642 acres  
Length of Dikes: 8.3 miles  
Tideboxes: 17  
Date Organized: 1939  
Comments: Maintenance and repair of levees, tideboxes and  
drainage ditches is the responsibility of the  
residents in the respective areas since no district  
organization exists. The Corps of Engineers  
inspection indicates that maintenance has been  
accomplished on several of the levees, but none on  
others.

### Diking District #8 -- Inactive

Location: Both sides of the Lewis & Clark River  
Size: 1,506 acres  
Length of Dikes: 10.5 miles  
Tideboxes: 14  
Comments: The Corps of Engineers inspection indicates the  
condition of the flood protective works has become  
progressively worse. Tideboxes continue to  
deteriorate and dense growth on the levee embank-  
ment prevents an adequate assessment of erosion  
damage.

Diking District #5

Location: Jeffers Garden Area, Lewis & Clark River, South  
of old U.S. 101  
Size: 537 acres  
Tideboxes: 7  
Date Organized: 1937  
Comments: Generally, maintenance of the levee and drainage  
facilities was considered to be satisfactory.

Diking District #9

Location: Youngs River  
Size, Tideboxes, Date Organized: Unknown  
Comments: Generally, maintenance of the protective works  
is considered marginal.

Diking District #11

Location: West side of Lewis & Clark River, just South of  
Clatsop County Airport  
Size: 365 acres  
Tideboxes, Date Organized: Unknown  
Comments: Generally, maintenance of the protective works  
is considered good by the Corps of Engineers.

NORTHEAST

Diking District #15 -- Inactive

Location: In and near Crown Zellerbach's Wauna mill near  
Westport  
Size: 233 acres  
Length of Dikes: 2.08 miles  
Tideboxes: 1  
Date Organized: 1920, reorganized in 1941  
Comments: The levee system was considered to be in satisfactory  
condition by the Corps of Engineers.

Diking District #7

Location: On Blind Slough south of Brownsmead  
Size: 935 acres  
Length of Dikes: 1 mile  
Tideboxes: 4  
Date Organized: 1937  
Comments: The flood protective works was considered to be in  
satisfactory condition by the Corps of Engineers.



Diking District #12 -- Inactive

Location: On Warren Creek near Knappa  
Size: 105 acres  
Length of Dikes: 450 feet plus the Burlington Northern  
railroad embankment.  
Tideboxes: 1  
Comments: There are dense growths of brush, trees and berry  
vines on the embankment slopes, as well as slight  
leaks during high tide in the two tideboxes.

Diking District #10

Location: Karlson Island  
Size: 370 acres  
Tideboxes: 3  
Date Organized: 1940s  
Comments: The dike has been broken. It would be expensive  
to repair.

Diking District #14

Location: John Day River area  
Size: 229 acres  
Length of Dikes: 3.5 miles  
Tideboxes: 16  
Comments: The condition of the levees has improved very little  
for the past several years. The Corps of Engineers  
has told the district its maintenance program is  
inadequate.

Diking District #4 -- Inactive

Location: Gnat Creek area near Brownsmead  
Size: 90 acres  
Length of Dikes: 2 miles  
Tideboxes: There were 3  
Date Organized: 1918  
Comments: The lagoon is filled with each tide. The County has  
put in a dike along the road to protect it. It  
would cost more to reclaim the land and repair the  
dike than the land would be worth.

Diking District #1 -- Inactive

Location: Near Brownsmead  
Size: 1391 acres  
Length of Dikes: 9.4 miles  
Tideboxes: 6  
Date Organized: 1915  
Comments: None

Diking District - Svensen Island Improvement Company -- Inactive

Location: Svensen Island

Size, Tideboxes, Length of Dikes: Unknown

Comments: Maintenance work needed to restore the protective facilities to full efficiency was noted in the Corps of Engineers inspection of the system.

TABLE 1  
FLOOD CONTROL DISTRICTS

<u>Local Name</u>	<u>Legal Name</u>	<u>Floodplain and Elevation</u>	<u>Elevations, Top of Levee</u>	<u>Freeboard</u>	<u>Datum</u>
<u>CLATSOP COUNTY, OREGON</u>					
Blind Slough Area	Clatsop County Diking District #7	1933 H.W. 8.6	11.6	3.0	M.S.L.
City of Warrenton Diking District #1	Formed one district effective 2/12/73	1933 H.W. 7.6	11.6	4.0	M.S.L.
City of Warrenton Diking District #2		1933 H.W. 7.6	11.6	4.0	M.S.L.
City of Warrenton Diking District #3		1933 H.W. 7.6	11.6	4.0	M.S.L.
Clatsop County Drainage District #1		1933 H.W. 8.8	11.8	3.0	M.S.L.
Clatsop County Diking District #2		1933 H.W. 7.6	11.6	4.0	M.S.L.
Clatsop County Diking District #5		1933 H.W. 7.6	10.6	3.0	M.S.L.
John Day River Area	Clatsop County Diking District #14	1933 H.W. 7.8	8.8	1.0	M.S.L.
Karlson Island	Clatsop County Diking District #10	1933 H.W. 8.5	10.5	2.0	M.S.L.
Knappa Area	Clatsop County Diking District #12	1933 H.W. 8.6	10.6	2.0	M.S.L.
Lewis & Clark River Area	Clatsop County Diking District #11 & 8	1933 H.W. 7.7	10.7 to 8.7	3.0 to 1.0	M.S.L.
Tenasillahe Island	Clatsop County Diking District #6	1933 H.W. 11.9	14.9	3.0	U.S.E.:2. Below M.S.
Walluski River Area*	Clatsop County Diking District #13	1933 H.W. 7.7	7.7 to 6.0	None	M.S.L.
Westport District	Clatsop & Columbia Counties, Diking District #15	1876 H.W. 11.0	13.0	2.0	M.S.L.
Wings River Area	Clatsop County Diking District #9	1933 H.W. 7.7	8.7	1.0	M.S.L.

(from CREST Inventory)

## WATER SUPPLY SYSTEMS

There are presently some 22 different water systems in the County serving approximately 6,700 people. There are also 5 city water systems serving approximately 20,000 people. Several of these water systems have water quantity and/or quality problems. Many of the water systems along the coast are vulnerable to a combination of tourism peak demand and low stream flows. D

### MUNICIPAL WATER SYSTEMS

The City of Astoria's water system is the largest in Clatsop County, serving approximately 3,600 industrial, commercial, and domestic connections within the City, and also providing water to Fern Hill, John Day, Willowdale, Olney-Wallooskee, and Burnside Water Districts, as well as to Tongue Point.

Astoria's water comes from three reservoirs in the Bear Creek watershed, approximately 10 miles southeast of the City. The watershed consists of 3,700 acres owned by the City. The three reservoirs have a combined capacity of about 360 million gallons; another 1.5 million gallons are stored around the system in elevated tanks. Although the City's population has remained stable over the years, water demand has increased 13 percent in the last five years, due primarily to increases in the shrimp processing industry. Approximately 26 percent of water demand is from commercial or industrial users. In three out of the last five years the maximum daily flow recorded has exceeded the practical capacity of the watershed and main system. There are signs that without major modifications of the water supply system and/or water redistribution programs, the City's water system will not be adequate indefinitely for the needs of the community it serves. D

In addition to demand considerations, two recent federal requirements impose standards hard for Astoria to consistently meet. The Federal Water Quality Act of 1972 caused the Oregon State Health Division of the Department of Human Resources to adopt new Administrative Rules requiring that domestic water supply maintain a pressure of 20 psi which Astoria's system is not always able to meet.

Furthermore, the Federal Safe Drinking Water Act of 1974 and subsequent Administrative Rules of the federal Environmental Protection Agency established domestic water system turbidity standards. Astoria's water system does not meet these standards during five months of the year, generally from August to December. Periodically, the EPA has expressed interest in having the City cover its reservoirs 2 and 3 and install a filtration system at the Headworks, in order to meet these standards.

None of the water districts obtaining water from Astoria have their own water storage facilities which could be a problem in times of repairs on the main water line. If the districts continue to rely on Astoria as their water source, they will be limited as to future areas they can provide service to. At this time, the City is most reluctant to give more water to those water districts than has already been committed. D

The City of Warrenton operates a water system which supplies water to Warrenton, Hammond, Fort Stevens State Park, Sunset Beach Water District, Palisades Pipeline Co., Gearhart and scattered properties in the Clatsop Plains rural areas. The estimated July 1979 population of this service area was 6,163 with approximately 1,995 connections of which 512 are in the unincorporated plains.

The main water line has a capacity of between 12 to 15 mgd. The current maximum daily consumption of the Warrenton system is 3.9 mgd. The City draws water from the Lewis & Clark River and three of its tributaries. The City currently holds water rights for the use of approximately 4.5 mgd. Under normal operating conditions, turbidity levels are below the EPA's allowable level of 1.0 turbidity units. As with Astoria's system, during periods of extremely high rainfall turbidity counts exceed the 1.0 turbidity unit level. In 1979, the City of Warrenton completed a comprehensive water study. The study found that the Lewis & Clark River is probably adequate in meeting the peak demand to the year 2000, but source augmentation, however, will be required beyond that time. The major recommendations were installation of meters in the City, increased fire flow capacity and constructing of a reservoir.

As mentioned before, the City of Gearhart and Town of Hammond obtain their water through the City of Warrenton water system. Gearhart and Hammond water systems have no storage at the present time. Both are entirely dependent upon the Warrenton water system and any break in the Warrenton pipeline could potentially deprive both systems of their source until the break was repaired.

Seaside's water system serves an estimated population of 6,500 including 2,167 metered services plus the Stanley Acres Water Association just north-east of the City limits. The main water supply is from a source on the south fork of the Necanicum River about eight miles southeast of the City. Water flows by gravity from a diversion dam at the headworks for six miles to a point where it is pumped to an 18 million gallon reservoir. The reservoir is at an elevation of 154 feet and has a nine-day storage capacity. An auxiliary supply source is located on the Necanicum River below the reservoir. The distribution system consists of lines from 6 to 12 inches with some laterals four inches or smaller. The system is generally in good condition, although recently large water loss has been recorded. The water system must serve a five-month summer population of up to 15,000 on weekdays and 30,000 on weekends.

Future water supply capability is good, but additional storage capacity may be necessary. Expansion of the system will not be a great problem if the area served is contained and future development is kept below the 80-foot elevation line to avoid further pumping.

The Cannon Beach municipal water system was purchased from a private owner in 1972. The source of supply is two springs. The system's major problem is the old and undersized distribution lines. There are adequate sources, storage, and capital equipment for the immediate future. Additional storage capacity could be warranted as the City grows, but the most serious deficiency is the condition of the water pipes themselves. The water superintendent estimates that 65-70% of the water lines are either undersized, in poor condition, or both.

## COMMUNITY WATER SYSTEMS

A Community Water Supply System is defined under the Safe Drinking Water Act as one that provides piped water for human consumption that has at least 15 service connections or regularly services at least 25 people. An inventory of these Community Water Systems was extracted from the State Water Resources Board fact sheets developed in 1974 and updated by the County planning staff. (See Table 2) Below are the current water systems in the County. (See Map 2)

### WATER SUPPLY MAP INDEX

(See Map 2)

Index Number	Water Supply
1	Westport Water Association
2	Wauna Water District
3 and 4	Knappa Co-op Water Company
6	Wickiup Water District
7	Burnside Water Association
8	Fern Hill Community Water System
9	John Day Water District
10	Olney-Walluski Water Association
11	Willowdale Water District
12	City of Astoria
13 and 15	Youngs River - Lewis & Clark Water District
14	City of Warrenton
16	Surf Pines Development
17	Palisade Pipeline Company
18	City of Gearhart
19	Stanley Acres Water Association
20	City of Seaside
21	City of Cannon Beach
22	Cannon View Park, Inc.
23 and 24	Arch Cape Water County Service District
25	Falcon Cove Beach Domestic Water Supply System
26	Sunset Lake Water County Service District
27	Evergreen Acres Water System
28	Elderberry/Nehalem Water System
29	Westport Heights Water System

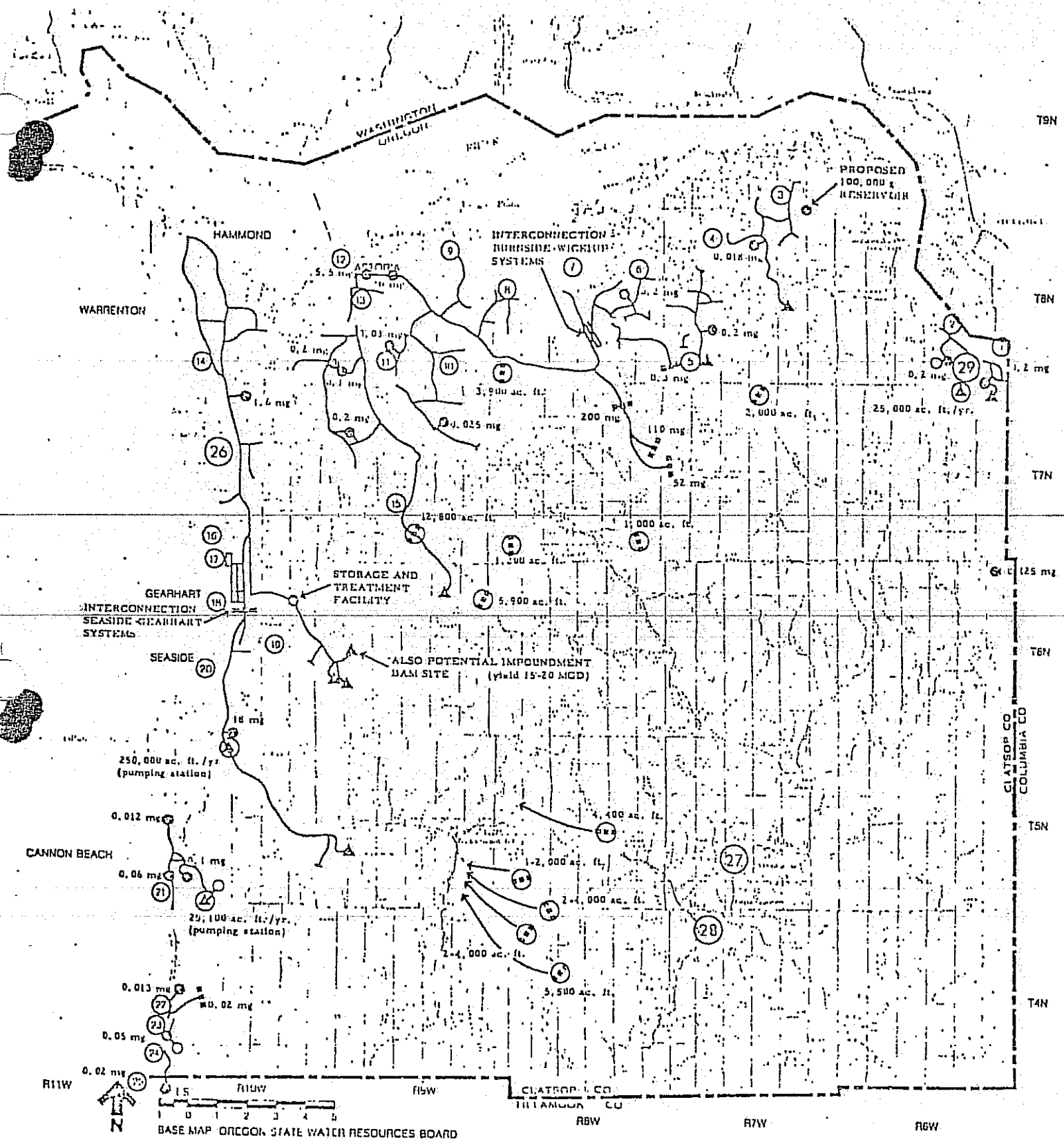


TABLE 2

CLATSOP COUNTY WATER SYSTEMS

System:	<u>Arch Cape Water County Service District</u>	
Estimated Total Population Served:	448 (172 services, no metering)	
Existing Source and Water Rights:	Unnamed tributary stream of the Arch Cape Creek and Shark Creek	
Estimated Capacity of System:	Close to Capacity	
Potential Source:	Arch Cape Creek	
Storage Sites - Existing	(No.)	(Cap.)
- On system reservoirs and capacity	2 wood stave	20,000-30,000 g.
- Impoundments and capacity	2 small concrete dams	
Storage Sites - Potential		
- On system reservoirs and capacity	1	100,000 g.
- Impoundments and capacity	Arch Cape Creek	
Existing Potential to Support:	No Data	
Treatment:	Chlorination	
Comments:		

An engineering study was done on the water system in 1976. The system was found to be deficient in treatment, storage and pipe size. The estimated cost for improvements to the system in 1976 was \$767,000 to \$811,000.

System:	<u>Burnside Water Association</u>	
Estimated Total Population Served:	190 pop., all metered	
Existing Source and Water Rights:	City of Astoria	
Estimated Capacity of System:	Has capacity for some additional	
Potential Source:	No Data	
Storage Sites - Existing	(No.)	(Cap.)
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	No Data	
- Impoundments and capacity	No Data	
Treatment:	By the City of Astoria	
Comments:		

Storage reservoir should be developed for fire protection and to allow for repairs of the main line.



**System:**Cannon View Park, Inc.

Estimated Total Population Served:

96 (37 services, no metering)

Existing Source and Water Rights:

Spring

Estimated Capacity of System:

No Data

Potential Source:

Arch Cape Creek

Storage Sites - Existing

(No.)(Cap.)

- On system reservoirs and capacity

1

75,000 g.

- Impoundments and capacity

None

Storage Sites - Potential

- On system reservoirs and capacity

No Data

- Impoundments and capacity

No Data

Treatment:

None

Comments:

Recent improvements to the system; new distribution lines and storage tank have addressed the system's supply and fire protection problems.

**System:**Elderberry-Nehalem Water Company

Estimated Total Population Served:

150 (50-55 services)

Existing Source and Water Rights:

Unnamed Creek

Estimated Capacity of System:

No Data

Storage Sites - Existing

(No.)(Cap.)

- On system reservoirs and capacity

1

35,000 g.

- Impoundments and capacity

Concrete retaining wall

Storage Sites - Potential

- On system reservoirs and capacity

No Data

- Impoundments and capacity

No Data

Treatment:

Chlorine-filter

Comments:

This system was unapproved following inspections conducted by Health Division Staff during the spring of 1977. There have been numerous complaints by users on the water quality and pressure.

**System:**Evergreen Acres Water System

Estimated Total Population Served:

75 (28 services, no metering)

Existing Source and Water Rights:

Well

Estimated Capacity of System:

60 services

Storage Sites - Existing

(No.)(Cap.)

- On system reservoirs and capacity

2

280 g. ea.

- Impoundments and capacity

None

Storage Sites - Potential

- On system reservoirs and capacity

No Data

- Impoundments and capacity

No Data

Treatment:

None--in the process of building a treatment plant

Comments:

The owner would like this system to become a public water system.

## System:

Falcon Cove Beach Domestic  
Water Supply System

Estimated Total Population Served:

Summer 120 (53 services, no metering)

Estimated Capacity of System:

No Data

Existing Source and Water Rights:

2 springs - 0.13 cfs

Storage Sites - Existing

(No.)

(Cap.)

- On system reservoirs and capacity

1

20,000 g.

- Impoundments and capacity

None

Storage Sites - Potential

- On system reservoirs and capacity

None

- Impoundments and capacity

None

Existing Potential to Support:

No Data

Treatment:

None

Comments:

It is difficult to assess the ability of this system to meet emergency situations due to lack of source data, population statistics, etc. Although the system is relatively small, given any potential growth, it is likely this system will have to seek the resource from other than their present supply.

## System:

Fern Hill Community Water System

Estimated Total Population Served:

150 (60 services, all metered)

Existing Source and Water Rights:

City of Astoria

Estimated Capacity of System:

At Capacity

Potential Source:

No Data

Storage Sites - Existing

(No.)

(Cap.)

- On system reservoirs and capacity

None

- Impoundments and capacity

None

Storage Sites - Potential

- On system reservoirs and capacity

No Data

- Impoundments and capacity

No Data

Treatment:

By the City of Astoria

Comments:

The system is currently at capacity and will not be able to have new connections until 1983. At this time there are no fire hydrants in the system.

## System:

Fishhawk Water Company

Estimated Total Population Served:

53 services

Existing Source and Water Rights:

Fishhawk Creek

Estimated Capacity of System:

270 services

Storage Sites - Existing

(No.)

(Cap.)

- On system reservoirs and capacity

1

125,000 g.

- Impoundments and capacity

None

Storage Sites - Potential

- On system reservoirs and capacity

No Data

- Impoundments and capacity

No Data

Treatment:

Chlorination, charcoal and sand  
filtration

**System:**John Day Water District

Estimated Total Population Served:	225 (75 services; all metered)	
Existing Source and Water Rights:	City of Astoria	
Estimated Capacity of System:	Near Capacity	
Potential Source:	No Data	
Storage Sites - Existing	<u>(No.)</u>	<u>(Cap.)</u>
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	No Data	
- Impoundments and capacity	No Data	
Existing Potential to Support:	No Data	
Treatment:	By the City of Astoria	
Comments:		

There is a problem with some hydrants having too low a volume of water. The district plans to replace the 4 inch line with a 6 inch line, which will increase capacity by 25 connections. These improvements will occur as soon as funds are available.

**System:**Knappa Co-op Water Company

Estimated Total Population Served:	780-900 (311 services, all metered)	
Estimated Capacity of System:	400 services	
Existing Source and Water Rights:	Mill Creek/Wells	
Potential Source:	Big Creek/Astoria System/Wells	
Storage Sites - Existing	<u>(No.)</u>	<u>(Cap.)</u>
- On system reservoirs and capacity	2	7,650 g.
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	1	200,000 g.
- Impoundments and capacity	1	2,000 ac.ft.
Existing Potential to Support:	No Data	
Treatment:	Chlorination	
Comments:		

In 1974, the Co-op had an engineering study of the system. The study found the present system operates with a number of problems which include excessive leakage, low pressure problems, pump station problems, and inadequate overall system reliability.

System:

Estimated Total Population Served:  
Existing Source and Water Rights:  
Estimated Capacity of System:  
Potential Source:

Storage Sites - Existing  
- On system reservoirs and capacity  
- Impoundments and capacity

Storage Sites - Potential  
- On system reservoirs and capacity  
- Impoundments and capacity

Existing Potential to Support:

Treatment:

Comments:

None.

Olney-Walluski Water Association

335 (124 services, all metered)  
City of Astoria  
540 pop. or 200 services  
No Data.

(No.)	(Cap.)
1	25,000 g.

None

No Data

No Data

No Data

By the City of Astoria

System:

Estimated Total Population Served:  
Existing Source and Water Rights:  
Estimated Capacity of System:  
Potential Source:

Storage Sites - Existing  
- On system reservoirs and capacity  
- Impoundments and capacity

Storage Sites - Potential  
- On system reservoirs and capacity  
- Impoundments and capacity

Existing Potential to Support:

Treatment:

Comments:

Palisades Pipeline Co.

33 services, all metered  
City of Warrenton  
No Data  
No Data

(No.)	(Cap.)
None	
None	

No Data

No Data

No Data

By the City of Warrenton

This system has had no new connection since 1974; they have no plans at this time for any improvements or expansion of the water system.

System:

Estimated Total Population Served:  
Existing Source and Water Rights:  
Estimated Capacity of System:  
Potential Source:

Storage Sites - Existing  
- On system reservoirs and capacity  
- Impoundments and capacity

Storage Sites - Potential  
- On system reservoirs and capacity  
- Impoundments and capacity

Treatment:

Comments:

None.

Shoreline Development Inc.

69 services  
City of Warrenton  
89 services  
No Data

(No.)	(Cap.)
None	
None	

No Data

No Data

By the City of Warrenton

System:

Stanley Acres Water Association

Estimated Total Population Served:	325 (86 services, all metered)
Existing Source and Water Rights:	City of Seaside
Estimated Capacity of System:	150 services
Potential Source:	No Data
Storage Sites - Existing	<u>(No.)</u> <u>(Cap.)</u>
- On system reservoirs and capacity	None
- Impoundments and capacity	None
Storage Sites - Potential	
- On system reservoirs and capacity	No Data
- Impoundments and capacity	No Data
Treatment:	By the City of Seaside
Comments:	

The system is generally in good condition.

System:

Sunset Lake Water County  
Service District

Estimated Total Population Served:	460 (200 services, all metered)
Existing Source and Water Rights:	City of Warrenton
Estimated Capacity of System:	400+ connections
Potential Source:	Clatsop Plains Aquifer
Storage Sites - Existing	<u>(No.)</u> <u>(Cap.)</u>
- On system reservoirs and capacity	None
- Impoundments and capacity	None
Storage Sites - Potential	
- On system reservoirs and capacity	None
- Impoundments and capacity	None
Treatment:	By the City of Warrenton
Comments:	

The district was organized in 1977 serving the Sunset Lake area. Fire hydrants are within 1000 feet of all houses in the district.

System:

Surf Pines Water Association

Estimated Total Population Served:	300 (110 services, all metered)
Existing Source and Water Rights:	Two well systems
Estimated Capacity of System:	No Data
Potential Source:	No Data
Storage Sites - Existing	<u>(No.)</u> <u>(Cap.)</u>
- On system reservoirs and capacity	2 20,000 g.
- Impoundments and capacity	None
Storage Sites - Potential	
- On system reservoirs and capacity	No Data
- Impoundments and capacity	No Data
Treatment:	None
Comments:	

The Association plans to improve pumping capacity by adding an additional pump to each well system. The system's 4 inch line does not have sufficient water volume to hook up to a fire truck.

System:

Wauna Water District

Estimated Total Population Served:

213 (76 services, all metered)

Existing Source and Water Rights:

Unnamed springs - 0.423 cfs

Unnamed stream - 0.223 cfs

Estimated Capacity of System:

140-160 services

Potential Source:

(\*)

Storage Sites - Existing

(No.)

(Cap.)

- On system reservoirs and capacity

2

2,000

- Impoundments and capacity

None

Storage Sites - Potential

- On system reservoirs and capacity

1

200,000 g. (1968)

- Impoundments and capacity

None

Treatment:

None

Comments:

(\*) Same as Westport - See Westport 'comments'.

System:

Westport Heights Water System

Estimated Total Population Served:

33 services, all metered

Existing Source and Water Rights:

Well

Estimated Capacity of System:

No Data

Potential Source:

Westport Water System

Storage Sites - Existing

(No.)

(Cap.)

- On system reservoirs and capacity

None

- Impoundments and capacity

None

Storage Sites - Potential

- On system reservoirs and capacity

No Data

- Impoundments and capacity

No Data

Existing Potential to Support:

No Data

Treatment:

None

Comments:

Present lines are inadequate for fire protection; system is close to capacity.

## System:

Westport Water Association

Estimated Total Population Served:	375-400 (150 services, all metered)	
Existing Source and Water Rights:	West Creek - 0.50 cfs	
Estimated Capacity of System:	300-400 services	
Potential Source:	Gnat Creek Artesian Aquifer Plympton Creek	
Storage Sites - Existing	(No.)	(Cap.)
- On system reservoirs and capacity	1	200,000
- Impoundments and capacity	None	-
Storage Sites - Potential		
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Treatment:	Chlorination	
Comments:		

Plympton Creek has been identified as a potential source for the Westport-Wauna area. However, extreme low stream flows, estimated at 1.1 cfs, would provide very limited supplemental supply to either system during the summer dry period. Further, any draw on the source during low flow periods could seriously endanger the ability of the stream to support any fish life or other natural life systems.

The Gnat Creek Artesian Aquifer is another potential source for the two systems. Upon examination of existing information, the aquifer appears to offer some potential for supplementing their present supplies. Additional studies of the aquifer are necessary though, to determine the feasibility of supplying that water to the Westport and Wauna systems.

## System:

Wickiup Water District

Estimated Total Population Served:	1,300-1,600 (467 services, all metered)	
Existing Source and Water Rights:	Little Creek - 2.1 cfs	
Estimated Capacity of System:	475	
Potential Source:	Astoria System	
Storage Sites - Existing	(No.)	(Cap.)
- On system reservoirs and capacity	1	200,000 g.
- Impoundments and capacity	2	300,000 g.
Storage Sites - Potential		
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Existing Potential to Support:	Near Capacity	
Treatment:	Chlorination	
Comments:		

With an extremely small (300,000 g) impoundment reservoir, only 2.1 cfs in water rights, and an extreme low stream flow of 0.31 cfs, the system has almost no potential to support any additional growth. Through their connection with the Burnside Water Association which is interconnected with the Astoria system, it is feasible that they could purchase sufficient water to support some limited, controlled growth. This would necessarily assume that Astoria would develop at least part of the available water rights.

System: Willowdale Water District

Estimated Total Population Served: 155 (37 services, all metered)

Existing Source and Water Rights: City of Astoria

Estimated Capacity of System: No Data

Potential Source: No Data

	<u>(No.)</u>	<u>(Cap.)</u>
Storage Sites - Existing		
- On system reservoirs and capacity	None	
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	No Data	
- Impoundments and capacity	No Data	

Treatment: By the City of Astoria

Comments:

None.

System: Youngs River/  
Lewis & Clark Water District

Estimated Total Population Served: 1,750 (695 services, all metered)

Existing Source and Water Rights: Barney Creek (NF & SF) - 2.0 cfs

Estimated Capacity of System: Near Capacity

Potential Source: Youngs River (Astoria System)

	<u>(No.)</u>	<u>(Cap.)</u>
Storage Sites - Existing		
- On system reservoirs and capacity	3	5,000 g.
- Impoundments and capacity	None	
Storage Sites - Potential		
- On system reservoirs and capacity	None	
- Impoundments and capacity	2	18,700 ac.ft.

Existing Potential to Support: \*Near Capacity

Treatment: Chlorinated

Comments:

\*This system could support as many as 4,400 residents if they were to draw their full 2.0 cfs from Barney Creek. However, due to the extreme low flow estimate of 0.55 cfs, a more realistic figure is in the order of the present population estimate or about 1,600. There is a potential storage site identified on the Youngs River that would impound some 12,800 acre feet and certainly would, if developed, afford the Youngs River - Lewis & Clark system adequate water commensurate with their needs for future growth. The district has hired an engineer to do an analysis of the system and develop a program for future improvements.



## INDIVIDUAL WELLS/SPRINGS

As it becomes more difficult in certain parts of the County to obtain water from a rural water system, more people will turn to a well or a spring as an alternative water source. Within this County springs are more likely to provide a source of water than wells. The number of people using springs as a water source is unknown. In those areas of the County where springs are used, the major problems have been quantity and quality of water. September tends to be the time of the year when many springs run dry or have very low flows. Persons who are using a spring as a source of water are required to apply to the Water Resources Board for water rights.

The availability of groundwater to wells depends on the permeability of geologic formations and their capacity to absorb, store and transmit water. Due to the sedimentary formation in vast areas of the County, drilling for potable water is somewhat a gamble. (See Map 4) Rain falling on the impermeable slopes of volcanic and marine sedimentary rock is rejected and runoff is rapid. The amount of water that enters the rock units is small; although it will often yield an adequate amount for domestic use, it might be brackish. Groundwater in the alluvial plains is more abundant due to the permeability of the gravels and sands and seepage from the river. Generally, water can be obtained at shallow depths in the wider floodplain areas. Most wells in the alluvial lowlands produce good quality water for domestic use. Hard water, usually high in calcium and magnesium, is likely to occur in wells in marine sedimentary and volcanic rocks.

## POTENTIAL WATER SUPPLY FOR CLATSOP COUNTY .

The potential water supply includes, in addition to numerous reservoirs that have been considered in the past, substantial quantities of groundwater from the Clatsop Plains dune sand aquifer, the artesian aquifer in the Gnat Creek area, and water from the Columbia River. A summary of potential surface water supplies is contained in Table 3 on page 31.

### Columbia River

The Columbia River could supply all the water needs for Clatsop County. Average low flows at the mouth of the river are recorded in the range of 90,000 cfs, while the consumption rate for the entire population of Clatsop County, based on a maximum daily per capita use of 290 gallons, is about 13.5 cfs. This shows the relatively insignificant amount of water that would be taken from the Columbia River to serve all of the needs of the County. Another comparison would be with the Crown Zellerbach Mill at Wauna <sup>1/</sup> which processes about 40 million gallons of water a day, or 61.9 cfs of water--more than four times that required for the remainder of the County.

Although there are large quantities of water available, there are problems involved with the use of the Columbia River as a water supply that require careful study and analysis. First, the river contains some, no matter how minute, radioactive material.<sup>2/</sup> Second, considerable liquid waste effluent, some raw, some with only primary treatment, is discharged into the river upstream. Third, saltwater intrusion could dictate a potential water treatment plant location no further downstream than the Wauna area, as it is not yet economically feasible to process saline water for human consumption. Fourth, were there a significant diversion of water upstream, such as to California, or very high tide level with extreme low stream flows, the saltwater intrusion zone could move even further upstream, making it more expensive to the consumer to process and transmit Columbia River

<sup>1/</sup> Clatsop County Long-Range Plan, 1968.

<sup>2/</sup> "Plutonium-production reactors at Hanford, Wash., release many radionuclides to the Columbia River. Most of these radioactive materials quickly decay after their release to the environment. Longer lived radionuclides, however, do persist to become associated with particulate matter in the water and be precipitated to the river bottom, or to remain in solution and be carried to the sea."

A.T. Pruter and D.L. Alverson. The Columbia River Estuary and Adjacent Ocean Waters. (Seattle: University of Washington, 1972) pg. 777.

water to Clatsop County. With these considerations and the U.S. Corps of Engineer's data,<sup>1/</sup> it would appear more feasible at this time to consider Columbia River water for uses which would not require large capital investments in treatment, storage, and transmission systems.

#### Artesian Aquifer - Gnat Creek

A recent report from the State Engineer's office on a well drilled for the Gnat Creek Fish Hatchery, east of Knappa Junction, indicates that the lava rock underlying the area could be a significant artesian groundwater aquifer. The well was drilled to 305-ft. and developed to 250-ft. Yield from the boring was up to 100 gallons per minute with a pressure of 42 psi.

The potential of the aquifer cannot be measured until further studies explore the limits of it. We can surmise, however, that subsequent borings yielding a similar capacity to the test well might be sufficient to adequately augment the water supplies of the independent water districts in the area. Map 3 on page 32 shows the location and general area the aquifer could possibly cover, based on present geological data.

#### The Clatsop Plains Aquifer

A report prepared in 1970 by Mr. F.J. Frank of the U.S.G.S. in cooperation with Clatsop County <sup>1/</sup> has shown the Clatsop Plains dune sand area to have considerable potential as a groundwater resource. Presently, the only area where the dune sands groundwater is being used as a primary community water supply source is in the private Surf Pines Development. About 90 homes are connected to the system, some occupied only on a seasonal basis.

According to the report, there are approximately 10 square miles in the central part of the dune area which are favorable for development of this water supply (see Map 3 on page 32). The areas immediately adjacent to the ocean, the Necanicum River at its mouth, and the northernmost extension of the dune area, are not considered good withdrawal areas because excessive pumping from the aquifer could permit saline water intrusion. Further, the dune area east of U.S. Highway 101 lies in low, boggy areas and groundwater from there could have an excessive iron content which, although not harmful to health, has an unpleasant taste and would tend to stain plumbing fixtures, cooking utensils and laundry.

The total volume of deposits saturated with freshwater in the dune sand aquifer is estimated at more than 900,000 acre feet. The estimated maximum volume of freshwater that could be pumped from that reservoir is 180,000 acre feet (20%), or nearly 60 billion gallons. Given that storage in the aquifer, an annual infiltration of up to 60-inches of precipitation into

<sup>1/</sup> Carl E. Green & Associates, op. cit., pg. 91.

<sup>2/</sup> F.J. Frank, Ground Water Resources of the Clatsop Plains Sand Dune Area, Clatsop County, Oregon. U.S.G.S. Water Supply Paper 1899-A (Washington D.C.: USGS, 1970) p. 41.

the dune sands (of which approximately 15-inches is lost to the evapo-transpiration process), as much as 2,500 acre feet of water per year per square mile (2 million gallons per day per square mile) may be available for withdrawal. Based on a maximum daily per capita consumption rate of 290 gallons, a water system using the 10 square mile area of potable water from the aquifer could potentially support a resident population in excess of 50,000 persons.

Although development of the dune sand aquifer has the potential mentioned above, it is not likely to be economically or environmentally feasible to withdraw all the water that is available. It would require a great many wells and might possibly lower the level of the nearby lakes. A more feasible use for the aquifer, should it be developed, would be to augment the existing water systems of the Seaside-Gearhart and the Warrenton-Hammond areas.

TABLE 3

## PRIMARY SOURCES OF POTENTIAL DOMESTIC SURFACE WATER SUPPLIES

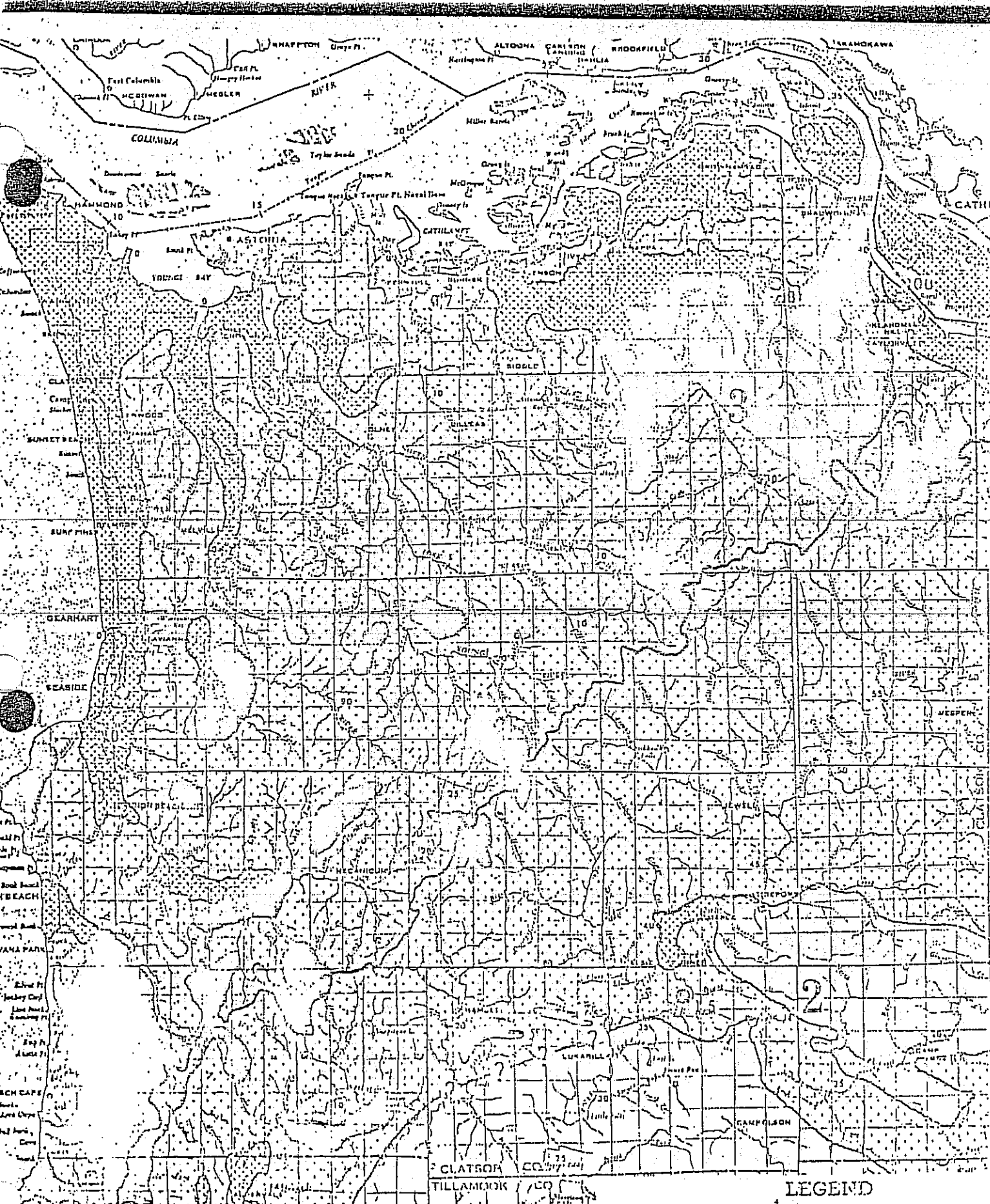
Source	No. of Systems on Source Now	Estimated Population on Source Now	Est. Avg. Summer Population	Existing Water Rights (cfs)	High/Low Stream Flow (cfs)	Present Storage Capacities (High 1/ Impoundment 2/ In System 2/)	Potential Impoundment 1/ Capacities	Comments
Plympton Creek	0	0	-	0.4 S.F.S. RR	20/1.1 diversion site	0		Limited potential for Wapuna-Westport area
Star Creek (Astoria Sys.)	7	Not sufficient data	No Data	3.0 City of Astoria	13/3.0	I = 202.0 R = 75.55	None	No additional water available
Big Creek 3/	0	0	-	27.38 (25.0 to O.S.F. Comm.)	50/3.0 storage site	0	2,000 acre ft.	Storage potential to benefit fish and municipal requirements.
Vallast River	0	0	-	0.05 Non-Consumpt.	No Data 0.34 storage site	0	3,500 acre ft.	Good potential to supplement Astoria system.
Klaskanine River 2/ (No. Fork)	0	0	-	None	44/0.8 storage site	0	1,000 acre ft.	High cost to transmit water to populous.
Klaskanine River 3/ (So. Fork)	0	0	-	None	40/2.2 storage site	0	1,200 acre ft.	Areas could be developed to augment Astoria system.
Lewis & Clark River 2/	3	3,900	11,000	17.0 Warrenton Intake	45/2.6	R = 1.6	No Data	Good potential for Warrenton system - storage will be required.
Youngs River & Tributaries	1	1,600	-	49 Astoria	40/4.1 storage site	I = 3,912.0 R = 0.3	18,700 acre ft.	May yield from 12 - 20 mgd for city and industry - good potential.
Mecanicum River	2	2,300	15,000	15.0	20/3 at intake	R = 18.0		Lacks good impoundment sites - water could be diverted from Nehalem River to supplement flow year 'round.
Elk Creek Basin	1	1,100	4,100	2.6	23/0.8 at diversion	R = .172	None	Good potential for Cannon Beach area.
Nehalem River Drainage Basin	None in Clatsop County	-	-	None in Clatsop County	300/0.7 (North Fork)	None in Clatsop County	15,000 (+) acre ft.	Water could be pumped from Nehalem R. tributaries to Mecanicum River tributaries.
TOTALS	14	20,000	40,000 (+)					

1/ Impoundment - (I) - storage reservoir site on stream (back-up behind dam).

2/ On system - (R) - storage reservoir in or near community (usually a large tank).

3/ Although these rivers exhibit some potential for domestic water use, they are presently closed to further development for any purpose other than the protection and propagation of fish life. Note: A systematic analysis of any source, whether being used or considered for potential use, is needed to determine each's ability to supply domestic water systems and still adequately maintain natural life systems dependent on the source.

Source: Engineering and Planning Report - Water Supplies and Sewerage of Clatsop County, Carl E. Green & Associates, Portland, Oregon 1968  
 Resource Analysis - Clatsop County, Oregon, Compiled by Cooperative Extension Service, Resources Development Section, Oregon State University, Corvallis, Oregon, January 1964.  
 Report of Clatsop County Long-Range Planning Conference, 1968.



MAP 4  
WELL YIELD CAPABILITY

GEOLOGIC UNIT YIELD CAPABILITY



Alluvium

Medium



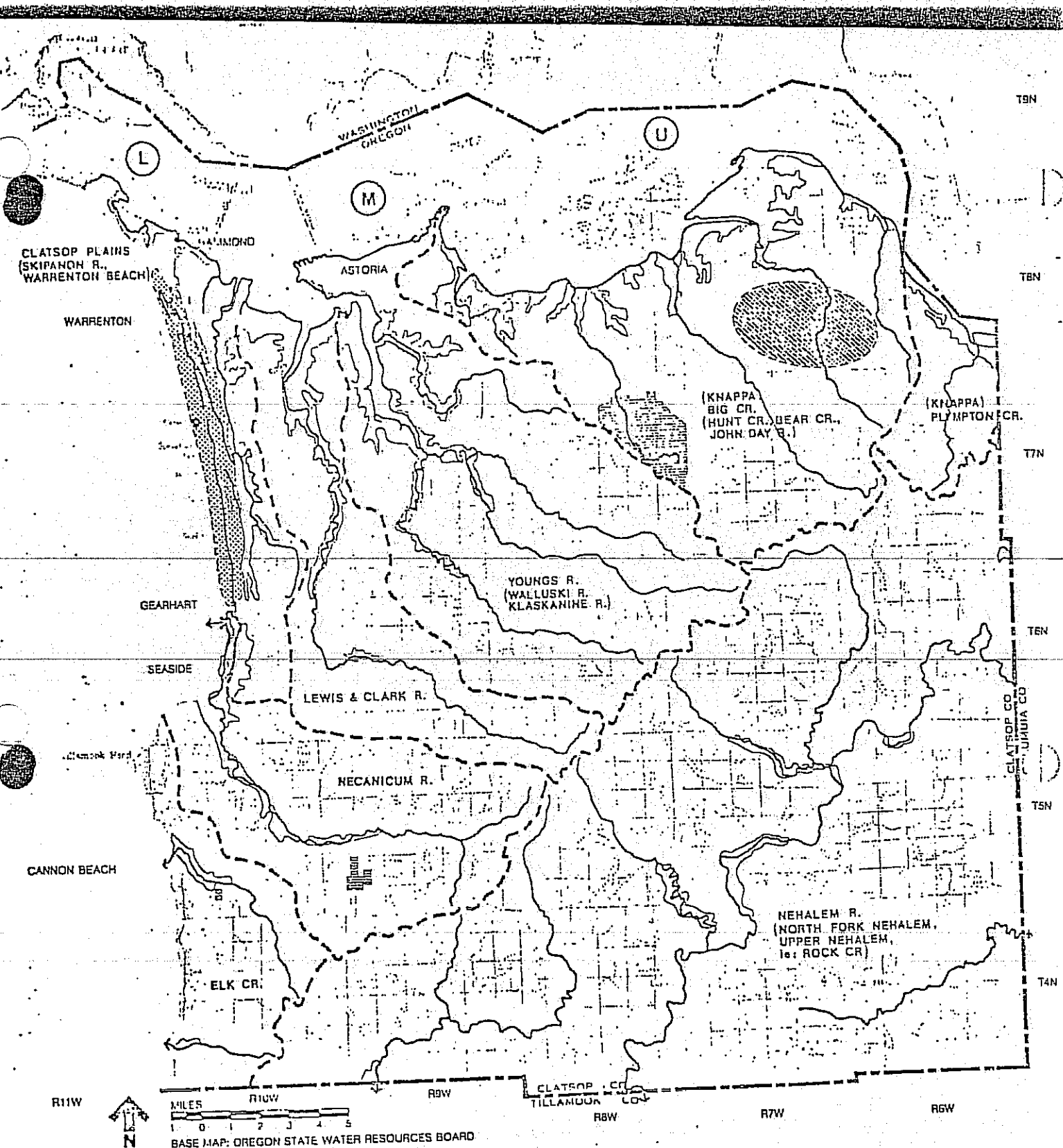
Columbia River Basalts

Low



Esthetic Lavas and Tuffs

Very low



### MAP 3 CLATSOP COUNTY GENERALIZED HYDROLOGY

SOURCE: OREGON STATE WATER RESOURCES BOARD, OR (WATER, LAND, & SOIL CONSERVATION SERVICE (Estuary Zones after Carl Sims, USNMFS))

- WATERSHED BOUNDARIES
- MAJOR RIVERS & CREEKS
- WETLAND AREAS (River & Marshlands, Tidelands, and Floodplains)
- DUNE SAND GROUND WATER AQUIFER
- LAVA ROCK GROUND WATER AQUIFER
- MUNICIPAL WATERSHED

#### ESTUARY SALINITY ZONES (Approximate)

- LOWER - (Saline Water) MARINE ZONE
- MIDDLE - (Brackish Water) TRANSITION ZONE
- UPPER - (Fresh Water) TIDAL ZONE

# WASTE DISPOSAL

## MUNICIPAL SEWER SYSTEMS

### Astoria

Astoria's lagoon treatment facility was built in 1974 at a cost of \$8.6 million. The system was designed to handle 4 million gallons per day (MGD) average and a peak flow of 24 MGD. Presently (1977) the average flows range from 1.36 MGD (July) to 7.86 MGD (Nov.). Peak flow recorded since 1974 was 18.7 MGD. The plant currently achieves a 92-99 percent reduction of sewage wastes. Effluent is discharged into the middle of the Columbia River channel. Storm sewers and sanitary sewers are combined throughout most of the city. Only the downtown area has separate systems. The interceptor and lagoon system was designed for a population of over 20,000. At an average yearly increase of 50 persons per year, the system should accommodate residential growth well past the year 2030 originally used as a design goal. No industrial development is planned which would exceed system requirements.

Since the city has been meeting its wastewater discharge requirements and is within its system capacity, it does not appear necessary to separate storm water and sanitary sewer systems.

The city is currently planning extension of the system to the Williamsport area (55 homes), and the connection of 30 houses in Alderbrook. Tongue Point and Emerald Heights are being considered as additions to the system since the treatment plant serving those areas is deteriorating.

It is not clear what costs or other alternatives are possible for the extension of sewer service to the Miles Crossing-Jeffers Gardens area. The possibility of a low pressure sewer is being explored, but this system (using a pressurized 4" PVC pipe connected to existing septic tanks) would not support major growth in the area. A conventional system has been very tentatively estimated to cost between \$1.5 - \$2 million for an interceptor.

### Warrenton

The city of Warrenton operates and maintains a sanitary sewage collection system and primary and secondary treatment facility.

In June of 1978, a sewage lagoon study was completed for the city by Dorner and Tunks, Consulting Engineers. This study calculated the capacity of the existing lagoon system and estimated current use levels. Projections were then made upon future use demands for Warrenton and the impacts of connecting the town of Hammond and Fort Stevens State Park to the Warrenton treatment plant. The lagoon study estimated that 1750 to 2000 residential inhabitants are now served by the collection system and that the existing treatment plant could serve a population of 4500. Accordingly, the plant is currently operating at 45% of its rated capacity.

The average per capita flow into the lagoons was estimated to be 120.5 gallons per day. Based on the capacity and daily flow information above, the following



estimates were made as to when the treatment plant would reach its capacity, both with and without the addition of flows from Hammond and Fort Stevens State Park. If it is assumed that the population of Warrenton will grow at an annual rate of 3%, the treatment plant has the capacity to handle in-city waste flows until the year 2000. If the same 3% growth rate is assumed and Hammond and Fort Stevens State Park are connected to the system, the lagoon capacity would be reached by the year 1985.

On November 15, 1972, the city of Warrenton entered into an agreement with the town of Hammond to allow Hammond to connect into the Warrenton treatment plant. Hammond will be responsible for the construction of the collection system within its municipal boundaries and for the construction of a sewer main line from the Hammond city limits to the Warrenton treatment plant, south along NW Warrenton Drive. As part of this agreement, initial steps were taken to obtain federal funding to partially offset the cost of expansion improvements to the Warrenton treatment plant. Also, a preliminary estimate was prepared for determining the shares which Warrenton and Hammond would be required to contribute as local matching funds to a federal grant.

The city of Warrenton will require Fort Stevens State Park to enter into a similar agreement if it desires to connect onto the Hammond collection system and, in turn, have its sanitary wastes treated at the Warrenton treatment plant.

### Gearhart

Wastewater disposal in Gearhart is achieved by on-site systems, principally septic tanks. This practice and potential influences on groundwater quality has been a subject of debate for several years. The concern is over the level of nitrates in the groundwater, which is increased by septic tank discharges and other human activities as well as by natural vegetation.

The City of Gearhart has prepared a wastewater facilities plan considering wastewater management alternatives within its incorporated limits. The findings are that the low density development existing within the community and projected in the City's Comprehensive Plan would not result in nitrate levels exceeding five milligrams per liter (mg/l), which is the administrative limit set by DEQ for the Clatsop Plains Aquifer. As a result, the proposed plan is to continue with on-site waste disposal but to establish a City utility to assure the proper maintenance and repair of septic tank installations.

The Department of Environmental Quality has since amended the moratorium in Gearhart and is allowing some new construction. Currently building permits are based on an overall city density rather than a density per lot. Monitoring results from the County groundwater quality study during 1978 indicate that the observed nitrate concentrations are less than the conservative estimates initially predicted.

Gearhart is participating in a Groundwater Quality Study under the Section 208 Program (PL 92-500). It is anticipated that this study will establish the water quality parameters and wastewater management quality protection program. Implementation of the City's proposed Wastewater Facilities Plan is therefore held in abeyance until completion of the 208 study.

## Seaside

The sewage treatment plant of the City of Seaside is serving a population equivalent of 5,000 people which is close to the capacity of the treatment plant.

In recent years, the City of Seaside's sewage treatment facility has experienced difficulty in meeting effluent standards for discharge into the Necanicum River. The treatment plant frequently has sewage flows which greatly exceed the 1.0 million gallons per day plant design capacity. This is due to the severe infiltration and inflow in Seaside's sewage collection system, caused by the widespread occurrence of defective joints and broken pipes. Many sewers are severely plugged with sand and sludge. Infiltration and inflow into Seaside's sewage system has also resulted in occasional overflows of untreated combined sewage into the Necanicum River. DEQ has estimated the City has a sewer capacity for an additional 135 hookups. These conditions have resulted in a Stipulation and Final Order issued by the Oregon Department of Environmental Quality that required the City of Seaside to prepare a Facilities Plan which has been completed. The City is in the process of doing detailed engineering and obtaining funds for the improvements needed.

## Cannon Beach

The City of Cannon Beach operates a 12-acre lagoon system to treat its wastewater. The system meets treatment requirements during the fall, winter and spring, but does not meet water quality requirements during the summer months due to low flows in Elk Creek.

The City and DEQ have been discussing limitation to sewer hookups. The City has decided to pursue a low technology approach to waste treatment. The consulting firm hired by the City has recommended a marsh system. At this point, it is unclear when any improvement will be made to the existing sewer system.

## COMMUNITY SEWER SYSTEMS

Community sewer systems have developed in the unincorporated County as a result of a health hazard (such as in Arch Cape) or the wish to develop an area where septic systems were not feasible (such as Cullaby Lake). DEQ in the past has discouraged the development of these package systems due to the regulation and quality control problems normally experienced. Below is information on various small sewer systems in Clatsop County.

### Location

### Comments

Arch Cape

The Arch Cape Sewer County Service District located south of the City of Cannon Beach has a sewer system that was completed in 1975. The system is designed for a population equivalent of 1,150 persons with a present population in the summer months of 450 to 500 people.

Location

Comments

Camp Rilea

To meet the continued expansion of the National Guard training program, a sewage lagoon system has been constructed on the southeast boundary of Camp Rilea. The system is designed for a population equivalent of 2000 to 3000 people on a year-round basis. The present usage is around 1,500 people during the summer months. Camp Rilea sewer system could provide treatment to a sanitary district in the area around Sunset Beach and Cullaby Lake. The district, if formed, would have to operate and pay for expansion of the treatment plant.

Shoreline Sanitary  
District (Cullaby Lake)

Shoreline Sanitary District, a private system, serves a population equivalent of 220 people with a capacity of 500 people. The owner of the system is looking into the possibility of expanding the plant's capacity to an equivalent of 1,200 people.

Tongue Point

Located east of Astoria, the Tongue Point Job Corps Center, originally a Navy installation, has a primary and secondary treatment plant. The system was tied into the City of Astoria treatment plant in 1979.

Sundown Sanitary District

A primary system built for the Navy hospital during WWII. The site is no longer being used for a hospital. At the present time the system is being used for residential as well as manufacturing uses. The system has a design capacity of 62,000 gpd with a present usage varying from 16,000 to 35,000 gpd.

Fishhawk Lake

A small private domestic sewer system with a design capacity of 270 hookups. Present usage is approximately 53 hookups, most of which are seasonal.

Wauna Mill

The Crown Zellerbach mill has a sewerage treatment plant designed for industrial treatment.

Florence I. Tagg  
Grade School (Westport)

This system is designed for school use only. Present usage is around 4000 gpd while design capacity is at 5000 gpd.

Location

Comments

Olney School

A small domestic system designed for school use only.

Westport-Wauna

The Westport-Wauna area has poorly operating septic tanks that daily dump raw waste into lower Plympton Creek. A sewer district has been formed, as well as a preliminary draft of the Wauna-Westport Facilities Plan developed by CH2M-Hill. What has and will continue to delay the system from being built has been the lack of EPA funds. At this point, the district is looking at 3 to 5 years before construction could begin.

Miles Crossing

There has been some interest expressed by the people in the area for a sewer system. Provisions have been made in Astoria's Comprehensive Plan that at such time as development is proposed which would require urban services, the County should investigate the cost of extension of City services versus the formation of special districts.

SEPTIC SYSTEMS.

The majority of non-urban county areas are served by septic systems. All areas cannot, however, be served due to limitations imposed by high water-table, insufficient soils above the bedrock, slopes greater than 25%, lot size and soil type/composition and its associated permeability.

The best soils for domestic septic tank systems are those which are well drained, have moderate permeability, and gentle slope. Also, soils should not be subject to flooding, high water table, and ponding nor should they overlie open, gravelly material which would allow contamination of ground water.

Soils which are dry and have good drainage characteristics will permit absorption and filtration of the organic matter suspended in discharged effluent. This drainage process is known as percolation and is essential to the proper functioning of a drainfield. In order to insure effective treatment, the soil must have a moderate drainage rate--too slow and the effluent may rise to the surface and too fast the unfiltered effluent may enter underground water sources or seep into streams and rivers. In either case, the potential for contamination exists.

In general, soils in Clatsop County have characteristics which allow drainfield operations. There are, however, septic system limitations in the diked tide land and steep sloped areas of the County. Each proposed subsurface sewage disposal site is considered on an individual basis.

First of all, there are geological and topographical considerations. A large majority of the area in Clatsop County is composed of steep and rugged terrain which is highly unsuitable for septic tank operations. Not only is the slope too great, but the depth of the soil is shallow. In most cases, these areas are used exclusively for forestry.

The lower valley areas have less severe limitations. Here the soil characteristics themselves--texture, structure, shrink-swell potential, permeability, etc.--are generally more conducive to proper drainage rates that insure effective treatment. There are, however, problems in some areas with high water tables and winter surface water predominantly in the diked tidelands area.

A critical consideration in septic tank operation is development density. With the exception of steep terrain, high water table, bedrock, and flood plain areas, a septic tank system, if properly designed and constructed, can be made to function adequately in most soils. Problems result when development densities become too great for the soil to accommodate the resulting effluent discharges. For example, a few homes scattered about a new subdivision on one acre lots may operate very effectively with individual drainfields. However, when the subdivision becomes fully developed with homes on every adjacent lot, the soil may become saturated with unfiltered effluent which could eventually surface and/or contaminate wells and other groundwater sources. The result is a potentially dangerous health situation.

The subsurface sewage disposal program is operated by the Department of Environmental Quality. Statistics for the inspection of septic sites indicate a 90% approval rate for installation of systems in 1978, while in 1977 it was 88% and 92% in 1976.

In areas where conventional systems may not be feasible, alternative and/or experimental systems may be utilized. The experimental systems program began on a non-funded basis in late 1975 with funding supplied by the legislature in 1977. Presently, there are 148 permits for use of 11 experimental systems in Oregon. Some of these systems are potentially available for Clatsop County; all are alternatives. These systems are not part of a standard permit process for property that has been found to be unsuitable for a standard system. Possible alternative systems are as follows: disposal trenches in soil shallow to weathered bedrock; disposal trenches in drainable wet soils; pressure distribution system in sandy and gravelly soils; seepage trenches in soils on steep slopes; sand filter followed by disposal trenches; mound; and gray waste water disposal trenches. There are 2 experimental systems presently approved for operation in Clatsop County. Another alternative system presently utilized in the County is a holding tank for commercial or industrial use.

Below is some general information on septic tank limitations in various parts of the County.

LOCATION

COMMENTS

Westport-Wauna

Floodplain, foothill, and upland soils (low permeability and slope). Area generally considered not good for septic drainage. An ad hoc building ban currently exists in the area. SCS soil limitation rating--Severe.

Bradwood

Terrace bench and floodplain soils (low permeability or high water table). Area generally considered poor for septic drainage. SCS soil limitation rating--Severe.

Knappa-Svensen

Problem with houseboats on John Day River. Area has some of better drained terrace soils in County (Knappa). Seasonal high water table and moderate permeability of the Wallooskee soils make it marginal for septic systems. SCS soil limitation rating--Moderate to Severe.

Jewell-Elsie

Terrace soils (Knappa) with moderate drainage. (Chitwood and Hebo) with seasonal high water table and ponding. Floodplain soils (Nestucca) moderately slow to moderate drainage--subject to occasional flooding. Area considered poor for septic drainage. SCS soils limitation rating--Moderate to Severe.

Olney

Terrace soils (Chitwood and Hebo) west of Olney have seasonal high water table and ponding. Floodplain soils along river subject to high water table and occasional flooding. Foothill soils (Tolovana) north of Olney have moderate permeability. Area considered poor for septic drainage. SCS soil limitation rating--Moderate to Severe.

Miles Crossing-Jeffers  
Gardens

Diked tideland soils. Water table near surface at all times. Area considered poor for septic drainage. SCS soil limitation rating--Very Severe.

LOCATION (cont'd)

Clatsop Plains

COMMENTS (cont'd)

The Clatsop Plains are underlain by windblown sands with a high hydraulic conductivity. Septic tank drainfield effluent is easily disposed of but is not adequately treated for all contaminants in this medium. High density residential development which uses septic tank drainfield disposal systems will pollute the aquifer.

## SOLID WASTE

### Introduction

Solid waste affects the quality of the County's environment in several ways by degrading the land, fouling the air and water, and providing a continuing problem for people and officials charged with disposing of it. As population increases, it is no longer a simple matter of taking the garbage to the dump. The environmental considerations, as mandated by State and Federal laws, must be given equal weight with economic and political factors. The County must overcome the problem identified by the former Mayor of Houston, Louie Welch, when he said "Everyone wants us to pick up his garbage, but no one wants us to put it down."

The County's solid waste "stream" consists of the old refrigerators seen along logging roads, the household garbage burning in the dumps, and the many tons of fish wastes that, at this time, cannot be utilized in other ways. Solid waste can be seen as both a burden and an opportunity as resources become scarce.

Clatsop County, with a permanent population of approximately 30,700 in 1975 generates about 17,670 tons of solid waste per year. Virtually all of this solid waste is deposited in open dumps. (See Table 4)

TABLE 4  
SOLID WASTE GENERATION  
In Tons

	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
CLATSOP COUNTY (Population)	30,700	32,600	34,500	36,100	37,500	38,800
Permanent Residents	15,870	18,630	21,840	25,070	28,855	32,940
Seasonal Residents	<u>1,800</u>	<u>2,250</u>	<u>3,075</u>	<u>4,020</u>	<u>5,250</u>	<u>6,860</u>
TOTAL	17,670	20,980	24,915	29,090	34,105	39,800

Source: Clatsop-Tillamook Solid Waste Management Plan, June, 1974,  
Clatsop-Tillamook Intergovernmental Council



Below in Table 5 is a brief discussion of the five solid waste disposal sites in Clatsop County. Of the five sites, three are land fills and two are dumps. A sanitary land fill is distinguished from a dump in that the sanitary land fill process compacts and confines the refuse to the smallest possible area and then covers the refuse with a layer of earth at the end of the day or, at least, at frequent intervals.

TABLE 5  
CLATSOP COUNTY SOLID WASTE DISPOSAL SITES

<u>Site Location</u>	<u>DEQ Permit</u>	<u>Area Served</u>	<u>Type of System</u>	<u>Comments</u>
Astoria	Yes	City of Astoria	Sanitary land fill backfilled daily	Pick-up is mandatory for city residents. Burning of paper and cardboard. Water pollution potential--stream runs through site. Rodent population controlled by monthly poisoning.
Warrenton	Yes	Warrenton Hammond Ft. Stevens North Clatsop Plains	Sanitary land fill compacted and backfilled daily.	No burning. No rodent population. No present danger of water pollution.
Seaside	Yes	Seaside Gearhart South Clatsop Plains	Dump over embankment.	Frequent complaints: potential leachate during rainy season. No controls on burning. Large rodent population, although poisoned monthly.
Cannon Beach	Yes	Cannon Beach Area	Dump over embankment.	Potential air-water pollution problems due to occasional burning and surface runoff. Rodent population controlled by monthly poisoning.
Elsie	Yes	Elsie and Area	Sanitary land fill--dump in trench; cover when full.	No pollution problems. No rodents.

Source: Clatsop County Planning Commission Staff and Oregon Department of Environmental Quality.

Over the last several years, a few solid waste sites in Clatsop County have either been filled up or closed due to new environmental standards developed by the federal government. Also many of the current sites are close to capacity.

As a result of the problems with the existing solid waste sites, a study was completed by CTIC in 1974 which is titled Clatsop-Tillamook Solid Waste Management Plan. The recommendations from the study follow.

#### SUMMARY OF RECOMMENDATIONS FROM CLATSOP-TILLAMOOK SOLID WASTE MANAGEMENT PLAN

Essential elements of the recommended solid waste management system in District One are as follows:

1. Establishment of a Service District in each county which will coordinate solid waste management for that entire county. Adoption of inter-governmental agreements with all cities for full participation in implementation of this plan as a part of their respective Service District.
2. Mandatory collection in all areas so designated by the Service District (on the basis of concentration of residences). The landfill will not be open for private vehicle hauling of wastes except at set hours each week during which yard wastes or other special loads (garage cleaning, etc.) will be accepted. Exceptions to the collection requirement in mandatory collection areas may be granted if it is demonstrated that all waste from the premises in question is being disposed of in some other acceptable fashion.
3. Landfill development for Tillamook County at the Vogt Site on the Trask River; for Clatsop County, at the Skipanon Site in Warrenton.
4. Installation of a grinding facility at the Skipanon Site; no processing in Tillamook County.
5. Transportation of waste to the landfills from distant collection points considered part of the disposal system and financed through it; that is, separation of the collection function from the long haul. Initially, Service Districts will contract with distant collectors to perform the long haul in their collection vehicles.
6. Eventual installation of transfer facilities in the Pacific City and Rockaway areas.
7. Assessment of an annual disposal fee from each residence and business to provide operating funds and funds for discharging debts incurred in setting up the transfer and disposal systems. Initially, this fee will be assessed by the Service District through tax rolls and direct billing. When the system is operating in a stable fashion and mandatory collection is well established, it may become more efficient for the collector to bill for disposal and reimburse the Service District.
8. Continuous review and evaluation of all system components by an Advisory Committee or committees so that necessary revisions of the Plan or operating procedures will be recommended and acted upon at the earliest possible time.
9. Service District oversee a program for closure of existing dumps, as outlined.

After five years, these recommendations have not been implemented. Essentially the same open dumps and modified landfills are still in use now as in 1974. The reasons for the present situation are varied and complex, but some of the factors are:

1. The problems of high rainfall, steep slopes, poor soils and citizen concerns make finding a landfill very difficult. The Department of Environmental Quality has been reluctant to approve any landfill sites it feels could cause water pollution problems.
2. Some sites, such as Clifton near the Columbia County border, are too remote. The Skipanon site was rejected because of environmental problems and proximity to the airport. The BPA site is not available due to federal land transfer policies.
3. Smaller volumes of waste make resource recovery uneconomical on a large scale. The County was actively supporting a two-county composting/recycling operation for a period of time, but found that the costs and lack of market for the product made the concept infeasible.
4. Waste recovery prices do not provide sufficient revenue to make recycling feasible on a mass scale. Community recycling still must depend largely on volunteer labor. However, if a County-wide system was initiated, there is the possibility that a "coordinator" could be paid on a part-time or full time basis. The technology still does not exist to separate recyclables at the end of the "waste stream" (the dump or landfill). Hand separation is still too costly.
5. Although a solid waste district has been established, there is no staff to provide the work needed. The County road-master has had to function as the principal staff person in between other duties.

Since other efforts have not as yet provided a solution, the County is preparing to hire an engineering consultant to investigate other landfill sites. The solid waste collection system will continue to rely on private haulers throughout the County, although the possibility of transfer sites has been investigated as a function of the solid waste district. Both the collection and disposal systems would be financed through user fees.

If the County selects an engineering firm in the fall, the final selection of disposal method or sites should occur by the spring of 1980. Financing and organization could take a year to arrange. Construction of the site could then be started during the spring or summer of 1981, and disposal could begin in the fall of 1981. Closure of other inadequate County dumps would occur after the new site became operational.

The cooperation of the municipalities in the County is essential, since cities establish or approve franchises and collection fees. According to the solid waste plan, it is important that there be a uniform fee schedule, and that credit be given for low income persons.

### Recycling

Perhaps a further recommendation might be that credit be given to persons who recycle, possibly through a voucher that could be obtained at a recycling center. This system could stimulate more participation in recycling, and a County-wide system of recycling centers. At the present time, there is a full-range recycling center in Cannon Beach, and newspaper drops in Seaside and Astoria. The Cannon Beach center is funded by a \$1000 yearly budget allocation, and by the receipts from the sale of the materials. Once a month, the community collects enough recyclables to fill a 55 foot "semi" trailer. This has generally consisted of the following:

Glass	5 tons
Tin Cans	1 ton
Aluminum	.1 ton
Newspaper	2 tons
Cardboard	1 ton
Magazines	.5 ton
Miscellaneous Paper	.1 ton

TOTAL . 9.7 tons

Source: City of Cannon Beach

Current market prices for this material are as follows:

	<u>June 1979</u>	<u>June 1978</u>
Glass	\$ 30/ton	\$ 30/ton
Tin Cans	30/ton	20/ton
Aluminum	560/ton	340/ton
Newspaper	18/ton	30/ton
Cardboard	47/ton	35/ton
Magazines and Miscellaneous Paper	3/ton	7/ton

NOTE: Refer to 1974 prices in Appendix V.

Source: Beyond Waste, DEQ, July, 1979.

There are a number of options for handling of recycling in the district. They are:

1. Continue strictly volunteer recycling operations.
2. Retain voluntary program, but provide coordination, space and other assistance to volunteer operators.
3. Conduct a fee-supported County operation. At this time a County-wide program would be excessively expensive, but it may become feasible in the future.

Many future actions could reinforce voluntary recycling success. The counties might adopt a credit system whereby individuals reduce their disposal fee through accumulated recycling credits issued at recycling centers. Within the coastal area (as elsewhere) there is a great need for jobs suitable for the handicapped, and the potential of a recycling operation to support a sheltered workshop program ought not be overlooked. Over the long term, the value of a successful community recycling effort as a tool for changing attitudes from viewing household by-products as waste to considering them a reusable resource, with consequent reduction in total volume discarded, should not be discounted.

As the value of various salvaged materials rises, more and more individuals and firms are entering what can prove to be a highly competitive field. In some areas severe conflicts have developed between persons involved in salvage operations (newsprint, cardboard, etc.) and franchised collectors who feel that their businesses are being threatened and their franchise rights violated by these salvage operations. Many problems can be avoided by early clarification of the status of materials which may one day be considered waste and the next, a desirable commodity. The Solid Waste Committee should provide a forum for open discussion of this question, obtain legal advice, and recommend clarification of the Solid Waste Ordinance if such is found necessary.

#### Energy Recovery

The Solid Waste Plan stated that as of 1974, there was near complete utilization of wood processing residues, and that these "wastes" would become more valuable in coming years. The use of municipal refuse as a supplementary fuel is receiving a great deal of attention. In Oregon, studies in Lane County, Lincoln County and the south coast have proposed using solid waste along with hog fuel to produce power. Utilization of the combustible fraction of the waste stream for fuel provides resource recovery in the form of energy from 80 percent of the waste stream.

The amount of processing needed to prepare the waste for use as fuel varies with the type of boiler. Some units can accept unprocessed wastes, while others require shredding and separation of the combustible matter from the non-combustible fraction. Shredding and classification of the wastes facilitate the recovery of other resources from the waste stream.

Alternate methods exist for energy recovery from solid waste. The wastes can be converted to combustible gases and oils by pyrolysis. These fuels can then be used to generate heat. However, pyrolysis and other conversion processes are still in the developmental stages and don't present a short-term solution to the solid waste problems in District One.

If separation can be accomplished at low cost, it is economically advantageous to use waste paper as a source of fiber rather than as fuel. The value of waste paper as a fiber source varies from \$20.00 per ton to \$60.00 per ton depending on the type and quality of the paper. The fuel value is at most \$10.00 per ton based on Btu value.

Fiber recovery and energy recovery are compatible. Since even though the total amount of fuel would be reduced, the average Btu value of the remaining combustible wastes will remain the same or increase.

At present there is no facility in either Clatsop County or Tillamook County which can utilize the combustible fraction of the solid waste stream as a fuel. The plan recommended, however, that the County investigate the burning of combustible solid wastes at the existing mill sites, and that a market for the excess stream be explored.

## GOVERNMENTAL STRUCTURE AND OTHER PUBLIC FACILITIES AND SERVICES

### LOCAL GOVERNMENT

Within the boundaries of Clatsop County are six incorporated cities and several special purpose service districts, including seven school districts. The basic unit of local government is the county with jurisdiction in all areas for such responsibilities as tax assessment, public records, and the county court. For other responsibilities, such as land use planning, zoning and building regulation, jurisdiction is limited to those areas outside the boundaries of the incorporated cities.

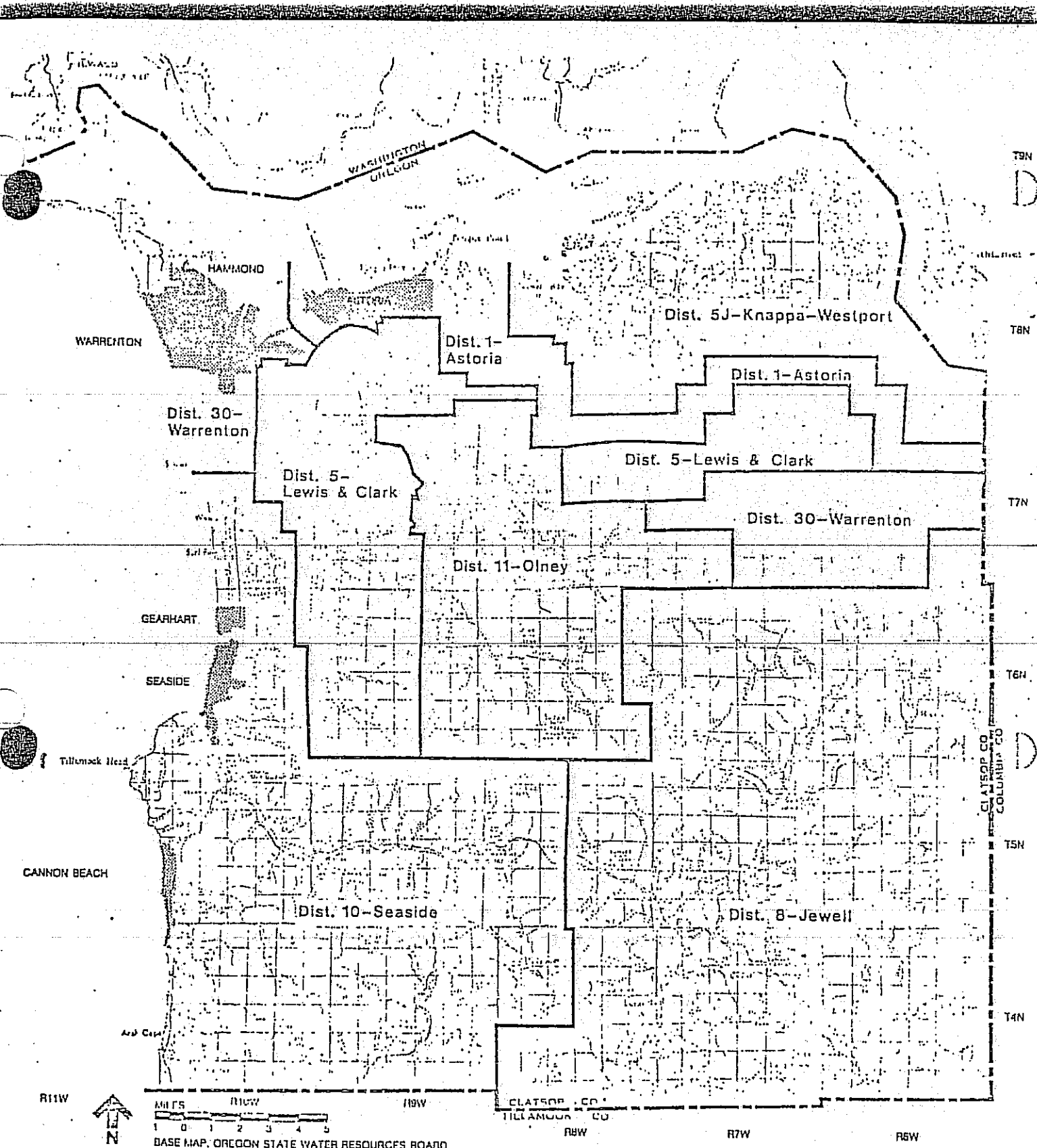
In addition to the cities and county which are general purpose governmental units, there are special purpose districts authorized by Oregon law. The seven school districts which are discussed in more detail below provide educational services. The county-wide intermediate education district provides special educational services. The Clatsop Community College District encompasses the whole county and provides educational services on the campus in Astoria. The Port of Astoria District and the Clatsop Soil and Water Conservation District also encompass the whole county.

The Port of Astoria, under the guidance of the publicly elected Port Commission, maintains a terminal for waterborne commerce at Astoria and the Clatsop Airport on the west side of Youngs Bay.

The Clatsop Soil and Water Conservation District administers land use controls in the Warrenton Dune Area, and provides technical assistance in the use and conservation of the soil and water resources of the county.

### EDUCATION

Clatsop County has seven school districts and five complete school systems (defined as facilities to educate grades 1 - 12). The boundaries of the school districts are shown on Map 5, and the capacities of the various school districts are shown on Table 6. The districts are laid out for the purpose of equalizing tax revenue from forest lands which means that students in outlying areas of one district may find it more convenient to attend a school located closer to their homes on a tuition basis. Students in the Olney and Lewis and Clark Districts must attend Astoria Schools for grades 9 - 12 on a tuition basis because their districts do not maintain high schools. There are five private schools in the county: Star of the Sea in Astoria, the Seventh Day Adventist School in Olney, Lewis and Clark Christian Academy in Lewis & Clark, North Coast Christian School in the Clatsop Plains, and Philadelphia Kindergarten in Hammond.



**MAP 5**  
**CLATSOP COUNTY**  
**GOVERNMENTAL**  
**DISTRICTS**

SOURCE: CLATSOP COUNTY PLANNING COMMISSION



-  INCORPORATED AREA
-  SCHOOL DISTRICT



TABLE 6

## SCHOOL DISTRICTS IN CLATSOP COUNTY

<u>Public Schools</u>	<u>Grades</u>	<u>Enrollment</u>	<u>Capacity</u>	<u>% of Capacity</u>	<u>Year Built</u>
<u>District #30 Warrenton</u>					
		(As of 1978)			
Warrenton Elementary	K-6	369	370+	99	1916
Fort Stevens Junior High	7-8	101	125	80	1890
Warrenton High School	9-12	281	300	94	1948
Comments: The district is planning to build a new school to replace the Warrenton Elementary and Ft. Stevens Junior High School at the elementary school site.					
<u>District #10 Seaside</u>					
		(As of 1978)			
Seaside Heights Elementary	K-6	458	478	96	1974
Gearhart Elementary	K-6	244	275	89	1948
Broadway Junior High School	7-8	251	280	90	1949
Seaside High School	9-12	508	600	84	1958
Cannon Beach Elementary	K-6	160	150	107	1948
<u>District 5J Knappa-Westport</u>					
		(As of 1977)			
Florence I. Tagg Grade School	1-7	118	200	59	1971
Lahti Grade School	1-8	388	450	86	1958, rem. '76
Knappa High School	9-12	256	500	51	1952, rem. '76
<u>District #8 Jewell Consolidated</u>					
		(As of 1979)			
Jewell	K-12	115	250	46	Grade Sch., 1977 High Sch., 1976
<u>District #5 Lewis &amp; Clark</u>					
		(As of 1977)			
Lewis & Clark Elementary *remodeled several times	K-8	365	425	86	1927*
<u>District #11 Olney</u>					
		(As of 1977)			
Olney Elementary	K-7	57	80-100	57	1967
<u>Private Schools</u>					
		(As of 1979)			
Lewis & Clark Christian Academy	K-12	97	200	49	
North Coast Christian School	2-12	28	30	93	
Philadelphia Kindergarten	K	10	15	67	
Star of the Sea	K-8	184	200	92	
Seventh Day Adventist School	1-8	9	30	30	

## HEALTH CARE

Clatsop County is served by two general care hospitals, one in Astoria and one in Seaside. The new Columbia Memorial Hospital, located at McCallister Field, is privately operated in Astoria. The facility has 65 acute care beds, an attending staff of 30, a 24-hour emergency room and an occupancy rate of approximately 70 percent.

The Seaside General Hospital built in 1970 has a total capacity of 55 beds and is currently licensed for 34. Union Hospital District was formed in the SW corner of the County to build this hospital. It has an attending staff of 6 and a doctor on duty 24 hours a day. The hospital is under utilized, with occupancy rates averaging around 40 percent. Out-patient and emergency room activity increase in the summer months, with the influx of part-time residents into the County. The hospital conforms to federal standards and is complete with X-ray rooms, laboratories, emergency rooms, and an out-patient clinic that operates five days a week.

There are approximately 20 practicing physicians in Astoria and 6 practicing physicians in Seaside. Fifteen of these physicians are in general practice or internal medicine; the rest are in a variety of specialties. More intensive care or specialized services require a trip to Portland. The County also has 17 dentists and 4 optometrists. Many south county residents use the Rhinehart Clinic in Wheeler for medical care.

The Clatsop County Health Department operates a clinic in Astoria. The programs the clinic operates include preventative medicine information, family planning clinic, vaccine clinics, nutritional programs, school nurse programs and Home Health Agency with nursing and physical therapy. The Health Department has a bi-monthly immunization program in Seaside and clinics in Westport and Svensen. All the clinics include the Women Infant Children Supplemental Nutrition Program. The full-time County Health Department staff includes 11 nurses and a physician.

The County is also served by a mental health clinic which receives County, state and federal funds. The clinic runs a mental health center in Astoria which provides out-patient treatment in the form of group and individual therapy. They have an office in Seaside that is open one day a week. In addition, there is a 24-hour crisis hotline service. The mental health service also had an alcohol counseling program and has a half-way house for clients that have completed a residential treatment program.

There are four nursing homes in the County, two in Astoria and two in Seaside. Their occupancy ranges from 80 to 90 percent. The Clatsop Care and Rehabilitation Center District has recently been organized to provide multi-purpose nursing home care using the old Columbia Hospital. This district encompasses all of Clatsop County except the Seaside Union Health District.

Until June 1977, ambulance service in the County was privately owned. Due to financial difficulty, a County Ambulance District was formed in 1977 to help maintain the same level of service.

## PUBLIC ASSISTANCE

The County also supplies public assistance services from its Welfare office located in Astoria. There are three public assistance programs administered by the Welfare office, General Assistance Program, Oregon Supplementary Income Program and Aid to Dependent Children Program. The County welfare office reports that currently 49 percent of their cases are in the Astoria area, 36 percent are in the Seaside-Cannon Beach area, 11 percent are in the Warrenton-Hammond area, and 3 percent are in the rest of the County.

As of November, 1976, there were 423 cases, or 1,204 individuals receiving Aid to Dependent Children Assistance. The County reports that about 75 percent of the households receiving ADC are headed by women. Additionally, in November 1976 there were 615 households, or 1,472 individuals who were not on public assistance programs but were receiving food stamps. The number of persons receiving some kind of public welfare varies from season to season depending upon the economics of the time. Layoffs by large plants such as Bumble Bee in Astoria often result in the temporary increase of the public assistance rolls.<sup>1</sup>

## POLICE PROTECTION

The State, County and local governments all have a role in police protection. There were a total of 74 sworn officers in the study area in 1977. Within the unincorporated County about 80% of the crimes are burglaries and vandalism. The rural County has about the same crime rate per 1000 as do the cities in the County. Clatsop County has funding for 8 sheriffs to protect a rural population of 10,900. Clatsop County is deficient in the level of police protection that is currently being provided. The national median average is one officer to 1000 population, while in Oregon the average number of sworn officers to population is 1:877 for counties with populations of 25,000 to 99,000.<sup>2</sup>

<u>Department</u>	<u>Police Services</u> (1977)				
	<u>Sworn Officers</u>	<u>Reserve Officers</u>	<u>Support Personnel</u>	<u>Patrol Cars</u>	<u>Special Vehicles*</u>
Oregon State Police	22	6	2	8	6
Clatsop County Sheriff's Dept.					
Criminal Division	8	15	1	3	2
Jail Division	6	3	-	-	-
City of Astoria Police Dept.	17	10	6	4	1
Town of Hammond Police Dept.	1	0	0	1	0
City of Gearhart Police Dept.	3	8**	0	3	1
City of Seaside Police Dept.	12	15	7	5	3
City of Warrenton Police Dept.	3	3	0	2	0
City of Cannon Beach Police Dept.	4	2	0	3	1

\*Special vehicles include game control trucks, 4-wheel drive patrol vehicles for beaches and rugged terrain, and motorcycles. \*\*Plus three cadets.<sup>1</sup>

<sup>1</sup>Source: Brown & Root EIS 1977.

<sup>2</sup>Law Enforcement Data System 1979.

## FIRE PROTECTION

Fire protection is provided by eight rural fire protection districts in the rural County. (See Map 6) With the exception of the City of Astoria, all of the city and rural fire departments are staffed by volunteers.

A useful index for gauging fire protection in the County is the protection class scale which the Oregon Insurance Rating Bureau has developed to aid insurance companies in fixing fire insurance premiums for homeowners. A maximum of 5,000 points is available. Points are deleted for inadequacies; therefore, the fewer points, the higher the class rating (i.e.: 5,000 points = Class 1 (best), 0 points = Class 10 (worst) ).

The rating schedule encompasses four basic elements which contribute to a community's ability to prevent or reduce loss of life or property from fire. These elements and their relative weight in the overall evaluation are water supply, fire departments, fire service communications, and fire safety control.

TABLE 7  
ISO RATINGS

### RELATIVE VALUES AND MAXIMUM DEFICIENCY POINTS

<u>Feature</u>	<u>Percent</u>	<u>Points</u>
Water Supply	39	1,950
Fire Department	39	1,950
Fire Service Communications	9	450
Fire Safety Control	13	650
	<u>100</u>	<u>5,000</u>

This rating system DOES NOT measure the efficiency, economy, or quality of fire protection services on a daily basis. The rating system DOES evaluate the sufficiency of manpower, facilities, and equipment of a department against standards established by ISO. Consequently, the system should not be used in comparing fire departments except in their ability to prevent an extensive fire. The system was developed primarily to establish uniform insurance rates. Most of the rural areas of Clatsop County have a rating between 6 and 8. (See Table 8) Fire protection levels should be reflective of anticipated population distribution patterns and should also be reflected in land use decisions which might have an impact on a fire department's effectiveness.

# TABLE 8 FIRE PROTECTION RATING

(Where two figures appear, the parenthesized number predominates)

Served by Cannon Beach R.F.P.D.	(6) - 9
Served by Seaside R.F.P.D.	4 - 8
City of Seaside	5
City of Gearhart	6
Served by Gearhart R.F.P.D.	7 - 9
City of Warrenton	(6), 8
Served by Warrenton R.F.P.D.	5 - 7
City of Hammond	(7), 8
City of Astoria	(5), 7
Served by Lewis and Clark R.F.P.D.	8 - 9
Served by John Day-Fernhill R.F.P.D.	9
Served by Knappa-Svensen R.F.P.D.	8 - 9
Served by Westport, Wauna R.F.P.D.	7 - 9
Served by Elsie-Vinemapple R.F.P.D.	10

The rating bureau's recommended premiums are not affixed linearly; thus, an expensive home in a class 10 area will cost more than twice as much to insure as a home half its value. The largest gulf between recommended premiums occur between ratings 8 and 9. A \$15,000 home costs about \$35 annually to insure in a class 8 area, \$70 in a class 9 area.

Recommended Premium on:	In Protection Class							
	<u>2</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>8</u>	<u>9a</u>	<u>9b</u>	<u>10</u>
\$15,000 home	16	20		25	25	69	83	91
\$10,000 home	14		19					67
\$ 5,000 home	12		16					45

Source: Oregon Insurance Rating Bureau

All class 2 areas receive excellent fire protection. The insurance companies affix only a base rate dependent on home value. What fire protection exists in a class 10 area is not sufficient to prevent the highest premium being charged.

## ADMINISTRATIVE - INSTITUTIONAL

Each of the six incorporated areas in Clatsop County has a city hall. The cities of Astoria and Seaside maintain libraries.

The Job Corps Center at Tongue Point provides vocational skills and instruction in general studies for people between the ages of 16 and 22 who are from low income families or are unemployed. There are approximately 400 people using the center which is managed by RCA Corporation.

The County courthouse provides office space for assessors, circuit court, county engineer, county planning commission, district attorney, district court, humane officer and dog control, juvenile department, county sheriff, surveyor, treasurer, and veterans service office.

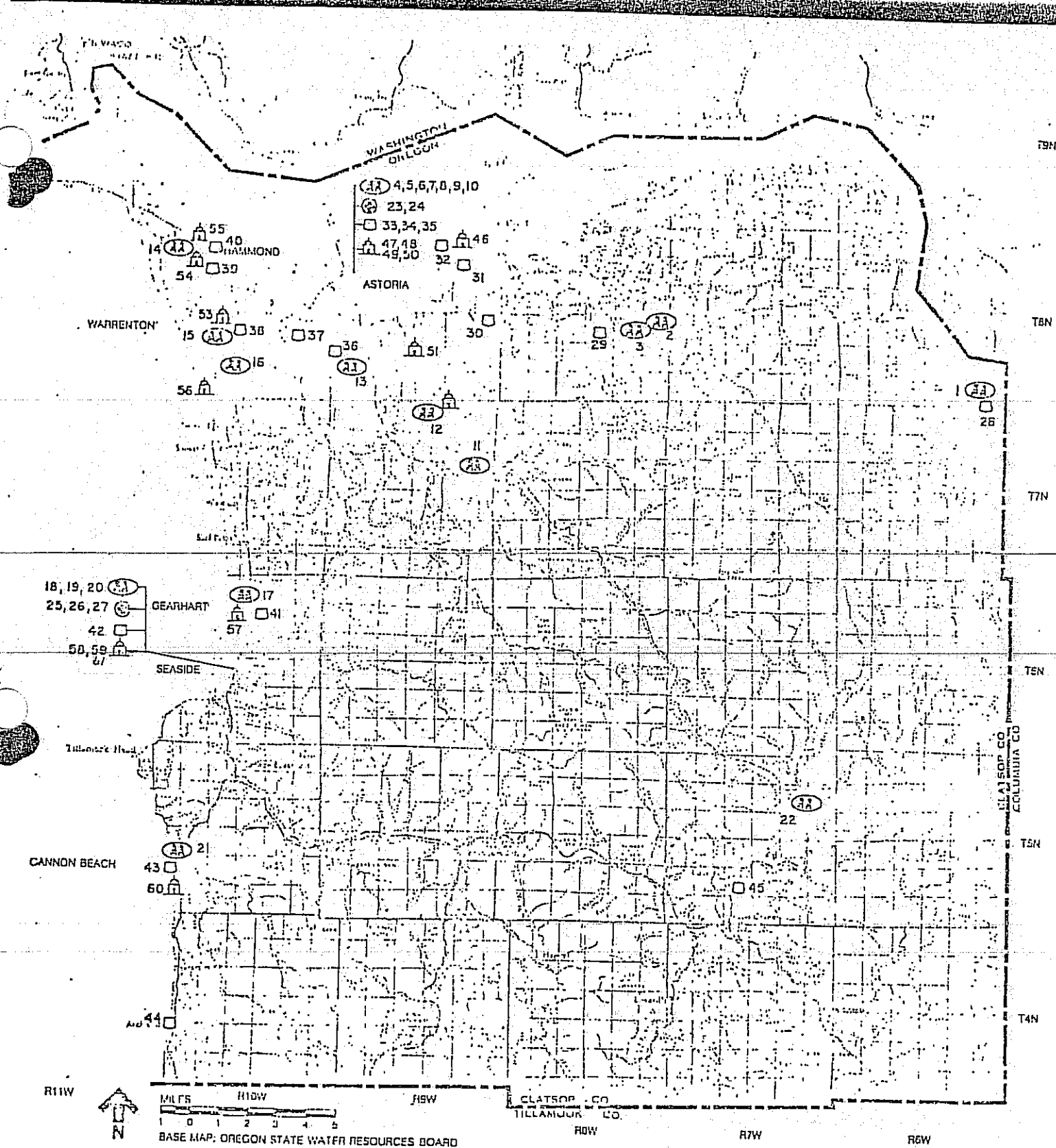
The federal building houses the extension service of Oregon State University, the agricultural stabilization and conservation service, selective service board No. 1, social security administration, vessel documentation, customs office and U.S. postal office.

Oregon State University College of Agriculture operates the John Jacob Astor Experiment Station which deals with dairy cattle management and nutrition, and a seafood laboratory in Astoria.

The National Marine Fisheries research marine life in the Columbia Estuary. Among current projects are studies on plankton, salmon migration, and crabs.

Camp Rilea is staffed by five full time federal technicians who maintain the equipment. In the summer, 750 National Guardsmen of the 12 - 49th Engineer Battalion train there for such projects as forest trail clearing. The Oregon-Washington labor school uses the camp in winter.

There are U.S. Post Offices in Astoria, Cannon Beach, Seaside, Warrenton, Hammond, Tolovana Park and Arch Cape. The U.S. Postal Service and the County are interested in the possibility of installation of a new grid system of addresses for the rural areas of Clatsop County. Such a system would assist in mail delivery, as well as police, fire and emergency services, in locating homes.



# Index to Public Facilities Indicated on Map 6.

Map

Index

Number

Education

1. Westport Grade School
2. Knappa High School
3. Hilda Haliti Grade School
4. Astor Elementary School
5. Clatsop Community College
6. Star of the Sea School (private)
7. Astoria Junior High School
8. Central Elementary School
9. Astoria High School
10. Robert Gray Elementary School
11. Olney Grade School
12. 7th Day Adventist School (private)
13. Lewis and Clark Grade School
14. Fort Stevens Junior High School
15. Warrenton Grade School
16. Warrenton High School
17. Gearhart Elementary School
18. Seaside High School
19. Central Elementary School
20. Broadway Junior High School
21. Cannon Beach Elementary School
22. Jewell Consolidated School

## Health Care

23. Columbia Memorial Hospitals
24. Crestview Convalescent and Nursing Center
25. Seaside Hospital
26. Ocean Air Nursing Homes
27. Seaside Convalescent Center

## Public Safety

28. Wauna Westport Fire Department
29. Knappa-Svensen-Brownsmead Fire Department
30. John Day Fire Department
31. Tongue Point Fire Department
32. Tongue Point Coast Guard Station



Map  
Index

Number

Public Safety, ...cont'd

- 33. Astoria Police and Fire Department
- 34. Clatsop County Sheriff
- 35. Oregon State Police
- 36. Lewis and Clark Fire Department
- 37. Coast Guard Air Station
- 38. Warrenton Police and Fire Department
- 39. Hammond Fire Department
- 40. Point Adams Coast Guard Station
- 41. Gearhart Police and Fire Department
- 42. Seaside Police and Fire Department
- 43. Cannon Beach Police and Fire Department
- 44. Arch Cape Station of Cannon Beach Rural Fire Protection District
- 45. Jewell Elsie Fire Department

Administrative Institutional

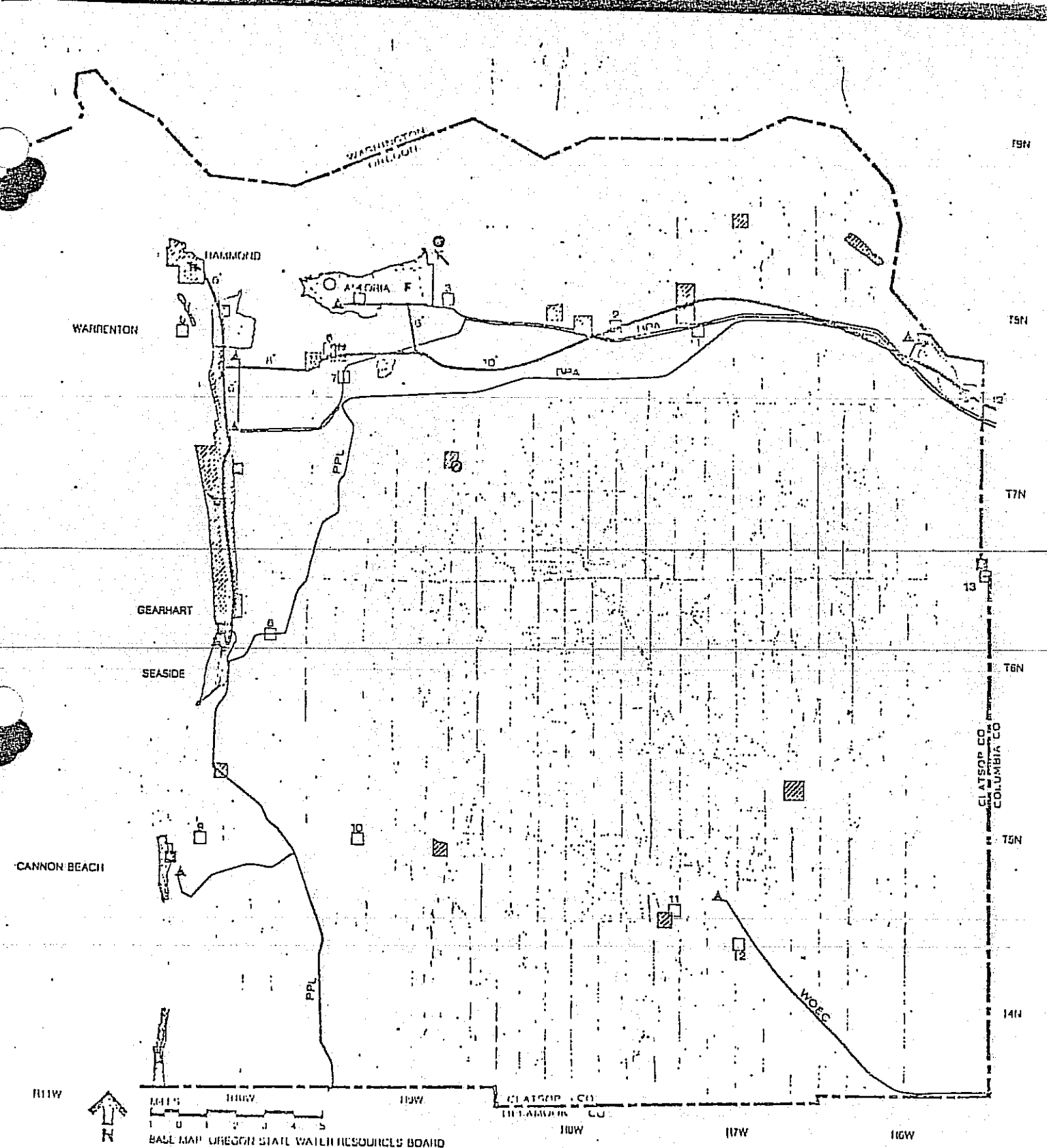
- 46. Job Corps Center
- 47. Astoria City Hall
- 48. Astoria Library
- 49. County Courthouse
- 50. Federal Building
- 51. State Forestry Department
- 52. John Jacob Astor Experiment Station
- 53. Warrenton City Hall
- 54. Hammond City Hall
- 55. National Marine Fisheries
- 56. Camp Rilea
- 57. Gearhart City Hall
- 58. Seaside Library
- 59. Seaside City Hall
- 60. Cannon Beach City Hall
- 61. Sunset Recreation District (swimming pool)

## GOVERNMENT FINANCE

Public facilities and services in Clatsop County are provided by a large number of general purpose local governments, special districts, and state and federal agencies. Most local governments in the area have a healthy financial history. Financial problems might occur for some of the County water districts when they try to meet Federal requirements for drinking water.

Education is the largest single area of expenditures for local governments in the County. In 1972, education accounted for \$7.6 million of the \$14.8 million spent by local governments. Other major items of expenditure in 1972 were highways, public health, police protection, parks and recreation, libraries, water supply and interest on general debt. At that time, there was \$9.6 million in long-term general debt outstanding for local governments in the County, of which \$4.8 million was for schools (1972 Census of Local Governments, 1974).

The County and cities of Clatsop County derive most of their revenue from property taxes, fees and service charges, state-shared revenues (gas, liquor, and cigarette taxes) and federal grants, (1972 Census of Local Governments, 1974). Property taxes account for approximately one-third of all general fund revenues. In addition, the County receives approximately \$2 million annually from the State for timber sales on land the County obtained by foreclosure and turned over to the State. This revenue is distributed among the County, cities, the port, schools, and other taxing bodies as an offset to property taxes. This amounts to approximately 15 percent of the property taxes to be collected in fiscal year of 1976-77. Property tax rates for the cities of Clatsop County are generally higher than those for the Portland Metropolitan Area. The County also has a tax equalization measure for schools administered by the Intermediate Education District.



# MAP 7 CLATSOP COUNTY PUBLIC UTILITIES

CLATSOP COUNTY WATER & SEWERAGE DISTRICTS

- RIVER NATURAL GAS PIPELINE (High Pressure)
- RIVER NATURAL GAS PIPELINE (Low Pressure)
- IRRIGATION
- WATER RIGHT
- WATER RIGHT (Surface Water)
- WATER RIGHT (Groundwater)

- PRIMARY SEWAGE TREATMENT PLANT
- SECONDARY SEWAGE TREATMENT PLANT
- REUSE WATER TREATMENT PLANT

## BIBLIOGRAPHY\*

- Bushley, Richard A. Comprehensive Sewer Plan for the City of Gearhart.  
R.W. Beck and Associates, Seattle, Washington, 1977. (P-g6)
- Bushley, Richard A. Wastewater Facilities Planning Study: Gearhart,  
Oregon. R.W. Beck and Associates, Seattle, Washington, 1978. (P-w15)
- C. & G Engineering. Arch Cape Water Study. Salem, Oregon, 1976. (T-a3)
- Ehinger, Paul F. Solid Waste Management Plan, District One, Clatsop and  
Tillamook Counties, Oregon. Portland, Oregon, 1974. (P-c20)
- Gladden, Bob M. Preliminary Draft of the Wauna-Westport Facilities Plan.  
CH2M Hill, Portland, Oregon, 1977.
- Green and Associates. Engineering and Planning Report on Water Supply  
and Sewerage Systems of Clatsop County, Oregon. Portland, Oregon,  
1968. (P-c8)
- Jylha, Arne. Diking and Drainage Districts in Clatsop County. Astoria,  
Oregon, 1974. (T-d4)
- Kreissl, James F. Status of Pressure Sewer Technology. Cincinnati, Ohio.  
(T-s11)
- Madden, Dann W. Clatsop Plains Sewerage Study, Clatsop County, Oregon.  
CH2M Hill, Portland, Oregon, 1975. (T-c1)
- Madden, Dann M. Wauna-Westport Oregon, A Study of Sewage Collection and  
Waste Treatment Facilities. Cornell, Howland, Hayes and Merryfield,  
Portland, Oregon, 1970. (P-w7)
- Meyers, J.D.; Leonard, R.T.; and Granger, O.R. A Plan for Land and Water  
Use, Clatsop County, Oregon: Phase I. Skidmore, Owings, and Merrill,  
Portland, Oregon, 1978. (P-c15)
- Morgan, Mike and Rittenback, Dennis. The Cannon Beach Comprehensive Plan,  
Background Information. Clatsop-Tillamook Intergovernmental Council,  
Cannon Beach, Oregon, 1978.
- Real Estate Research Corporation. The Costs of Sprawl, Environmental and  
Economic Costs of Alternative Residential Development at the Urban  
Fringe. Council of Environmental Quality, Department of Housing and  
Urban Development, and Environmental Protection Agency, Washington D.C.,  
1974. (T-c31)

\*The numbers in parathesis which follow publications are the shelf-list numbers of those publications in the Planning Department Library.

Seaman, Margaret H., ed. Columbia River Estuary Inventory of Physical, Biological and Cultural Characteristics. Columbia River Estuary Study Taskforce, Astoria, Oregon, 1978. (P-c43 c)

State Water Resources Board. North Coast Basin. Salem, Oregon, June 1961.

Tillson, Gregory; Youmans, Russell; and Thomas, Marion D. Impacts of Urban Growth on Local Government Costs and Revenues. Oregon State University Extension Service, Corvallis, Oregon, 1974. (T-u5)

Tilson, Murray. City of Warrenton Comprehensive Water System Study. H.G.E. Engineers, Portland, Oregon, 1979.

U.S. Army Corps of Engineers. Water Resources Information, Miscellaneous Clatsop County. Portland, Oregon, 1971. (T-w4)

U.S. Environmental Protection Agency. Wastewater Treatment Facilities: Astoria/Williamsport. Portland, Oregon, 1979. (T-a6)

Urban Systems Research and Engineering, Inc. The Growth Shapers, The Land Use Impacts of Infrastructure Investments. Council on Environmental Quality, Washington D.C., 1976. (R-g2)

Westech Engineering, Inc. Knappa Water Association, Clatsop County, Oregon, A Water System Analysis. Salem, Oregon, 1974. (T-k2)

Wilhelm, Leon J. Preliminary Draft Sewerage Facilities Plan, Seaside, Oregon. STRAAM Engineers, Inc., Portland, Oregon, 1979. (P-s12 b)

Wilhelm, Leon J. Sewer System Evaluation Survey, Seaside, Oregon. STRAAM Engineers, Inc., Portland, Oregon, 1979. (P-s12 a)

Wright, Robert A. Sunset Beach, Oregon, A Preliminary Study of Sewage Collection and Waste Treatment Facilities. Cornell, Howland, Hayes and Merryfield, Portland, Oregon, 1969. (P-s9)