COMPREHENSIVE PLAN
FOR THE
NORTHWEST DISTRICT
OF
SKAGIT COUNTY
WASHINGTON

SEPTEMBER 1974

SKAGIT COUNTY PLANNING DEPARTMENT
120 W. KINCAID ST.
MOUNT VERNON, WASHINGTON 98273

SEPTEMBER 1974

C O M P R E H E N S I V E P L A N

F O R T H E

N O R T H W E S T D I S T R I C T

O F

S K A G I T C O U N T Y

W A S H I N G T O N

SKAGIT COUNTY PLANNING DEPARTMENT

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NORTHWEST DISTIRCT - SKAGIT COUNTY WASHINGTON

COMPREHENSIVE PLAN

Prepared by the Skagit County Planning Department

Robert C. Schaefer Director

CERTIFICATE OF ADOPTION

This is to certify that the Official Comprehensive Plan for the Northwest Area of Skagit County is hereby adopted by:

The Skagit County Planning Commission on December 9, 1974

Chairman

Vice-Chairman

Secretary

The Board of County Commissioners on January 7, 1975

Chairman

Commissioner

Commissioner

This text together with the Comprehensive Plan Map, comprises the Comprehensive Plan for the Northwest District of Skagit County.

ERRATA SHEET

NORTHWEST DISTRICT PLAN

COMPREHENSIVE PLAN TEXT

The following are revised portions of the plan (changed to read as follows) as they chronologically appear in the text.

0.6 Official Title of Proposed Action and Summary of the Proposed Action:

b. west, following the Skagit River channel to a point due south of the Pulver Road, north on the Pulver Road to the northern boundary line of Section 12, Township 34, Range 3E, west along the section line to its intersection with SR 20, west along SR 20 to the center of the Swinomish Channel; . . .

0.8 The following describes the approximate boundaries of the six planning areas of Skagit County:

5. Northwest:

West - The center of the Swinomish Channel

6. Island:

All of the islands of Skagit County lying west of the center of the Swinomish Channel.

6.2.3 Bayview Airport, owned by the Port of Skagit County and the Port of Anacortes, and land directly south, lying above the 100 year floodplain elevation, have been designated as suitable for heavy industrial activities.

6.3.3 The land areas allocated for industrial development are proportionate to the demand. Over allocation of industrially designated land has been avoided as being wasteful of valuable land. The land designated industrial has been chosen to give industrial expansion the choice of either leasing land from a local entity, the Port of Skagit County, having land available for private purchase. Approximately 86% of the land designated as industrial in the Northwest area is administered by the Port of Skagit County, and or Port of Anacortes.

6.6.1.21 The Zoning map shall be revised to conform to this Comprhensive Plan.

6.6.2.15 Commercial and/or industrial activities directly related to agricultural production, or similar thereto, could be allowed in the agricultural areas provided they can sufficiently justify their location.

6.6.3.2 The route for the SR 20 realignment from I-5 to Fredonia should be determined so as to displace the least amount of agricultural land, not dissect parcels so as to unusable, while utilizing to the maximum the present SR 20 route facilities.

6.6.3.3 Gages Slough and other natural water courses should be maintained and any new road corridors should not inhibit drainage patterns or overland water flow during flood conditions.

6.6.3.4 Access controls should be developed along any new corridor as a joint venture between the State Highway Department and Skagit County Government.

6.6.3.5 Route selection should maintain or enhance the health, safety and general welfare of both the immediately affected, and the entire Skagit County residents.

6.6.5.7 The Comprehensive Plan approves in general by reference, the recommendations of the four studies completed under the auspices of the Skagit County Development Association in 1972 . . . .

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0.3 PREFACE

Chapter 172, 1st Extraordinary Session, Laws of 1973 amended RCW 36.70.320 (known as the Planning Enabling Act) to allow Comprehensive Planning on a District or less than entire county basis.

The Skagit County Planning Department has adopted the District approach to Comprehensive Planning to facilitate the preparation and adoption of current, viable plans specifically tailored to the needs and objectives of each of the several separate and distinct geographical areas of the county.

The six Planning Districts selected for Skagit County are generally identified as follows:

North Central District - including the area surrounding Sedro Woolley

Northwest District - including the area surrounding Burlington

Island District - including the area surrounding Anacortes

Southwest District - inlcuding the area surrounding LaConner

South Central District - including the area surrounding Mount Vernon

Upriver District - including the area surrounding Concrete

The Northwest Planning District is the second in a series of six areas that are under revision for a new Comprehensive Plan for Skagit County. The Comprehensive Plan for the County, combining the six different districts, is scheduled for completion in 1976.

It should also be noted that Chapter 172, 1st Extraordinary Session, Laws of 1973, which amended the Planning Enabling Act as mentioned above, does not invalidate previous Comprehensive Plans or those portions of previous Comprehensive Plans covering areas other than the Planning District. Since there are a number of areas which can best be considered on the basis of a countywide plan, the District Plan should be consdiered to be a supplement to the Countywide Comprehensive Plan adopted in 1968. In areas wherein there is an apparent conflict, the District Plan takes precedence. When all six districts plans are completed, the new Comprehensive Plan will be considered complete and the 1968 Plan will then be superseded in its entirety.

0.4 FOREWARD

The Northwest District Plan contained in this volume and illustrated in principle on the accompanying map, is the second in a series of six District Comprehensive Plans stemming directly from the Comprehensive Land Use Planning Alternatives Program completed in 1973.

This series of six District Plans, when completed, will form an entirely new Comprehensive Plan for Skagit County.

0.5 SUMMARY - NORTHWEST AREA COMPREHENSIVE PLAN

The Northwest Comprehensive Plan described and evaluated in this document is an important milestone in Skagit County's planning program. This plan represents a culmination of several years effort to update and revise the Comprehensive Plan for Skagit County. This plan for the Northwest area is the second in a series of revisions of Skagit County's Comorehensive Plan.

However, this plan for the Northwest area does not represent a completion of the planning process for the Northwest area. This plan will and should be in turn be amended and revised as community standards change. No comprehensive plan should be considered as the final answer to all land use problems and decisions, it can be a valuable and usable guideline through which decisions related to land use can be made. As with any guideline, this plan should be used regularly by decision makers in order to reap the best benefits a comprehensive plan can provide.

The recommendations contained in this plan can best be described by the following generalization:

1. The existing and future agricultural use of the floodplain should be provided with at least 20 year flood frequency protection.
2. The variety of lifestyle's available in the Northwest area, both rural and urban, should be maintained or expanded in those areas where the physical environment and existing developments are compatible.
3. Development of the unprotected floodplain area should be stopped.
4. New development should be directed to floodsafe uplands of the Northwest area.
5. Commercial goods and services should be provided by the traditional urban centers. Highway services only should be provided at key arterial intersections.

6. Industrial uses should be located near urban centers or in areas where the physical environment and existing or proposed land uses are conducive and compatible with the proposed industrial development.

This Comprehensive Plan will produce a pattern of devleopment for the Northwest area of Skagit County that will: 1) preserve the resource productive areas; 2) provide a variety of living environments, and 3) maintain control over the costs associated with community growth and improvement.

0.6 SUMMARY SHEET - NORTHWEST E. I. S.

Nature of this report: Draft Environmental Impact Statement

Sponsor: Skagit County Planning Department
Skagit County Courthouse Annex II
120 W. Kincaid Street
Mount Vernon, Washington 98273

Type of Proposed Action: Legislation

Official Title of Proposed Action and Summary of the Proposed Action:

Northwest Skagit County Comprehensive Plan Amendment

The proposed legislative action will amend and revise a portion of the current and official Skagit County Comprehensive Plan. The portion for which the Comprehensive Plan is being amended is approximated as the area from a point in the Skagit River channel: (a) north along the District Line Road to the Cook Road, west along the Cook Road to Interstate 5, north along Interstate 5 to the County line; (b) west, following the Skagit River channel to a point due south of the Pulver Road, north on the Pulver Road to the northern boundary line of Section 12 Township 34, Range 3E, west along the section line to its intersection with SR-20, west along SR-20 to the western edge of the Swinomish Channel; (c) the western boundary being Samish Bay and Padilla Bay. This area contains approximately 80 square land miles, all within Skagit County, Washington.

Summary of Environmental Impacts:

A Comprehensive Plan, by its nature, is a permissive document in terms of potentially allowing a wide variety of land uses to occur. It is also restrictive in that adherence to the provisions, policies, and goals of a Comprehensive Plan will preclude a variety of land uses from occurring. Thus, there is a balance of the liabilities and benefits of a Comprehensive Plan.

No comprehensive plan will have a direct environmental impact. A comprehensive plan does not develop projects, or prohibit, or promote, degradation of the environment directly. The various provisions, policies, and

of a comprehensive plan will, upon implementation, affect the environment either beneficially or detrimentally. However, each specific development, or each consumption of land, at the project level, is the point in time or source at which environmental assessments and impact statements should be developed, issued, reviewed, and commented upon.

Comprehensive plans are not rigid, fixed documents, they are merely references of the various standards a neighborhood, community, or region has developed to guide the development of the areas, so as to provide an identifiable lifestyle and life quality, against which various forms of land development or use may be analyzed and evaluated. A comprehensive plan can and should change as community standards and goals change.

A list of environmental impacts of a comprehensive plan would include all of the aspects of that plan both in terms of all of the myriad types of activities it would condone for finite areas and all of the larger group of activities that would be precluded in finite areas.

The comprehensive plan will:

1. Allow substantial development of large land area for development of the following use activities:
   a. residential
   b. commercial
   c. industrial
   d. public
   e. agricultural
   f. forestry
2. Prevent many types of development and land use activities
3. Provide minimum use standards for development and land use activities
4. Allow habitat change for numerous indigenous species of flora and fauna.

Summary of Alternatives

1. Other Alternatives
   A. No Comprehensive Plan

      Conprehensive plans are required by the Revised Code of Washington, thus this alternative would require a change in state law which is

beyond the range of control of the Board of County Commissioners.

B. More Proscriptive Comprehensive Plan
A more proscriptive comprehensive plan could at an extreme preclude all forms of development and land use activities and could propose that as existing development and land use activities are amortized that the area they occupy be returned, or allowed to return, to its natural status.

C. More Liberal Comprehensive Plan
A more liberal comprehensive plan could allow any form of development to occur in any area, adjacent to any other developed or undeveloped area, in which any form of degradation or alteration of existing systems would be allowed.

2. Alternatives Within a Plan

A. For a discussion of the alternative for the Northwest District refer to Maps O,P,Q,R,S,T, and Chapers 4 & 5 in this plan.

B. For additional information on planning alternatives, refer to Chapters VI & VII, pages 329 - 366 of the Comprehensive Land Use Planning Alternatives for the Skagit River Floodplain and Related Uplands.

3. Recommended Plan

A. For a discussion of the recommended plan refer to Chapter 6 of the Northwest Area Comprehensive Plan.

B. For a graphic representation of the Northwest Area Comprehensive Plan, see Map U.

Review Period: 30 days August 30 - September 30 1974
(Comment Period deadline is September 30, 1974 @ 4:30 P.M.)

Recipients of the Document: 1) Skagit County Planning Commission
2) Skagit Regional Planning Council
3) Skagit County Board of Commissioners

0.8 PREAMBLE FOR THE SKAGIT COUNTY COMPREHENSIVE PLAN

On September 10, 1968, the Skagit County Board of County Commissioners adopted a revision of its Comprehensive Plan which stated as follows:

> "This text together with the Comprehensive Plan-Map, the 'Analysis of Population in Skagit County', the 'Skagit County Economic Base', October, 1964, 'Parks and Recreation', A Plan for Skagit County, comprises the Comprehensive Plan for Skagit County."

Chapter II, entitled "Purpose and Intent" of the Comprehensive Plan on Page 9 explained the intent of Skagit County as follows:

> This Plan should be periodically reviewed by the Planning Commission and said Board. In addition to adding more detailed plans, it may be necessary from time to time to change basic features of the Plan, as economic, social or technological changes indicate a better basic pattern of land use or a need for re-evaluation of planning principles and objectives.

The Washington State Planning Enabling Act, RCW 36.70.340 provides that:

> When the Comprehensive Plan containing the mandatory subjects as set forth in RCW 36.70.330 shall have been approved by motion by the Board and certified, it may thereafter be progressively amplified and augmented in scope by expanding and increasing the general provisions and proposals for all or any one of the required elements set forth in RCW 36.70.330 and by adding provisions and proposals for the optional elements as set forth in RCW 36.70.350. The Comprehensive Plan may also be amplified and augmented in scope by progressively including more completely planned areas consisting of natural homogeneous communities, distinctive geographic areas, or other types of districts having unified interests within the total area of the county . . . .

Skagit County recognizes that its Comprehensive Plan must be studied continually and revised whenever new technology, techniques and other data indicate that the best interest of the County, or any portion thereof, will be served thereby.

Skagit County recognizes, as it moves forward from its long range generalized plan, adopted in 1965, and amended in 1968, to more precise plans for development, that because of the vast amounts of land within the boundaries of Skagit County, 1,735 square miles, and because of the great diversity of the kinds of land and needs of its citizenry, and in order to make the Comprehensive Plan more meaningful as a guide and a tool for the regulation of land, it is in the best interests of the people of Skagit County to supplement the plan by dividing the county into natural homogeneous communities and geographic areas in order that more precise development policies can be developed and adopted for the more natural homogeneous communities and geographic areas.

Therefore, Skagit County, for planning purposes, is divided into the following districts:

1) North Central
2) Upriver
3) South Central
4) Southwest
5) Northwest
6) Island

and, in conjunction with the revision and updating of the general provisions that apply to the county as a whole, more precise plans and guidelines that will apply more particularly to the specific areas will be developed for these areas or districts.

The following describes the approximate boundaries of the six planning areas of Skagit County:

1) North Central:
   North - Skagit County Line
   South - Skagit River
   West - A line running north from the Skagit River along the District Line Road to the Cook Road, then west along the Cook Road to Highway I-5, then north along I-5 to the County Line.

East - A line running north from the Skagit River beginning at a point lying between Sections 21 and 22, Range 6, Township 35, and continuing north to the County Line (generally between Lyman and Hamilton)

2) Upriver:

North - Skagit County Line

South - Skagit County Line

West - A line running between county lines, parallel to a north/south line between Sections 21 and 22, Range 6, Township 35 (generally between Lyman & Hamilton)

East - Skagit County Line

3) South Central:

North - Skagit River

South - Skagit County Line

West - South along the Skagit River from its intersection with I-5

East - A line running south from the Skagit River beginning at a point lying between Sections 21 and 22, Range 6 Township 35 (Generally between Lyman and Hamilton)

4) Southwest:

North - A line running west beginning at a point between Section 12 and 13, Range 3, Township 34, generally south of Avon

South - Skagit County line

West - Western edge of Swinomish Channel

East - South along the Skagit River from its intersection with I-5

5) Northwest:

North - Skagit County Line

South - Skagit River, to a line running North along the Pulver Road to a line running west beginning at a point between Sections 12 & 13, Range 3, Township 34 (generally south of Avon)

West - The western edge of the Swinomish Channel

East - A line running north from the Skagit River along the District Line Road to the Cook Road, then west along the Cook Road to Highway I-5, then north along I-5 to the County Line.

Note: The Northwest Planning District does not include the city of Burlington.

6. Island:

All of the islands of Skagit County lying west of the western edge of the Swinomish Channel.

(See "Scope", Page 8, 1968 Skagit County Plan)

The text portion of the Comprehensive Plan, including the illustrative materials tables and charts, is designated as the "plan policies." It sets forth in narrative form the public objectives, policies and standards to be applied when guiding the future growth of Skagit County.

In addition to the plan policies there is also a map portion of the Comprehensive Plan, which is designed and intended to illustrate the application of the plan policies in a general way.

The Comprehensive Plan is an expression of public policy outlining the general guidelines for the future development of the county and is not designed or intended to establish precise land use boundaries in either the policies or the map portion of the plan.

1. PHYSICAL ENVIRONMENT

The physical environment is a complex of many interrelated elements. Often times action upon one seemingly isolated element has subsequent impacts upon other elements. It is important therefore, to know these elements and their relationships with other elements, including man.

The physical characteristics section is composed of the following sections:

1.1) Geology
1.2) Slope
1.3) Soils
1.4) Septic Suitability
1.5) Floodplain

The diverse physical environment can be mapped and discussed for specific areas, such as the Northwest Planning area.

The value of an analysis of the Physical Environment is that those responsible for planning decisions can more clearly understand the relationship between the consumption of land areas and the effects of that consumption upon the other elements of the environment.

1.1 GEOLOGY

1.1.1 Geologic Units

The geology of this area is composed of six basic and distinct geologic units.
These are:

- Qa — Alluvium - Mostly unconsolidated (not a compacted mass) silt, sand, and gravel valley fill, with some clay, mostly deposited by stream or river currents, and glacial movements; includes low-level terrace, marsh peat, artificial fill and glacial deposits.
- Qg_1 — Younger Glacial Drift - Till outwash and associated deposits; sorted and unsorted sand, gravel, silt, and clay. Includes some alluvium.
- Qg_2t — Till - Hard, blue grey to grey concrete - like mixture of clay, silt, sand, gravel deposited as end or recessional glacial moraines.
- JK — Upper Jurassic - Lower Cretaceous Sedimentary and Volcanic Rocks, Undivided - Graywacke, argillite, siltstone, slate, volcanic rocks phyllite, greenschist, and greenstone.
- pT — Pre-Tertiary Sedimentary and Metasedimentary Rocks, Undivided- Graywacke, argillite, chert, phyllite, talc and graphite, schist, some faulted in blocks of serpentine and greenstone.
- TKc — Paleocene, Cretaceous Non-Marine Rocks - Brown-gray to light gray, medium to coarse grained massive crossbedded arkose with interbedded conglomerate and siltstone.

1.1.2 Geology Map

The geology map locates these geologic units in the planning area on a generalized basis. Refer to Map B.

1.1.3 Sub-area Analysis

The scouring force of glaciers, especially during the Fraser Glaciation of the Pleistocene Ice Age, in combination with, other forces including the uplifting of the Cascades and the effects of the Skagit River system, produces the lowlands and influenced many of the land forms in the study area.

The Burlington area is in the Skagit Floodplain and is typified by an abundance of alluvium (Qa) and flat topography. An exception to this is the Bayview area. It is composed of a younger glacial drift (Qg_1) which was a product of glacial deposition action in the Pleistocene epoch. The other exception to the flat floodplain are the hills in and near Burlington.

The northern portion of the study area, including Bow, Edison, Blanchard, and Allen, is part of the Samish River Floodplain and Delta. It is a northern extension of the Skagit Floodplain, and is characterized by the alluvium mentioned earlier. Bayview, with its glacial drift also extends into this area. Samish Island, now connected to the mainland, is also composed mainly of glacial drift. This portion of the island probably was uplifted and the later depositional action of the glaciers left glacial drift around it.

The Bow Hill area consists mainly of the younger glacial drift including till, outwash and associated deposits, and sorted and unsorted sand, gravel, silt and clay. It also includes some alluvium. Bow Hill might be considered the product of glacial and related actions. The Samish River, running through parts of this area, has been able to cut into the sides of the hill due to its vulnerable under-structure. This has formed a narrow flat valley with strong meander scarps in some places.

The Chuckanut Hill area, near Alger, is an arm of the Cascades that extends westward into the lowlands. It consists of pre-Tertiary sedimentary and metasedimentary rocks, Paleocene-Cretaceous non-marine rocks, and upper Jurrassic-lower Cretaceous sedimentary and volcanic rocks. These include resistant ridge-forming sandstone, interbedded with erodible siltstones and shales.

The Skagit and Samish Rivers meander through the area constantly using their natural forces to change the form of the land. This is done by deposition, erosion and flooding. The down-river area has a multitude of bends, some of which are near towns. During enlargement of a bend, the river channel shifts toward the outer part of the bend, leaving a strip of relatively flat land or floodplain on the inner side of the bend. The floodplain is built of bars composed largely of sand and gravel brought as bedload scoured from the outsides of bends immediately upriver. Inundation of the floodplain from time to time allows finer silt and clay to settle out over the surface, adding to the floodplain height and covering the coarser alluvium beneath. As lateral cutting by the river continues, the floodplain strips grow wider and presently join to form continuous belts along either side of the river. The cutting and filling proceeds to such an extent that the channel migrates across the entire floodplain.

1.1.4 Planning Considerations

These geological considerations have a great effect on not only the density of development, but also the configuration of that development to the land itself. Ground configuration and substratum determine how both buildings and services (water, sewer, roads, etc.) are dispersed over the land. Historically, flat areas, such as valley and river basins, have been very susceptible to a grid pattern of development. This makes it easy to administer the land and to provide the necessary services, but all too often the resulting development has been regarded as monotonous, ugly, and depressing. The existence of a variety of landforms and resources in an area provide a natural base with which to plan a development pattern that enhances these attributes rather than ignoring them. The upland areas of Skagit County are well endowed with these attributes. Such things as a variety of hills and gullies, streams, lakes, trees, and spectacular views should be considered as design resources which are nonrenewable if not used in a proper design context. In the Northwest area of Skagit County, mineral resources are also an important consideration. Sand, gravel and quarry rock are of primary interest in planning for future needs and require care in the selection of areas where extraction activities will be compatible with adjacent land uses.

1.1.5 Supplemental Information

A broader evaluation of the planning implications of geologic consideration is presented in Comprehensive Land Use Planning Alternatives for the Skagit River Floodplain and Related Uplands, which is a supplement to this Comprehensive Plan for the Northwest District of Skagit County. The geologic topics covered in the above suppliment are:

1. Climate and precipitation
2. Flora and fauna
3. Geologic factors affecting landforms
4. Mountain forming
5. Glaciation
6. Geology of specific areas
7. Planning implications
8. Mans relationship to the earth processed

Additional data is contained in the tables which deal with the following subject area:

1. Movements of the land surface
2. Allowable bearing capacities of earth materials
3. Explanation of rocks of the study area
4. Divisions of geologic time
5. Pleistocene sequence in the Puget lowland

1.2 SLOPE

1.2.1 Element of slope

The two main elements of slope that must be considered when examining the possibility of development are steepness (slope %) and aspect (the orientation of a sloping ground surface with respect to geographic north).

1.2.1.1 Slope Steepness

Slope steepness affects the rate at which precipitation is drained from the surface. On steep slopes surface runoff is rapid and water does not long remain available to plants. On gentle slopes, much of the precipitation can penetrate the soil and become available for prolonged plant use. The thickness of the soil may be lessened by the process of erosion. Thus, the characteristics of the soil itself may often be related to slope steepness.

1.2.1.2 Slope Aspect

The second element of slope which may have an effect on its use is slope aspect. As stated earlier, this concept is involved with the direction in which the slope is facing. It has direct influence upon plants by increasing or decreasing their exposure to sunlight and prevailing winds. Upon divides, peaks, and ridge crests the soil tends to be drier because of rapid drainage and because the surfaces are more exposed to sunlight and to drying winds. Generally speaking, slopes facing the sun have a warmer, drier environment than slopes facing away from the sun. Another example might be the location of a ski area. Some slopes have more snow, due in part to their slope aspect.

1.2.2 Slope Map

For discussion purposes, slope has been classified and mapped into five categories. These are:

0-3%	15-30%
3-8%	30+ %
8-15%	

These categories are derived from Soil Conservation Service maps, and the United States Coast and Geodetic Survey map of the planning area.

The slope map locates these categories of slope on a generalized basis in the Northwest area. Refer to Map C.

1.2.3 Sub-area Analysis

The Burlington-Bayview area, west of I-5 and north of SR 20, is generally characterized by little or no slope since most of the area is located in the Skagit Samish Floodplain. The exceptions are the slope areas near the edges of Bayview Hill. The Bayview area does have a plentiful amount of land having a moderate slope ranging from 3-15%.

The Bow-Alger-Samish area has a mixture of different slope characteristics. The area south along the Samish River and its floodplain, and the area immediately north of Bow and Edison, are virtually flat with a 0-3% slope. About a mile north of Bow, the slope begins to increase as the Northwest section begins to rise up Colony Mountain. Proceeding northward up Chuckanut Mountain the slope increases to over 30% on the west side of the mountain. Areas of moderate slope are scattered mostly on the eastern side of Chuckanut Mountain, along the sides of Colony Mountain and in the Bow Hill region. The Alger Vicinity and southward has a variety of slope configuration, while the Bow Hill area probably has the most potential when considering the availibility of land with suitable slope characterisitics.

1.2.4 Planning Implication

The numerous mountains, hills, and valleys of Skagit County are a product of many forces over a certain expanse of time. However, the general shapes and slopes that have been created were probably most influenced by the last

glaciation, the constant flow of the Skagit River System and the movements of the earth's crust. By analyzing these slopes, one can understand both their potentials and their weaknesses and the connection in the proper functioning of our ecosystem.

1.2.5 Supplemental Information

For more detailed information of the aspect of the physical composition of the Northwest planning area, Skagit Land Use Alternatives has a more extensive discussion of the planning implications of slope and of view characteristics associated with topographic features of this area.

View is also a factor of land use planning that is dealt with in the above mentioned section. The other areas of emphasis discussed are:

1. Slope steepness
2. Slope steepness and accelerated land erosion
3. Slope aspect
4. View characteristics
5. Slope analysis of the study area

1.3 SOILS

1.3.1 Soil Types

Of the fifty-six (56) soils found in the Skagit County area, twenty (20) are represented in the Northwest Portion of Skagit County. The soils found in this area are:

Aa-Alderwood	Rb-Rough Broken Land
Bl-Bellingham	Rk-Rough Rocky land
Bo-Bow	Rm-Rough Mountainous
Cg-Cagney	Sa-Samish
E-Everett	Se-Samiahmoo
Hv-Hovde	Sm-Sumas
Kp-Kline	Sn-Snohomish
Lu-Lummi	Sq-Squalicum
Pg-Puget	St-Sultan
Pu-Puyallup	Td-Tidal March

1.3.2 Soils Map

The soils map locates the above soil types in the planning area, on a generalized basis. Detailed information on the above soils types is contained in Tables 1, Soil Characteristics; Table 2, Soils Suitability, and Table 3, Agricultural, Pasture, Forestry and Soil Suitability, pages 29, 38, and 47, respectively, in Comprehensive Land Use Planning Alternatives for the Skagit River Floodplain and Related Uplands. Refer to Map E.

1.3.3 Sub-area Analysis

The Bow soils with their characteristics of high shrink-swell potential, moderate to very low shear strength and severe limitations for septic filter fields are predominately found near and on Bayview Hill and Bow Hill.

Puget and Puyallup soils are found primarily in the central portion of this area. If properly drained and protected from stream overflows, these soils are some of the most productive soils in the county and are conducive to

intensive agriculture, including dairying and important row crops. These areas are located on the flatlands west of Burlington to Bayview and northwest of Burlington to Bow and Edison.

The northern portion, north of Bow and Edison, is primarily composed of Rough Mountainous land and, to a lesser extent, Alderwood with great variability in soil characteristics.

The remaining soils, which are found in smaller quantities than the above, are not susceptible to generalizations about capabilities or characteristics because great variation can occur within relatively small areas. The best source of information on soil capabilities of Skagit County is a soil survey issued in 1960 by the United States Department of Agriculture, Soil Conservation Service.

1.3.4 Planning Implications

The capabilities and characteristics of soils have an important role in determining what land use and intensity of land use that should occur within an area.

1.3.5 Supplemental Information

The Comprehensive Land Use Planning Alternatives for the Skagit River Floodplain and Related Uplands report deals with soils through the following discussions:

1. Soils of study area - general overview
2. Soil forming processes
3. Soil characteristics
4. Properties of major soils groups
5. Soils suitability (planning implications)
6. Soil suitability table
7. Agriculture, pasture, forestry and soil suitability

1.4 SEPTIC SUITABILITY

1.4.1 Elements of Septic Suitability

Septic suitability is a term used to define the conditions pertaining to a certain area with respect to individual sewage disposal systems or subsurface drainfields. The suitability of an area is usually thought of in terms of degree (i.e., good, moderate, poor, very poor, etc.). The information presented in this section is an attempt to give a generalized picture of the septic suitability of the study area. Every site proposed for development should be tested thoroughly.

Strict regulations pertaining to the use of septic tanks are necessary because of the potential health hazard involved if a system fails. For this reason, septic tanks are considered to be an interim solution to the problem of sewage disposal.

Land areas are classified in one of four categories: a) possessing only slight limitations with regard to septic suitability; b) possessing moderate limitations; c) being of a variable nature (primarily with regard to soil depth and slope), and d) possessing severe limitations.

1.4.2 Septic Suitability Map

The septic suitability map is a graphic display of the acceptibility of septic tanks of various areas in this planning area. It must be emphasized that this is a generalized map. It does, however, give an initial insight into the septic suitability of a general area. The only way to obtain accurate information as to the suitability of a specific area is to perform a series of tests at that site during the time of greatest precipitation. Refer to Map F.

1.4.3 Sub-area Analysis

Due to the extreme variability of septic suitability this plan will not generalize by sub-area. The need for percolation test prior to development

is emphasized for all non-sewered developments.

1.4.4 Planning Implications

The suitability of soils for the use of septic tanks as a means of sewage disposal is an important locational factor in the planning process. Sewer systems cannot always be provided to a given area at a certain time, usually because of economic reasons. Distance is also an important economic factor in relation to sewer systems. There might be too great a distance between the outer extremities of existing facilities and a new development which delay the extension of these services.

1.4.5 *Supplemental Information*

The report, Comprehensive Land Use Planning Alternatives for the Skagit River Floodplain and Related Uplands, deals in greater depth with the whole question of septic suitability and provides a generalized table which analyzes the septic suitability of the various soils types found in the Northwest Planning area:

1. Planning implications
2. Suitability criteria
3. Septic tank design
4. Suitability map analysis
5. General septic suitability of Skagit County soils

1.5 FLOODPLAIN

1.5.1 Floodplain and Its Management

Effective floodplain management is an alternative to flood control projects. Floodplain management is designed to provide an approach which will permit the use and development of floodplain lands for the optimum benefit of the region's population and its economic activities without having to provide structural measures of protection to prevent flood damages. The primary concern of floodplain management is to minimize the number of structures on the floodplain and/or to require that new structures be built to offer minimum resistance to floodwater in certain crucial areas.

Floodplain management does create a substantial land use planning problem in the Northwest portion of Skagit County, as it does in other parts of the county, with the ever increasing amount of encroachment by residential and commercial developments. The floodplain management plan will reduce present and future flood damages by controlling and directing the amount of development on the floodplain by the use of floodplain zoning and regulations to restrict developments and thru the floodproofing of buildings on the floodplain. Levees, in combination with existing upstream storage are capable of providing on 3-15 year protection to the floodplain areas. Approximately half of the Northwest area, including almost the entire city of Burlington is within the 100 year floodplain.

1.5.2 Floodplain Map

The Floodplain map displays the 100 year floodplain in the Northwest portion of Skagit County. Refer to Map H.

1.5.3 Sub-area Analysis

In the Skagit-Samish Floodplain, the area within the 100 year floodplain are primarily agriculturally oriented with some concentrated residential development, primarily adjacent to Burlington. These areas are exposed to excessive

flood hazards because the capacity of the river channel is insufficient to carry major flood flows.

1.5.4 Planning Implications

The revised Comprehensive Plan for the Northwest Planning area reflects good floodplain management policy in that new development is proposed mainly for the uplands (and hence flood safe) parts of this area and agricultural use of the floodplain area is encouraged.

There are several ways by which a floodplain management program can be implemented. These are: (1) land use controls; (2) tax adjustment; (3) public policy directing the construction and location of public facilities and service out of flood prone area; (4) flood proofing existing structures; and (5) structural flood control measures. All of these management approaches are or will be exercised to prevent loss of life and reduce property damge.

1.5.5 Supplemental Information

The Flood Characteristics section of the Comprehensive Land Use Planning Alternatives for the Skagit River Floodplain and Related Uplands report contains the following chapters:

1. General Flood Information
2. Historical Flooding
3. Economic Considerations of Flooding
4. Existing Flood Control Projects
5. Proposed Flood Control Projects
6. Federal Flood Insurance Program
7. The Federal and State Role in Floodplain Management
8. Floodplain Management

A thorough review of the above chapters will provide a basic understanding of the relationship between floodplain management and land use planning and can ably supplement this Comprehensive Plan for the Northwest area.

2. DEVELOPMENTAL CHARACTERISTICS

This portion of the Comprehensive Plan District is oriented toward the impact man has had on land and land use in the Northwest area. The boundaries of man's impact are less readily definable than the boundaries of the physical environment. Man is a mobile influence on his environments; population, land use, land ownerhisp, etc., are not fixed and stable factors. For this reason some of the chapters of the Developmental Characteristics section deals with a larger land area than the Northwest planning area.

An inventory and analysis of the developmental characteristics, when combined with data on the physical environment, provide a set of parameters within which the decision making functions of the planning process can occur. The interrelationship of the natural and man made developmental systems must be clearly reviewed to successfully develop meaningful land use decisions.

The Developmental Characteristics section of the Comprehensive Plan is composed of the following chapters:

2.1) History of Development
2.2) Population Analysis and Projections*
2.3) Land Use Patterns
2.4) Housing Analysis and Projections*
2.5) Land Ownership
2.6) Economic Base Analysis*
2.7) Transportation
2.8) Open Space - Recreation
2.9) Community Facilities

*These chapters are oriented to both the Northwest area and to some extent to the Downriver area, due to the nature of the data.

2.1 HISTORY OF DEVELOPMENT

2.1.1 Orientation

This chapter of the Comprehensive Plan is a very brief synthesis of An Illustrated History of Skagit and Snohomish Counties published by the Interstate Publishing Company. While the following summary is concerned with early European settlement of this area, this Plan recognizes the impact that earlier Indian culture exerted upon this area. The history of Indian culture in Skagit County is contained in a book by Chief Martin J. Sampson.

2.1.2 Early Settlement of the Delta Area

The European settlement of Skagit County began on Fidalgo and Guemes Island. The first settlers on the mainland were Samuel Calhoun and Michael Sullivan. No one is quite sure who came first, although Calhoun is said to have come to the Skagit Delta area in the Spring of 1863. These men were supposed to have built the first diking systems in the area to reclaim the tidelands for crops.

As the fertility of the land and the feasibility of building dikes and levees became more apparent, settlers increased as did the crop yields. The first trading post on the Swinomish Flats was established by Alonzo Low in May, 1867, upon the site of the present city of LaConner. This business failed after a brief period, but was soon replaced by an establishment owned by Thomas Hayes. It was his successor, J. S. Conner, who named the town of La Conner.

In 1870, Jasper Gates and Joseph F. Dwelley became the first settlers in the area now known as Mount Vernon. However, the old site of Skagit City was the hub of the river transportation system until the work of removing the great log jams from the vicinity of Mount Vernon was completed in 1876. This caused the territory above the delta area to open for settlement, but destroyed the prestige of Skagit City. However, the problem of log jams on the Skagit occurred intermittently for years to come.

The city of Mount Vernon was actually founded in 1877 after the log jams were cleared. In 1883 Skagit County came into existence after being separated from Whatcom County.

2.1.3 Logging

The development of Skagit Valley grew steadily, with farming and logging becoming increasingly popular and successful.

Actually, logging had to be done first, for the whole valley was at one time covered by dense stands of timber. As a business, logging seems to have come into existence on the lower river as early as 1871. By the year 1875, there were hundreds of men engaged in logging at various places in the Skagit and Samish regions. The lure of these industries, combined with the later development of the coal mines and mineral resources, caused immigrants to move into the county in increasing numbers. There was a lag in this prosperity in 1874 due to the financial crisis in the East. This caused the Northern Pacific Railroad to suspend construction of its line to the valley and slowed immigration into the county. Money became very scarce.

After the clearing of the big log jams made the Skagit River navigable above Mount Vernon, the logging industry began to prosper. It was not until Mr. Minkler built a sawmill at Birdsview in 1882, that Skagit County had an actual mill. Before that, all the logs were sent to large mills at Tacoma, Seattle, and Utsalady.

As this industry grew, so did the county. The various towns and cities upriver owe much of their existence to the logging industry, Sedro Woolley and Burlington being two good examples.

2.1.4 Mining

The mining industry in Skagit County got off to a slow start due to the giant log jams. It had a fairly short prosperous period and then evolved into a relatively unimportant industry. In 1874, Amasa Everett, Orlando Graham, and Lafayette Stevens discovered coal near Hamilton. The coal found here was of good quality, but the quantity was a hindrance in its long-range

2.1.7 County Growth

As the county became more accessible and its great wealth of resources became known, it saw much growth. The greatest growth actually came in these earlier years, between 1900 and 1910. During these years the county grew from 14,272 people to 29,241. This was an increase of 105%. The population began leveling off between 1910 and the 30's, but between the 30's and the 60's it rose steadily once more. However, between the 60's and the 70's, the population has again shown signs of leveling off. It is interesting to mention that the County saw more than half its growth in the ten years between 1900 and 1910.

	1900	1910	1920	1930
Population	14,272	29,241	33,142	35,142
% of Increase		104.9	14.1	5.3
	1940	1950	1960	1970
Population	37,650	43,273	51,350	52,000
% of Increase	7.1	14.7	18.9	0.2

2.1.8 Sub-area Analysis

In 1882, John P. Miller and William McKay built a shack in the dense forests which would become the town of Burlington. McKay recorded his plat of the townsite on New Years Day, 1891. This was the same year the first sawmill, a shingle mill, and the post office was built and the railroads arrived. Burlington was a site of much real estate speculation in its early days. Many acres of land were bought, subdivided and sold for suburban land at very reasonable prices. The existence of the railroads and the closeness to the agriculture and timber lands made this a hard deal to reject. The town grew in the ensuing years as a commercial and agricultural hub. In recent years, development has slowed along with the rest of the county.

Many other towns and communities have come and some are now gone. Their development, for the most part, has waned in recent years. Although they have left interesting histories, to trace each on is a task beyond the scope of this document. Let it suffice for now to name some of these smaller communities: Bow, Edison, Blanchard, Alger, Bayview, and Samish Island.

importance to the county. Skagit County was not without its dose of "gold fever" in the late 1800's. This precious mineral, however, was also found in too scarce a quantity to amount to any substantial sums, but it did cause quite a bit of excitement.

The discovery of large amounts of rock suitable for construction purposes near Concrete was of significant importance for many years. This importance has been reduced significantly in recent years.

2.1.5 Fishing

The fishing industry got a late start in this county due to the limited accessibility to a market. However, an abundant supply of fish was secured for local needs and it was a well known fact that the region's water swarmed with salmon. The pioneer in the fishing business on the upper Skagit seems to have been James H. Moores. He was located on the west bank of the Skagit just above Mount Vernon, near the great log jam. His success opened the way for others. The Skagit area has seen great booms in the fishing and canning industries over the years since. It has been the home of some of the largest salmon canneries in the world. In recent years, however, the competition from other fishing areas and the increasing emphasis on agriculture and logging have tended to lessen the overall impact of the fishing industry on Skagit County.

2.1.6 Agriculture

As the fame of the fertile Skagit Delta lands spread, so did the agricultural base of the county. The main crops of the early days consisted of oats, barley, and various vegetables. However, the prosperity that these farmers enjoyed was seriously hampered on many occasions by floods and high tides, which sometimes destroyed whole crops. As logging activities moved eastward, agriculture became the primary industry in the floodplain. As more land was cleared and reclaimed, the value and economy of the county grew. New and better crops have been introduced through the years, helping to affirm the strong agricultural base of the county.

income levels, and needs. It also assists in determining the amount of emphasis, both physically and socially, needed for recreation areas, schools, and other community facilities for all segments of the population young, old, in-between, singles, families, rich, poor, black or white.

2.2.2.2 Population Distribution

The final element is population distribution. With accurage information of this nature, combined with other data, it can be determined how various land uses and facilities can and should be located in an area. Population analysis not only aids in determining the proper land uses within a given period of time, but also helps to determine how these total space needs should be allocated to different parts of the planning area at a particular time.

2.2.3 Births, Deaths, and Migration

Population change can be a rather complex phenomenon. It can involve such things as annexation and consolidation. But for the most part, population change occurs by death, births, and migration. All types of forecasts take these things into consideration, either explicityly or implicitly.

Deaths tend to be the most stable of the three elements. It is interesting to note, however, the impact of modern medicine on the mortality rate of a population. Since the greatest advances in medicine the first half of the century were in the control of infectious diseases, especially those to which babies are particularly susceptible, the sharpest drop was in mortality of infants and young children. This, combined with a rather stable life expectancy, has a tendency to lower the overall death rate. The lower death rate and a fluctuating birth rate have caused the expotential type of growth in world population.

The birth rate has a major role in population analysis and can cause many changes in a specific population. Due to the more complex factors involved in birth rates, they are more difficult to speculate upon than death rates. It seems far easier to judge what can be done in lowering death rates in the future, than to judge what people may want to do regarding the size of their

families. Values and attitudes can be of a very elusive nature. Ideas about such things as marriage, birth control, adoption, family size, divorce, and abortion tend to change and this in turn has an effect on the birth rate.

Migration has become an important factor in population analysis because of the increase of mobility within the present American society. Migration is also difficult to estimate with any degree of certainty. Some causes of migration are:

1. The desire for better economic opportunities.
2. The attraction of milder, more suitable climates.
3. Desire for better living or housing conditions.
4. Movements for reasons of health, education, or retirement.

Of these reasons, the first is usually considered to be responsible for the major percentage of migration in most communities. Also, such basic considerations as prosperity or depression, peace or war, and so on, can have a very marked influence on the volume of net migration. The elements of births, deaths, and migration are important components of population change.

2.2.4 Characteristics and Trends Effecting Population in Skagit County.

The total population of Skagit County at the time of the 1970 census was 52,381. This was a 2% increase over the 1960 population of 51,350. Of this 1970 population, 24,241, or 46.3% people lived in an urban environment, while 28,140, or 53.7%, maintained a rural type of existence. This trend is less significant than in previous years, for there has been a marked deceleration in both migration to the city and migration from the country in Skagit County.

Ninety-eight and one-tenth percent of the total 1970 population in Skagit County are white, only 1.9% were non-white. The non-white total increased only slightly from the previous decade and has deviated only .4% since 1940. Out of the 1970 total of 1,011, 650 people were American Indian, 182 were Mexican-American, 134 were Oriental, and 45 were Black. Minorities are examined by enumeration district and contracted with the total population composition.

2.2.4.2 Distribution

Population distribution, past, present, and future, is shown at the end of this section. In 1970, the population of the county was 46.3% urban and 53.7% rural. The change over previous years is as follows:

	Urban		Rural	
1970	24,241	46.3%	28,140	53.7%
1960	23,008	44.8%	28,342	55.2%
1950	15,448	35.7%	27,825	64.3%

As can be seen, the county is becoming increasingly urban, but at a slower pace. It is felt that this is due to the overall decrease in the rate of population growth. Whether there is slow or fast population growth, the areas to be most affected would probably be the Mount Vernon area, particularly eastward, the Sedro Woolley area, and the Fidalgo Island area. Provided that such things as: 1. agricultural zoning; 2. 1.0 acre minimum lots; 3. flood zone restrictions, and similar measures are maintained, major portions of areas such as the south Skagit Floodplain, the Samish Floodplain and the Middle Skagit River will not become extensive residential locations. However, portions of these areas out of the danger of flood and not conflicting with agricultural areas, could assume a higher proportion of people. These could include such areas as Bow Hill, Pleasant Ridge, Bayview, and the area east of Conway. If the restrictions mentioned earlier are not enforced, areas such as west Mount Vernon and west Burlington could grow, causing a split in the agricultural land and increasing the danger of flood damage to both life and property.

2.2.5 Population Trends and Forecast - Skagit County

Historically, it has been hard for demographers and planners to acquire the degree of accuracy in their predictions of population growth in less populated areas that they have attained in more densely populated areas. The larger numbers provide a higher degree of accuracy. For example, if a person owned four cars and one broke down, he would not feel the loss as much as a person who owned one car and lost the use of it.

The average age of the population of Skagit County has increased in the last decade, while the number of young children has decreased. The county exceeds the state in the percentage of people over 45. This has an effect on the rate of natural increase and may have had a part in the decrease in the rate of population growth in the county. The decrease in the younger age groups can probably be attributed to the decreasing number of births since 1960. These trends can have an effect on the extent and type of community facilities to be provided in an area.

There has been a slight increase in the number of deaths over the last 10 years. This is probably due to the fact that the increased number of older people also causes an increase in the number of deaths. The people that were part of the big population surge of 1900-1910 are now reaching the average maximum age and thus dying at an increasing rate. This trend could increase if the county becomes more widely accepted as a possible location for retirement. The number of deaths can be seen as an element of population changes.

2.2.4.1 Migration

When net migration is included with these other elements, it is further evidence of the overall decrease of population growth in Skagit County over the last 10 years. Between 1940 and 1950 the county experienced a "plus" net migration of 3,343 people. In the time period between 1950 and 1960 there was also a plus or "in" net migration of 2,269. However, between 1960 and 1970, net migration was minus or "out" of the county by 2,271 persons. The people born in the big post-war population surge were now becoming old enough to enter the labor market, as mentioned earlier a prime factor in relation to migration is the desire for better economic conditions When these people could not find enough work in the county, they had to look elsewhere. Also, the desire for higher education lured people out of the county. The county's agricultural and extractive resources economic base cannot support great increases in employment or persons with masters and doctorate degrees. These people then generally find work in more urbanized areas where the demand for their talent and background is higher. This phenomenon of migration can be seen more clearly in the age/sex pyramid and the components of population change at the end of this section.

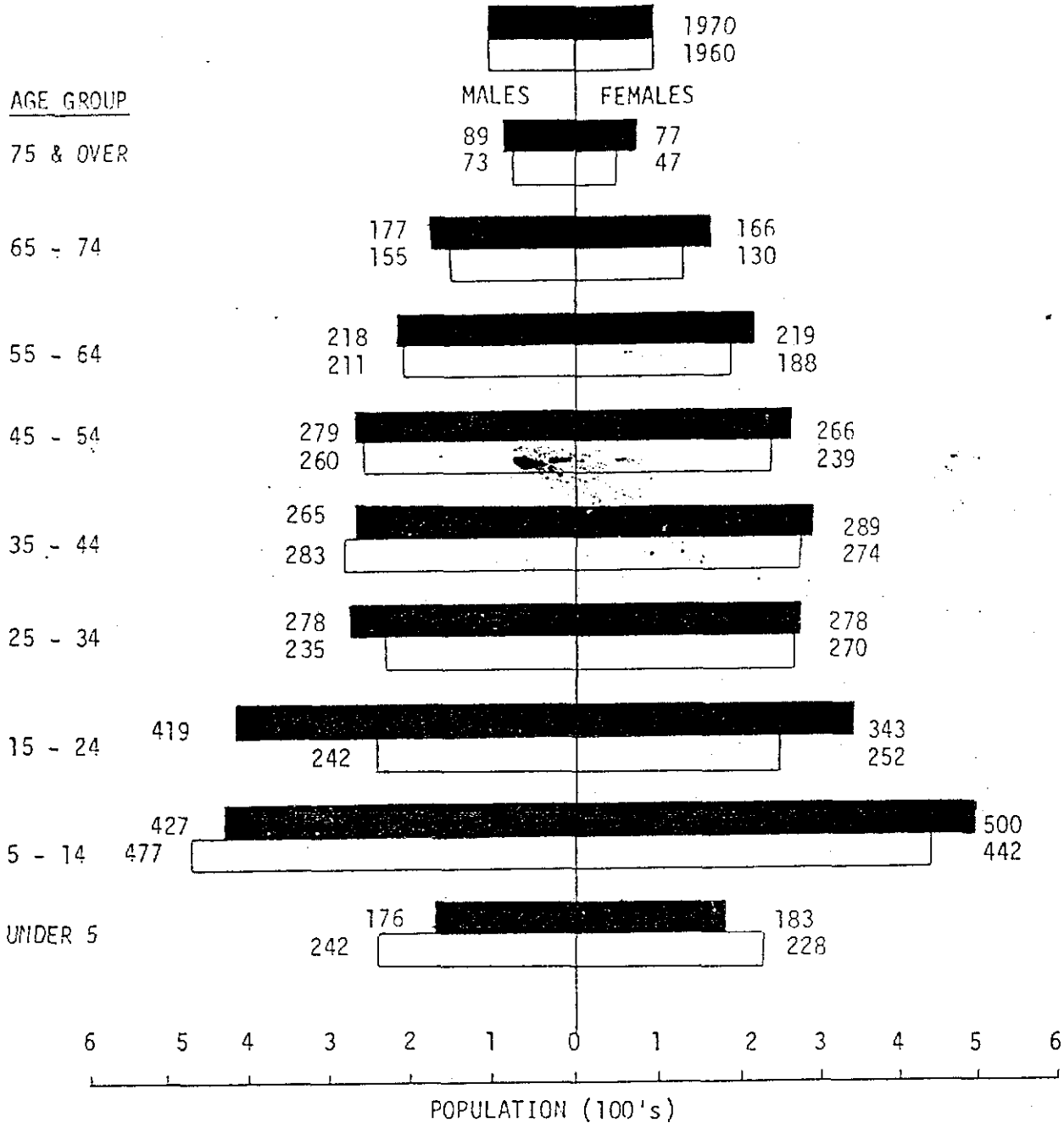
There are a number of population forecasting methods, each being of different complexity and accuracy. For the more general purposes of this study, the migration and natural increase method was used. Age and sex groups were also considered. A range in the 2000 population estimate was derived using this method. The corresponding range is shown at the end of this section.

As can be seen at the end of this section, the percent increase of population for Skagit County has decreased over the last 10 years to approximately .2% per year. This fact, combined with the decrease in births and young children, shows that the county's population is leveling off, at least for a while. The fact that migration has been "out" instead of "into" the county recently is another important sign of a stabilizing period. Assuming that there are no major economic changes in the county or in adjacent areas, this trend should continue during this planning period. However, if major economic changes do occur, for instance south of the county, Skagit County could be in the path of possible expansion. This would be, in all probability, beyond the 26 year confines of this study.

The NorthCascades Park could have an effect on population in the county, but it can be reasonably assumed that this will take place in the form of temporary of second homes rather than permanent full-time residences. Development of an extensive rapid transit system would cause serious changes to this forecast, but again, this is unlikely during this planning period. An increase in industrial and commercial activity within the county also has an effect on population.

The construction force for the proposed Nuclear Plant could produce an impact on the county for a limited time. The time span would be from 6-10 years with the majority of the labor force leaving after construction in completed. It is anticipated that the majority of the labor force would be commuting to the site from outside the county. However, those that set up temporary residence in the county would put an increased demand on goods, services and housing facilities within the county.

2.2.6.1 NORTHWEST DISTRICT AGE & SEX DISTRIBUTION (PYRAMID), 1960-1970



- Derived from U.S. Census Bureau data
- Excludes the city of Burlington

2.2.11 POPULATION NORTHWEST AREAS

By Census Division (1970):

Area		Population	Total Housing Unit	Average Family Size	% Occupancy
Div. 6	Ed 12 (25%)	231	146	2.9	.91
	Ed 13	359	120	3.18	.94
Div. 7	Ed 14	855	427	2.83	.72
	Ed 15	719	227	3.31	.97
Div. 10	Ed 17	1040	358	2.83	.91
Div. 11	Ed 28B	1248	384	3.33	.97
	Ed 30	113	33	3.77	.91
	Ed 31	1489	517	2.94	.96
Div. 12	Ed 32	376	176	2.31	.93
(Burlington)	Ed 33	1160	433	2.69	.97
	Ed 37	214	74	2.97	.97
Total		7804	2895	3.04	.92

By Land Use Data Analysis (1972):

Using the data developed for the Comprehensive Land Use Planning Alternatives for the Skagit River Floodplain and Related Uplands, it is estimated that there are 2,895 residential dwelling units in the Northwest area. If 2,895 dwelling units are multiplied by the occupancy rate for the Northwest area (.92), and by the average family size for the Northwest area (3.04), it can be estimated fairly accurately that 8,096 persons resided in this area at the time of the 1972 land use analysis.

Enumeration districts 30-33 reflect the population at 3,138 for the city of Burlington. This would indicate that the population of the unincorporated areas of the Northwest was 4,666.

2.2.12 POPULATION PROJECTIONS FOR THE NORTHWEST AREA

Area	1960 *1	1970 *2	1985 low	1985 high	2000 low	2000 high	1900 *3 high
Burlington	2968	3183	3276	3707	3376	4206	5122
C.D. #6	789	989	1019	1143	1049	1297	1111
C.D. #7	1845	1933	1979	2249	2053	2553	2634
C.D. #10	738	1040	1070	1207	1100	1267	1780
C.D. #11	1732	1870	1926	2170	1986	2459	2150
Population of Census Division	8072	9015	9270	10476	9564	11782	12797
Estimated and Projected Population of Northwest Planning Area		7804	8032	9053	8272	10275	

*1 Official U.S. Census figures

*2 Official U.S. Census figures

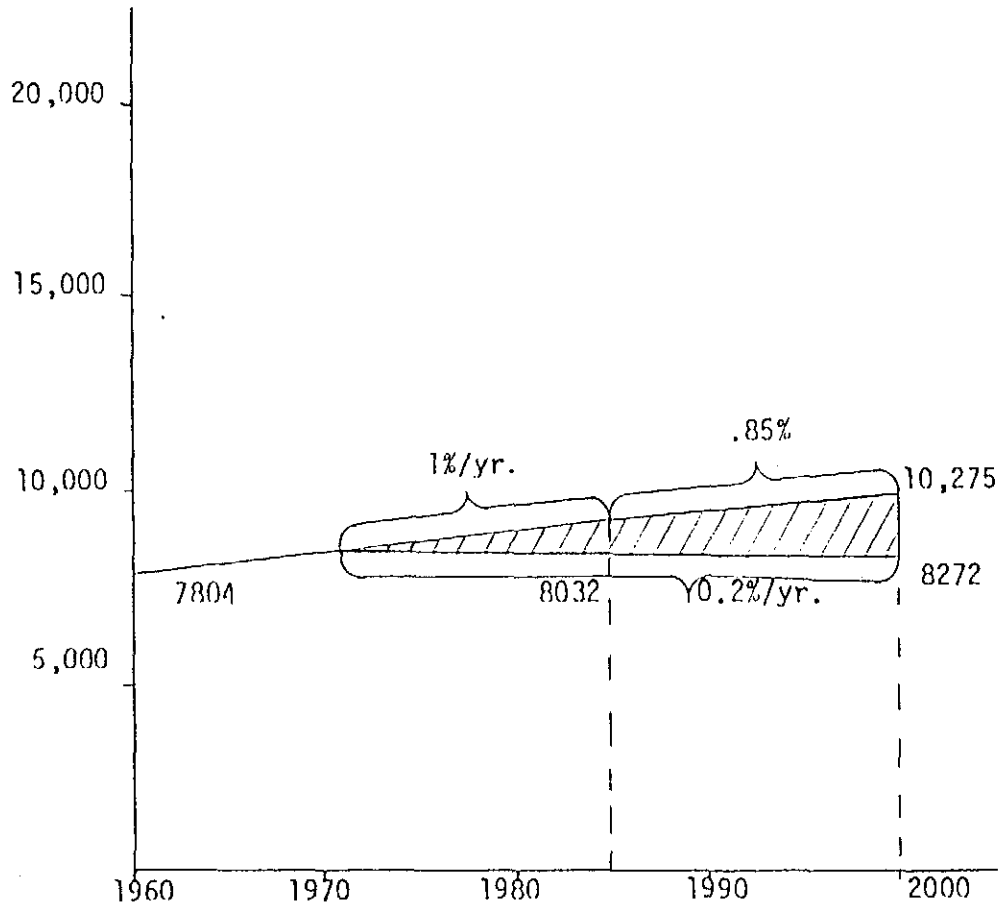
*3 Sewer, Water, Drainage Plan, Skagit County -- Stevens, Thompson, Runyan

These population estimates are based upon assumption regarding the approximate proportion of overlapping boundary areas. Neither the Census Division boundary lines, nor the previously developed "Geographic Boundary" line are contiguous with the boundaries of the Northwest Planning area. Therefore, it has been necessary to estimate the approximate population in the Northwest Planning area based on land use data.

2.2.13 Population Map

The population map I displays the 1960 population, 1970 population, and year 2000 estimated population projections for the Northwest Planning area.

2.2.14 POPULATION PROJECTIONS FOR THE NORTHWEST AREA TO THE YEAR 2000



LEGEND

Projected Population Range

Low Range - Based on previous 10 year growth rate of 0.2% per year

High Range- Based on 1% average annual growth rate

(Skagit County Comprehensive Plan, 1968)

The 85% reflects projected decline in fertility ratio, after second generation post WW II Baby Boom

2.3 LAND USE PATTERNS

2.3.1 Orientation

The existing land use patterns for the Northwest area were surveyed and mapped on a parcel by parcel basis in the summer of 1972. This parcel by parcel land use survey was also performed throughout the entire county. The information is recorded on section maps at a scale of 1" = 400'. Each land use is identified and located both in relation to property lines and in relation to change in land use characteristics within individual parcels of property.

2.3.2 Generalized Land Use

Section 2.3.2 below displays the major classifications of land use by activity and area for the Skagit River Floodplain and related uplands (east of Swinomish Slough). The Burlington - Bayview proper and a portion of Bow-Alger-Samish proper areas are the portions of Skagit County which comprise the Northwest Comprehensive Plan area.

GENERALIZED LAND USE*
(by activity)

Use	# of Units	% of All Units	Acres	% of Acres
Residential[1]	15,565[1]	89.68	9,488.25	1.71
Community	322	1.85	1,052.00	.18
Commercial[2]	1,249[2]	7.19	814.50	.44
Industrial	220	1.26	954.25	.17
Transportation	--	--	6,483.50	1.17
Forest	--	--	426,088.00	77.10
Agriculture	--	--	106,760.25	19.31
Parks	--	--	955.00	.17
Total	17,356	100.00	552,595.75	100.00

*Skagit River Floodplain and Related Uplands (East of Swinomish Slough)

[1]Less accessory buildings

[2]Less parking lots

2.3.3 LAND USE CLASSIFICATIONS BY DENSITY (COUNTY)

Land Use Density	Structures/Acre	Acres Allocated Per Structure
Single Family	2.04	.49
Multi-Family	1.94	.52
Mobile Home	2.68	.37
Accessory Building	4.54	.22
Group Housing	1.32	.76
Vacant - Unused	.52	1.94
	Services/Acre	**Acres/Services**
Community Service	.28	3.35
Quasi-Public	.32	3.15
Vacant - Unused	.33	3.00
	Commercial/Acre	**Acres/Commercial**
Goods	2.11	.47
Services	1.48	.68
Parking	.76	1.25
Warehouse	1.88	.53
Vacant - Unused	1.62	.62
	Industry/Acre	**Acres/Industry**
Heavy	.20	4.90
Light	.29	3.49
Vacant - Unused	.18	5.62
	Barns/Acres	**Acres/Barns**
Barns & Out Buildings	1.98	.50
Vacant - Unused	.36	2.76

2.3.4 Generalized Land Use

The Generalized Land Use Table for Skagit County contains nine land use classifications and compares these classifications by 1. the number of structures in each classification; 2. the percentage in each classification; 3. the acreage in each classification, and 4. the percentage of acres in each classification.

2.3.5 Sub-area Analysis

See the following tables entitled: Burlington-Bayview Proper and Bow Alger-Samish Proper.

COUNTY SUMMARY

2.3.4 LAND USE INVENTORY

Existing Land Use	Number	Acres	Acres % of Total	Acres - % Land Use Classification
1. Single Family	13,646	6,687.00	1.21	70.47
2. Multi-Family	307	158.50	.02	1.67
3. Mobile Home	1,196	447.00	.08	4.71
4. Accessory Building	6,562	1,445.00	.26	15.22
5. Group Housing	47	35.50	--	.37
6. Vacant - Unused	369	715.25	.12	7.53
1. Communtiy Service	199	666.25	.12	63.33
2. Quasi-Public	114	358.75	.06	34.10
3. Vacant - Unused	9	27.00	--	2.56
1. Goods	471	222.75	.04	27.34
2. Services	555	375.00	.06	46.04
3. Parking	72	95.00	.01	11.66
4. Warehouse	181	95.75	.01	11.75
5. Vacant - Unused	42	26.00	---	3.19
1. Heavy	108	537.75	.09	56.35
2. Light	100	349.00	.06	36.57
3. Tran./Util./Corridor	1,163	6,483.50	1.17	100.00
4. Vacant - Unused	12	67.50	.01	7.07
1. Standing		405,584.00	73.39	95.18
2. Harvested		20,427.50	3.69	4.79
3. Vacant - Unused		76.50	.01	.01
1. Crop Active		58,846.50	10.64	55.12
2. Crop Inactive		700.00	.12	.65
3. Pasture Active		38,552.00	6.82	36.11
4. Pasture Inactive		2,500.75	.45	2.34
5. Woodlot		3,347.75	.60	3.13
6. Barns & Outbuildings	4,334	2,182.75	.39	2.04
7. Vacant - Unused	228	630.50	.11	.59
1. Aquatic - Marine				
2. Aquatic - Fresh				
3. Park	33	955.00	.17	100.00
4. Forestry Park				
5. Shoreline, Dikes, Levees				
6. View Spot - Turnoff				

BON/ALGER/SAMISH PROPER SUMMARY

2.3.5.1 LAND USE INVENTORY

Existing Land Use	Number	Acres	Acres - % of Total	Acres - % Land Use Classification
1. Single Family	1,037	561.00	1.18	63.80
2. Multi-Family	11	27.00	.06	3.07
3. Mobile Home	137	67.00	.14	7.62
4. Accessory Building	799	211.75	.45	24.08
5. Group Housing	11	7.00	.01	.79
6. Vacant	15	5.50	.01	.62
1. Community Service	11	38.50	.08	64.70
2. Quasi-Public	7	21.00	.04	35.29
3. Vacant				
1. Goods	12	8.50	.02	19.42
2. Services	21	14.50	.03	33.14
3. Parking	5	15.50	.03	35.42
4. Warehouse	9	3.75	---	8.75
5. Vacant	3	1.50	.003	3.42
1. Heavy	3	17.50	.04	11.64
2. Light	33	133.25	.28	88.68
3. Tran./Util./Corridor	243	1,146.50	2.42	100.00
4. Vacant	1	.50	---	.33
1. Standing		23,905.50	50.48	99.47
2. Harvested		126.50	.27	.53
3. Vacant				
1. Crop Active		13,213.50	27.90	64.14
2. Crop Inactive		60.00	.12	.29
3. Pasture Active		6,024.25	12.72	29.24
4. Pasture Inactive		477.50	1.00	2.31
5. Woodlot		290.00	.61	1.40
6. Barns & Outbuildings	759	360.75	.76	1.75
7. Vacant	64	173.00	.36	.83
1. Aquatic - Marine				
2. Aquatic - Fresh				
3. Park	5	442.00	.93	100.00
4. Forestry Park				
5. Shoreline, Dikes, Levees				
6. View Spot - Turnoff				

BURLINGTON/BAYVIEW PROPER SUMMARY

2.3.5.2 LAND USE INVENTORY

Existing Land Use	Number	Acres	Acres - % of Total	Acres-% Land Use Classification
1. Single Family	2,162	1,074.00	5.65	84.03
2. Multi-Family	59	32.75	.17	2.56
3. Mobile Home	134	39.50	.20	3.09
4. Accessory Building	784	107.75	.56	8.43
5. Group Housing	2	.75	---	---
6. Vacant - Other	20	23.25	.12	1.81
1. Community Service	22	67.50	.35	26.60
2. Quasi-Public	20	186.25	.98	73.39
3. Vacant				
1. Goods	71	43.25	.22	24.82
2. Services	106	103.75	.54	59.54
3. Parking	4	2.75	---	1.57
4. Warehouse	34	24.50	.12	14.06
5. Vacant Ind.	1	4.50	---	12.41
1. Heavy	3	7.75	---	21.37
2. Light	8	24.00	.12	66.20
3. Tran./Util./Corridor	105	392.00	2.06	68.29
4. Vacant - Other	14	182.00	.89	46.42
1. Standing		3,096.00	16.31	92.06
2. Harvested		267.00	1.40	7.87
3. Vacant				
1. Crop Active		8,400.00	44.26	63.35
2. Crop Inactive		83.00	.43	.62
3. Pasture Active		3,737.75	19.67	28.18
4. Pasture Inactive		188.25	.88	1.41
5. Woodlot		625.00	3.29	4.71
6. Barns & Outbuildings	490	220.25	1.16	1.66
7. Vacant	6	5.00	---	.03
1. Aquatic - Marine				
2. Aquatic - Fresh				
3. Park	6	38.50	.20	100.00
4. Forestry Park				
5. Shoreline, Dikes, Levees				
6. View Spot - Turnoff				

2.3.6 LAND USE INVENTORY: NORTHWEST AREA

Existing Land Use	Number	Acres	Acres % of Total
Residential	2,520	1,393	2.31
Community	64	446	0.74
Commercial	191	102	0.17
Industrial	242	945	1.57
Forest	680	18,347	30.46
Agriculture	2,754	29,061	48.25
Other	540	9,941	16.50
Total	6,991	60,235	100.00

2.3.7 Validity

The validity of the land use data was checked by comparing the number of single family residential units (not including accessory buildings) with the 1970 census data on single family dwelling units. The 1972 land-use survey indicated that there were 15,565 single family dwelling units in the project area. The 1970 census figures indicate that there were 15,215 single family dwelling units.

Comparison of Residential Dwelling Units	
1972 Land Use Survey	15,565
1970 Census Data	15,215
	350

Taking into account new construction between the 1970 census and the 1972 Land Use Survey, there appears to be a high level of correlation between the two data sets.

The other figures given by the Land Use Survey could not be checked for comparability because information was not available to make comparisons. Thus, the dwelling unit comparison indicates that the validity of the 1972 Land Use Survey is reasonable and satisfactory.

2.3.8 Land Use Map

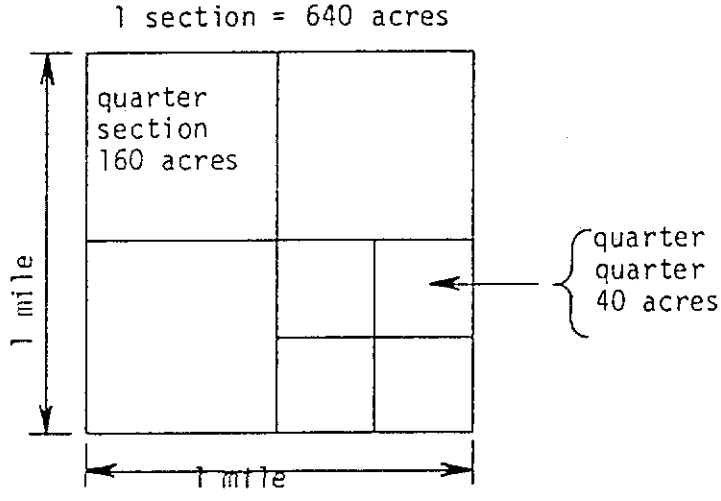
The land use map of the Northwest Planning area is generalized by 40 acre increments. The forty (40) acre generalization was developed by aggregating the land uses in each quarter of a quarter of a survey section (i.e., 640 acres (1 square mile) = 1 section) within each of the Townships and Ranges in the project area. The illustration on the next page demonstrates the quarter of a quarter of a section concept.

2.3.9 Availability of Land Use Data

The raw and bulk land use data is available at the Skagit County Planning Department office.

In addition to the section maps containing parcel and land use characteristic information, the land use data is cross-referenced with numerical land use data logs. These land use data logs describe each 40 acre parcel of land, in terms of the 1. various land uses within that 40 acre parcel; 2. the number of each of the land uses, and 3. the acreage of each of the land use classifications which occur in that 40 acre parcel of property.

The land use data logs are also available for reference purposes in the Skagit County Palnning Department. The information contained in the data logs is prepared by computerization and has been key punched onto cards for use in a computer. These keypunched cards are also available at the Skagit County Palnning Department office.



One of the more significant features of dissimilarity between this planning area and the State of Washington is the rate of change of the urban-rural, incorporated-unincorporated population trend. As can be seen in the following chart series, there has been a general expansion of population and housing in both incorporated and unincorporated urban areas in Washington State. However, in this planning area the rate of urban growth is limited. Statewide rural population has remained relatively stable for both incorporated and unincorporated areas, while the rural population in the Skagit area reflects a considerable decrease. The slight growth of urban incorporated areas of this area is due primarily to annexations by existing communities of the fringe area adjacent to communities and the building activity in these areas.

While the population in Skagit County has not expanded significantly in the last decade, the number of occupied housing units has expanded from 15,759 to 17,185, a change of 1,426 more occupied housing units. However, the total number of housing units has only changed by 215 units, from 19,360 in 1960 to 19,575 in 1970. This indicates: 1) a higher rate of occupancy and thus greater utilization of the housing resources; 2) a smaller average household size. It can also be assumed that a substantial number of deteriorated and/or delapidated structures have been demolished in the last decade, because approximately 1,100 building permits for new residences have been issued in that period and the total housing supply has increased only by 215 residential units.

2.4.3 Housing Characteristics

On the following pages are tables of housing characteristics, both on a county wide and area level, designated by census divisions and municipalities.

Table #1 is "Housing Characteristics of the Northwest Area" which is taken from the census divisions in the area, and, divisions which overlap with other plan areas. Thus overlapping is caused by the difference of boundary line designation between census divisions and the boundary of the Northwest Area.

Table #2 is a summary of County housing characteristics.

2.4.3.1 HOUSING CHARACTERISTICS OF THE NORTHWEST AREA BY CENSUS DIVISION

Census Division No.		6	7	10	11	Burl.	Total
1. Total population		989	1,938	1,040	1,725	3,138	8,830
2. Total Housing Units		318	774	358	564	1,159	3,173
3. Total Occupied Units		291	632	324	550	1,105	2,903
4. Occupancy Rate		.915	.817	.905	.975	.955	.914
5. Occupancy Status (Owner) %		232 79.8	488 77.3	273 84.2	433 78.7	759 68.6	2,185 75.27% O.U.
6. Occupancy Status (Renter) %		59 20.2	144 22.7	51 15.7	117 21.2	347 31.4	718 24.73% O.U.
7. Seasonal & MIgrant (Vacant) % Total H.V.		1	10	0	0	0	11 .003%
8. Average Family Size		2.93	3.51	3.12	3.32	2.83	3.14
9. Average Value Unit Owner Occupied		15,800	17,660	24,820	18,300	15,190	18,354
10. Mobile Home Trailer		43	36	21	20	20	140
11. Average Monthly Rent Renter Occupied		61	72	85	91	89	79.6
Occupied Unit by No. Persons/Unit	1	42	77	36	80	256	491
	2	87	95	112	185	380	859
	3	44	226	46	75	160	551
	4	41	197	59	97	131	525
	5 & up	77	114	71	113	179	554

A table of county housing characteristics by census division and municipality is presented on the preceding page. (Table 2.4.3.2)

2.4.4 Housing Characteristics - Conclusions

The significant conclusions which can be drawn from these two summaries of housing characteristics are as follows (with the applicable figures for the Northwest area in parentheses).

1. There were 52,381 residents in Skagit County in 1970. (8830)
2. There were 19,575 dwelling units in Skagit County in 1970. (3173)
3. 17,185 of the 19,575 dwelling units were occupied. (2903)
4. The average household size was 3.28 persons per dwelling units. (3.14)
5. The occupancy rate was approximately 88% (91%)
6. Of the occupied units, 12,798 (or approximately 74%) were owner occupied. (75%)
7. There were 4,351 rental occupied units, or approximately 26%. (25%)
8. The average value of the owner occupied units was $17,775. ($18,354)
9. The average monthly rental was $76. ($79)
10. 3,129 (491) dwelling units were occupied by one person.
11. 5,651 (859) dwelling units were occupied by two person.
12. 2,761 (551) dwelling units were occupied by three persons.
13. 2.606 (525) dwelling units were occupied by four persons.
14. 4,085 (554) dwelling units were occupied by five or more persons.
15. Of the 19,575 dwelling units, 17,124 (or approximately 89%) were classified as sound.
16. 1,634 dwelling units (or approximately 8%) were classified as deteriorating.
17. 618 dwelling units (or approximately 3% were classified as dilapidated.
18. There are 716 (140) mobile homes used as dwelling units.
19. It was estimated that 2,257 homes were in need of repairs or remodeling.
20. Within the next 20 years, approximately 2,084 (300) new dwelling units will have to be constructed if:
    a. the average household size remains stable.
    b. the projected population rate of 1% annually is achieved.
    c. a significant economic event doesn't occur in the planning area, or in the adjacent counties.

21. During the last four years the following number and types of subsidized housing has been developed for low income families in Skagit County:

Low Rent Public Housing

May 1971	20 units	family
Jan. 1971	50 units	family
Dec. 1971	60 units	elderly
Jan. 1971	50 units	elderly

Owner Occupied Insured Cases

Dec. 1970	46* units	family	236
1968-71	228 units	family	235*

*All classifications of "235"

*Nine of which received rent supplement

Percent of the low income population served low rent public housing:

Families	15% or 79 units
Elderly	16% or 110 units

Owner Occupied:

All "235" - "236" programs = 95% of projected need

As can be seen in a survey of residential units, the single family dwelling unit is the primary residential structure for the planning area. It may be assumed that this trend will continue. However, several factors may alter this trend during the planning period. These factors are: 1) increased use of mobile homes as permanent residential structures; 2) expanded development of multi - family residential structures, and 3) the increased use of planned unit development versus conventional subdivisions. As land prices escalate, it can be assumed that there will be increased use of higher density developments. However, the offsetting factor in this area is the seeming abundance of vacant and potentially developable land.

The most likely occurance with regard to housing for this planning area will be a slow continuation of the diversification of housing types. There will probably

be continuing demand for rural and ranchette developments, as well as town-houses and garden aprtments, especially near urbanized portions of the planning area and near natural resource areas, such as lakes and shorelines.

2.4.5 Housing Goals and Objectives

The following housing goals and objectives were developed and adopted by the Skagit Regional Planning Council:

1. All residents in the planning area should be housed in safe, sanitary and sound dwelling units.
2. Housing diversity of the broadest possible type should be available to residents of this planning area.
3. Residential land uses should not be mixed with incompatible land uses.
4. All urban services should be provided to the residents of the planning area living in middle and high density residential areas.
5. Services of a rural nature should be provided to the residents of the planning area residing in low density areas.
6. The building code should be revised to stimulate either the repairs or eventual demolition of deteriorating housing.
7. Land use policies should continue to be promulgated by local government.
8. Financing of residential development should continue to be controlled by the state and federal government, especially with regard to the amount of available capital and the interest rate at which capital can be expended.
9. Private enterprise should be encouraged to fulfill the demands of the housing market.
10. Land use regulations should be revised and amended as technology modifies development techniques, so the planning area will benefit from state and federal experiments in residential development.
11. Publically financed housing hsould continue to be provided for the elderly and for low income families in such a manner that erriciently allows for diversity in housing.

2.4.6 Housing - Demand

It is estimated that the various real estate firms in the Skagit Planning area sold approximately 600 residential dwelling units in 1971. They were predominantly

single family residential structures that sold for an average price of $20,700. The single family units average approximately 1,200 square feet in area. The median home sold in 1971 was approximately three to five years old and was financed with monthly payments of approximately $160 per month.

The average sales of area real estate sales firms were approximately 18-22 houses per year for the last five years. Whereas each builder constructs an average of 14-16 residences annually, which is approximately 255 residential structures in 1971. Approximately 60% of the new homes built in 1971 were financed through "235" or "502" Programs. The conventially financed construction accounted for approximately 102 new residences; this figure cooresponds very well with the Building Department estimate of approximately 1,100 new residences constructed in the last decade.

The two primary problems encountered in producing and selling houses mentioned by builders and relators were land use controls and septic problems; the secondary problems are financial and the availability of suitable structures and/or lots.

In 1970 a housing survey was completed by the Skagit County Rural Development Committee to determine:

1. the number of living units in the county.
2. number of homes needing repair.
3. projected needs by 1980 based on information contained in the Skagit County Comprehensive Plan and Skagit Regional Sewage, Water and Drainage Facility Plan.

In November of 1973 an update of this study was done to compare what the actual growth has been incomparison to earlier projections. This was done by examining the building permit logs af various agencies. The survey dealt with single family units, farms, apartment units, duplex and four-plex, modular homes and mobile houses that were built or installed between 1971 and November 1973.

The resulting figures show that new construction is increasing more rapidly than growth projection, the major areas of growth are in the rural areas of the county as opposed to urban, and if the growth rate continues, the 1980 housing projection need will be met by 1974. For the Northwest area specifically, including the City of Burlington, figures show the need for 55 units more in order to reach the 1980 projected goal (48 of which are in the City of Burlington).

2.5 LAND OWNERSHIP PATTERNS

2.5.1 Orientation

Like the other chapters of this section on Developmental Characteristics, this chapter on land ownership patterns is to some extent related to the entire Region rather than the more specific Northwest area. Accordingly, reference must be made to the Regional area, however, the specific analysis of acreas overlapping the Northwest portion of Skagit County have been included in this chapter.

Study of land ownership patterns results in a more precise picture of past, present, and future trends in land development for a study area. Trends in parcelization and ownership were the primary elements under consideration in this chapter on Land Ownership Patterns.

2.5.2 Parcelization and Subdivision

The dividing of a piece of land into separate saleable parcels is a common practice in the field of land development. Although it was beyond the means of this study to amass the amount of data for a complete study of all county land parcels, a sample of 51 randomly selected sections (51 areas of 1 square mile each) throughout the county were taken and studied through the years 1941-1972. This statistical sample was more than adequate to establish trends in parcelization in the study area. It was found that between the years 1941 and 1959 there was an average increase of approximately 3.7 parcels per square mile section. Between 1959 and 1972 this increase was 4.3 parcels per square mile. This demonstrates a reasonably steady increase in the amount of parcelization over the past 20 years. These figures (the number of parcels per square mile section) were then placed on a graph (#1) and compared with population trends and number of housing units for the same time span, Graphs 3,4, and 5. The corresponding results were then placed together on Graph 6 to show similarities and differences among the trends.

This series of graphs included in this section attempts to demonstrate further the correlations between population, parcelization, and housing

unit trends. As can be seen, Graph 1 plots the number of parcels per square mile section against the population figures for 1940, 1960, and 1970. When the results of this graph are compared with Graph 4, which plots the number of housing units against the same population figures, the trend of parcelization exceeding the number of housing units is more easily seen. Graph 5 compares the number of housing units directly with the amount of parcelization and shows a smaller increase in the amount of speculative subdividing of land.

These graphs show that in Skagit County there has been a steady increase in parcelization of land. Population and the total number of housing units, on the other hand, show signs of leveling off in later years. All of this seems to demonstrate that there is a trend toward more subdivision than is really needed. As slow as parcelization has been, it still has remained on a steadily increasing course.

This presents the people of the county with some problems. There is an increased burden on land-use management. A single piece of land is easier to manage in terms of water, sewer, drainage, roads, and other utilities, not to mention the added expense to assess the taxes on the extra parcels. In the case of platted subdivisions, the developer often initiates the utilities to stimulate the sale of the properties, but sells out before all the utilities are completed. Combined with this is the fact that people often buy land purely for speculative reasons, not intending to live on the land. However, the people that do buy and build a home on the land want to be serviced with the remaining utilities and services. The number of people having actually bought and lived on the land does not make extension of the full package of utilities and services economically feasible. The taxpayer thus absorbs this loss.

More parcelization or subdivision also makes land values rise becoming an economic burden to potential buyers, as well as a tax burden to adjacent land owners. Adjacent land is almost automatically forced into subdivision. Leap

frqging of subdivision farther out to take advantage of cheaper land expands cities beyond their economic limit.

Another aspect of over parcelization is the fact that it is substantially harder to acquire a number of parcels for the purpose of aggregating for a special use. This problem is characterized in the public sector by acquisition of land for parks, schools, community centers, and other similar facilities.

2.5.3 Other Elements of Land Ownership

Other elements studied included parcelization and land ownership trends in each geographical/planning area: The state and federal lands of the county are also an important element of this section. An inventory of all public lands in the area was conducted by the Planning Department and is on file.

The question of land values and uses for various areas is important with respect to locational analysis. However, due to budgetary and time restraints, it was not feasible to attempt a specific and precise consideration of this area of emphasis.

2.5.4 Sub-area Analysis

Burlington/Bayview Proper

1941-1959

Between the years of 1941-1959 this area remained similar in reference to land ownership patterns. Parcelization or subdivision of property was not widespread; at times land was aggregated under one owner in a few sections.

The Burlington area saw a substantial increase in subdivision activity. The influence of the city grew considerably, primarily in the west and south.

Another interesting area during this period was the Bayview area. In 1941 the airport was rather small and was called the Skagit County Airport. By 1959 it had engulfed almost four square miles of land and became known as

the Mount Vernon Airport. The actual community of Bayview remained constant through this period.

1959-1972
During this latter period, the agricultural land has remained the same. Parcelization seemed to be minimal, in fact, some consolidation of land holdings was seen.

Bayview grew through the subdivision of portions of the land in that area. The airport was acquired jointly by the Port of Skagit County and the Port of Anacortes.

The Burlington area again experienced some growth with subdivision occuring on the south and west.

Bow/Alger/Samish
1941-1959
Sections of this area remained the same during this period. These include the agricultural land in the southern part containing Bow, Allen, and Edison, and of state land in the north.

The land along Chuckanut Drive had a tendancy to parcelize during this period. More extensive subdividing occurred around the Alger area and along Highway 99. In the Alger area, the county transferred its land to logging companies or to the state. The state was the primary purchaser of land in this area. During this period, the logging companies tended to subdivide their land extensively after it was logged and after development grew in the surrounding areas.

1959-1972

The agricultural land in the southern portion of this area remained the same, as did the majority of the area. Land owners retained large holdings while some areas such as Alger and parts of Highway 99 experienced parcelization.

Bow and Edison remained small, experiencing little or no subdivision of property in or around them during this time span.

The state remained an extensive land owner through the years to the present, especially on Chuckanut Mountain.

2.5.5 State and Federal Lands

Obviously, the large amount of state and federally owned land in Skagit County affects the area in that the government has control of the development of these lands. When one remembers that more than 50% of Skagit County's total land area is under state or federal jurisdiction, how the rest of the land is developed becomes a rather meaningful question. Furthermore, when one accepts the fact that agriculture is a permanent economic base in the planning period of this study and subtract these agricultural lands and other previously developed or unsatisfactory areas, and subtracts the state and federal lands from the total area, the amount of land presently available and suitable for development is substantially reduced.. In addition to the fact that the county exercises no control over federal lands, the county also receives little or no tax revenues from them. Of ocurse, it can be said that as long as the land is in federal control, it will be protected and maintained. The benefits from the tourism stimulated by such wilderness areas will be a great boost to the county's economy when reasonably and properly developed. Also, the county receives monies from the state on County Trust Land. When this land produces income from logging, the county receives a percentage of the income earned. The remainder is retained by the state as a management fee. This County Trust Land is one of several types of state ownerships. However, this type seems to be the most Widespread and beneficial in Skagit County.

2.5.6 Land Ownership Map

A map depicting the amount and location of these state and federally owned lands has been prepared as a part of this plan.

2.6 ECONOMIC BASE ANALYSIS

2.6.1 Orientation

The analysis or evaluation of the economy of the Northwest area must be done in relation to Skagit County and the surrounding Northwest Washington Region. To date there has been no specific economic base analysis made which pertains only to the Northwest area.

The primary economic source of revenue in the Northwest area is the agricultural base with its diversifications into dairy and beef operations and various crop production. Other activities in the area include; logging, aquacultural operations, recreation, aircraft operation facilities, and various commercial and industrial operations primarily in and around the city of Burlington.

In that the economy of this area is tied closely to that of the region, many of the goals, objectives and findings of regional studies are directly applicable to the Northwest area. This plan adopts those findings, summaries of which are outlined in this section after a brief overview of the Skagit Regional Planning area.

The diverse elements which comprise the economic base of the Skagit Regional Planning area have been investigated and analyzed by a number of organizations and agencies. Some of the reports have dealt with specific aspects of the Skagit economy, while other reports have been oriented toward the general composition of the total regional economy.

2.6.2 Economic Base Analysis Information Sources

A list of these reports, studies, and analysis of Skagit's economy are available from the Skagit County Development Association at the Port of Skagit County office. Numerous other studies have been performed by private corporations and developers, and are not available for public consumption.

The latest economic studies relating to the Skagit Planning area are as follows:

I. Skagit County Agriculture: An Economic Mainstay

II. Skagit County Industrial Site Survey

III. A Tourist and Recreation Strategy for Skagit County with Recommendations for Implementation

IV. The Urban Land Institute Report on Skagit County

V. The North Cascades Highway: A Study if Its Impact on Local Community Economics

VI. Overall Economic Development Plan (Skagit County, Wash.)

These reports and studies represent the most recent and detailed analysis of the Skagit Regional economic structure. All of these studies, except the Overall Economic Development Plan (Skagit County, Washington), were developed concurrently with the Skagit Regional Comprehensive Plans. The above listed reports deal with the three primary elements of Skagit's regional economic structure: 1. agriculture; 2. industry-commerce, and 3. tourism-recreation. To bring these economic elements together, the Skagit County Development Association, the Washington State Department of Commerce and Economic Developement, and the Economic Development Agency of the Federal Government contracted for the services of the Urban Land Institute.

2.6.3 Economic Goals & Objectives

The goals and objectives of all of these reports can be summarized as follows:

a. Preserve the existing agricultural economic structure of the Skagit area.

b. Promote compatible diversified industrial development for the Skagit area.

c. Expand and promote tourism and the recreational attributes of the Skagit and the Northwest area.

d. Provide additional flood protection for existing urban areas.

e. Develop safe and adequate sewer, water, and drainage systems for the Skagit and the Northwest area.

f. Pursue area-wide planning and economic development.

The Northwest area contains adequate land areas to accommodate diverse

community and industrial development providing the economic goals and objectives outlined in this analysis are adopted and followed. In the same vain, these reports stress the need and the desirability of preserving the existing agricultural economic structure of the area. A balance must be reached between the various, diverse land uses. To date, our land areas have been adequate to absorb a variety of land uses without major conflict or incompatibility. However, the various agricultural, community, and industrial organizations and agencies must work together to insure that the wise use and allocation of this land is continued for the benefit of all citizens.

The adequacy of the land areas is an indication of the philosophy of the Skagit Regional Planning Council that diverse and compatible land uses which do not damage existing economic activities are encouraged to locate in the Skagit area.

To further benefit from and continue cooperation with development organizations and agencies, the reports listed are adopted as the economics element of this report. It is the intent of this plan to conform to the goals and objectives contained in those reports. These goals and objectives are summarized in tables at the end of this section.

2.6.4.2 SUMMARY OF ECONOMIC GOALS AND OBJECTIVES

From Skagit County
Industrial Site Survey

Report Number	Page Number	Paragraph Number		Cost per Acre	# of Acres
II	29	1	-- E. Swinomish Channel N SR 536	$20,476	1100
II	34	1	-- Far W. Burlington W I-5	$ 1,450	1930
II	38	1	-- Far W. Burlington W I-5	$ 8,080	550
II	47	1	-- W. Burlington W I-5	$ 5,667	195
II	51	1	-- S. Burlington E I-5	$ 6,438	235
II	55	1	-- S. Burlington E I-5	$ 6,571	105
II	59	1	-- S. Burlington E I-5	$ 3,703	37
II	63	1	-- N. Burlington E I-5	$ 8,765	170

2.6.4.6 SUMMARY OF ECONOMIC GOALS AND OBJECTIVES

From Overall Economic Development Plan

Report Number	Page Number	Paragraph Number	
VI	18	1	-- construct adequate sewer facilities
VI	23	1	-- development of Bayview Industrial Park
VI	25	1	-- develop solid waste management plan
VI	28	1	-- continue construction of and improve arterial networks
VI	34	1	-- expand Manpower Training Program
VI	36	1	-- provide adequate housing in the area
VI	37	1	-- continue with development of new crops
VI	38	1	-- research in extending harvest season
VI	39	1	-- develop comprehensive park, recreation and facilities plan
VI	40	1	-- identify resource & non-resource oriented industrial development (feasibility study)

2.7.2 Classification of Arterials

The existing road system in the Northwest area as well as in the county was recently surveyed and classified by the engineering consulting firm, VTN Washington, Inc. In their study, available at the County Engineer's office or the Planning Department, proposed road design standards and an arterial classification system are discussed and recommended for adoption. Also included is a priority array to be used as a guide for the development of a six year construction program.

The roads within the study area were extracted from the county priority array and are listed according to priority number with a high priority rating number indicating importance of construction. It is not a rule for a road construction improvement program, but is a guide for scheduling road improvements.

Suggestions for improvements are included in the evaluation and are represented by the following:

R - Reconstruction
W - Widening
S - Resurfacing
SW - Shoulder Widening
CR - Complete reconstruction on new alignment
D - Drainage Improvement
SI - Spot Improvement

Existing roads are classified according to the following arterial designations and their functions:

Primary Arterial - To expedite the movement of through traffic from city or town to city or town with combined populations greater than 500 people. To expedite the movement of through traffic to major traffic generators such as major shopping areas, major commercial and industrial complexes, and major recreational areas. To collect and distribute traffic from freeways, expressways, and other major state highway routes to less important arterial roads, or directly to traffic destinations.

2.7 TRANSPORTATION - ROADS & CIRCULATION

2.7.1 Orientation

Ground elevations vary from near sea level in the Skagit and Samish River agricultural basins to foothills in the central region of the county and finally to the rugged, alpine regions of the Cascade Mountains. In western Skagit County, the flat terrain of broad agricultural river basins has not greatly influenced road location and development. Road alignments generally follow along or parallel section lines. However, in the eastern part of the county rolling and mountainous topography has greatly influenced the location and construction costs of the road developments.

Streets and roads provide the main means by which people move about, travel, and ship goods and services. They act to determine where people choose to live, shop, and pursue leisure activities. Certain land uses, whether they are farming or manufacturing, require roads that provide direct and efficient means of transportation. These uses largely influence where and how roads are built. Once established, other land uses such as residential, commercial enterprises and support industries are attracted to and become established along such roadways. Soon more arterials and connectors, as well as road improvements, are needed to meet the needs of the increased traffic. These in turn act as stimuli for further development and, thus, demand for increased public expenditures rises.

Roadways and the resultant circulation system must be a critical part of a comprehensive planning effort. In this section, the existing road system will be examined and in other sections land use and development patterns are analyzed. From these analyses future road circulation needs and problems can be identified and means to meet and solve them determined.

Secondary Arterial - to collect and distribute traffic from higher type arterial highways to less important roads or directly to traffic destinations. To serve secondary traffic generators such as commercial, industrial, and agricultural areas, outlying grouping of residence areas, an important grouping of churches, a recreation facility, a community center and a large hospital.

Collector Arterial - To collect and distribute traffic from higher type arterial highways to access streets, or directly to traffic destinations. To serve traffic within a community, a neighborhood, or commercial and industrial complex. To serve community traffic generators such as small group of stores, a club house, a grange hall, a small hospital and a residential area.

2.7.3 SKAGIT COUNTY ROAD PRIORITY

PRIORITY RATING CUMMARY

ROAD NO.	NAME	SECTION	LENGTH	TERMINI COUNTY ROUTE MILE POSTS	PRIORITY	SUGGESTED IMPROVEMENT
3630	ALLEN WEST ROAD	1A	0.50	SR 537 TO BENSON ROAD 0.00 to 0.50	52	R
3091	SAMISH ISLAND ROAD	3	1.18	RONEY ROAD TO HALLORAN ROAD 2.70 to 3.88	50	S-SW
3311	AVON-ALLEN ROAD	2	1.49	SR 536 TO SR 20 1.07 to 2.56	47	S-SI
2120	BOW HILL ROAD	4	0.58	ERSHIG ROAD TO R.R. TRACKS 2.43 to 3.01	43	SW
2120	BOW HILL ROAD	5	0.80	R.R. TRACKS TO BOW-CEMETARY ROAD 3.01 to 3.81	43	W-SW
3810	HALLORAN ROAD	1	1.00	SAMISH ISLAND ROAD TO RONEY ROAD 0.00 to 1.00	39	W-SW
3121	BAYVIEW-EDISON ROAD	1B	0.94	ROAD # 3122 TO WILSON ROAD 1.98 to 2.92	31	CR
3121	BAYVIEW-EDISON ROAD	1C	0.26	ROAD # 3122 TO WILSON ROAD 2.92 to 3.18	31	S
3150	OVERNELL ROAD	1B	1.00	AVON ALLEN ROAD TO SR 537 0.61 to 1.01	31	R
3311	AVON-ALLEN ROAD	6	0.06	ALLEN-WEST ROAD TO SR 11 6.85 to 6.91	31	W
2120	BOW HILL ROAD	3	2.49	SR 5 TO ERSHIG ROAD 0.94 to 2.43	30	S-SW
3300	WILSON ROAD	2B	1.90	AVON-ALLEN TO SR 537 2.98 to 4.88	29	W-SW
2321	ERSHIG ROAD	1A	1.54	SR 11 TO BOW HILL ROAD 0.00 to 1.54	27	SW
3630	ALLEN-WEST ROAD	1B	2.55	BENSON ROAD TO AVON-ALLEN ROAD 0.50 to 3.05	27	--
3311	AVON-ALLEN ROAD	3	1.19	SR 20 TO PETERSON ROAD 2.56 to 3.75	26	SI

2321	ERSHIG ROAD	1B	1.40	SR 11 to BOW HILL ROAD 1.54 to 2.94	25	--
3061	ROMEY ROAD	1	0.44	HALLORAN ROAD TO SAMISH ISLAND ROAD 0.00 to 0.44	24	W
3150	OVERNELL ROAD	1A	0.61	AVON-ALLEN TO SR 537 0.00 tl 0.61	23	R
3300	WILSON ROAD	1	1.83	SR 11 TO AVON-ALLEN ROAD 0.00 to 1.83	23	SW
3240	PETERSON ROAD	1	1.52	SR 20 TO AVON-ALLEN ROAD 0.00 to 1.52	22	W
2120	BOW HILL ROAD	2	0.14	SR 5 INTERCHANGE AREA 0.80 to 0.94	21	-
2120	BOW HILL ROAD	6	0.94	BOW CEMETARY ROAD TO SR 11 3.81 to 4.75	21	-
2561	LAKE SAMISH ROAD	2B	0.35	SR 5 TO COUNTY LINE 1.39 to 2.47	21	R
3311	AVON-ALLEN ROAD	5	0.48	BRADLEY ROAD TO ALLEN WEST ROAD 6.37 to 6.85	21	S
6300	COOK ROAD	3	0.11	SR 5 TO OLD 99 1.75 to 1.86	21	-
6300	COOK ROAD	2A	1.13	SR 11 TO SR 5 0.44 to 1.57	20	W
2400	COLONY ROAD	1B	2.56	SR 11 TO ERSHIG ROAD 0.25 to 2.81	19	-
3091	SAMISH ISLAND ROAD	1	2.3	BAYVIEW-EDISON ROAD TO SCOTT ROAD 0.00 to 2.30	18	-
3690	D'ARCY ROAD	1	1.26	SR 537 TO BAYVIEW-EDISON ROAD 0.00 to 1.26	18	-
3121	BAYVIEW-EDISON ROAD	2	2.81	WILSON ROAD TO D'ARCY ROAD 3.18 to 5.99	17	-
6031	RIVERSIDE DRIVE N.	1	1.87	BURLINGTON C.L. TO M.V.C.L.	15	-
2400	COLONY ROAD	1A	0.25	SR 11 TO ERSHIG ROAD 0.00 to 0.25	14	-
3150	OVERNELL ROAD	1C	1.44	AVON-ALLEN ROAD TO SR 537 1.61 to 3.05	14	S-SW

3300	WILSON ROAD	3A	0.63	SR 537 TO BAYVIEW-EDISON ROAD 4.88 to 5.51	13	S-SW
3121	BAYVIEW-EDISON ROAD	1A	1.98	ROAD # 3122 TO WILSON ROAD 0.00 to 1.98	12	-
3311	AVON-ALLEN ROAD	4	2.62	PETERSON ROAD TO BRADLEY ROAD 3.75 to 6.37	12	-
3091	SAMISH ISLAND ROAD	2	0.40	SCOTT ROAD TO ROMEY ROAD 2.30 to 2.70	9	SW
3300	WILSON ROAD	2A	1.15	AVON-ALLEN ROAD TO SR 537 1.83 to 2.98	9	-
3210	BAYVIEW ROAD	1	0.78	SR 537 TO BAYVIEW-EDISON ROAD 0.00 to 0.78	8	SW
6300	COOK ROAD EXT.	1	0.44	AVON-ALLEN ROAD TO SR 11 0.00 to 0.44	7	-
6300	COOK ROAD	2B	0.18	SR 11 TO SR 5 1.57 to 1.75	7	-
3121	BAYVIEW-EDISON ROAD	3	3.67	D'ARCY ROAD TO SR 537 5.99 to 9.66	7	-
2561	LAKE SAMISH ROAD	2A	0.59	SR 5 TO COUNTY LINE 0.80 to 1.39	6	-
3300	WILSON ROAD	3B	1.02	SR 537 TO BAYVIEW-EDISON ROAD 5.51 to 6.53	6	-
3240	PETERSON ROAD	2B	1.62	BAYVIEW AIRPORT TO AVON-ALLEN ROAD 1.71 to 3.33	5	-
2321	ERSHIG ROAD	2	0.99	BOW HILL ROAD TO COLONY ROAD 2.94 to 3.93	3	-
2400	COLONY ROAD	2A	2.97	ERSHIG ROAD TO LAKE SAMISH ROAD 2.81 to 5.78	3	-
2400	COLONY ROAD	2B	0.57	ERSHIG ROAD TO LAKE SAMISH ROAD 5.78 to 6.35	3	-
3240	PETERSON ROAD	2A	0.19	BAYVIEW AIRPORT TO AVON-ALLEN ROAD 1.52 to 1.71	3	-

The following is a list of those roads in the Northwest area that have been classified based upon the VTN study:

Primary Arterials
-- U.S. 99 Alt. (Chuckanut Drive)
-- U.S. 99 (Skagit River to Cook Road)
-- Cook Road (U.S. 99 Alt. to District Line Road)
-- SR 20 (Swinomish Channel to District Line Road)

Secondary Arterials
-- Bayview-Edison Road
-- SR 537
-- Avon-Allen Road
-- Bow Hill Road
-- Ershig Road (Bell Road to Bow Hill Road)

Collector Arterials
-- Samish Island Road
-- Allen West Road
-- Wilson Road
-- Peterson Road
-- Pulver Road (SR 20 to Cook Road)
-- District Line Road (SR 20 to Cook Road)
-- Colony Road
-- Lake Samish Road (I-5 to county line)
-- D'Arcy Road
-- Ershig Road (Bow

The existing Federal Aid Secondary (FAS) System and the recommended FAS System for future development funding is depicted on a map in the County Commissioners office. Placing roads under the FAS System enables the county to receive federal aid for improvements and up-grading. In all cases county determines the allocation of such funding, using the monies for priority projects. The degree of intensity of development in certain parts of the county would cause the county to focus these funds on road-ways in and around these developing areas. Thus, there is a need for a continuing planning process for road systems based on land use patterns.

2.7.4 Bridges plan an important role in determining circulation and traffic routing in that their existing condition directly effects the overall roads trafficability; i.e., the loads the bridge can bear without undue stress to its structure. The county is presently pursuing a six year construction program (1974 to 1979) of replacing many of the wooden bridges

with those of concrete materials for longer life and durability. There are no plans for bridge replacement under this program forseen for the Northwest area in the near future.

2.8 OPEN SPACE - RECREATION

2.8.1 Orientation

Skagit County has a unique rural environment and even though the county now has an abundance of open space it is the responsibility of the county to plan ahead and save sufficient and meaningful park and open space to fulfill the needs of its citizens.

Tables in the Land Use Analysis Section, indicate that the majority of the Northwest Region land is either agriculture (48%) or forest (30%) both of which can be categorized as open space.

The western boundary is characterized by the saltwater shorelines of Padilla and Samish Bays, while portions of the Samish and Skagit Rivers are the main bodies of flowing fresh water in the region.

2.8.2 Goals and Objectives of Open Space - Recreation

The Northwest Region cannot be isolated in any discussion of open space of recreational activities. The areas open space and recreational resources attract and are utilized by not only area citizens, but also by vacationers and travellers from within and outside the state. Since the existence of developed recreational facilities are minimal in number and size in the Northwest area, the greatest attraction to this area is the open space created by the natural attractiveness of the agricultural community and the surrounding environs.

Since recreation has a region-wide impact upon the area's resources, this plan adopts those goals and objectives stated in the Comprehensive Land Use Planning Alternatives that apply to recreation. They are:

1. Locate and define potential recreation areas and outdoor recreation activities.
2. Determine and evaluate the recreation needs of resident and non-resident populations.
3. Preserve and maintain the aesthetic qualities and interesting attractions of the Skagit area.
4. Examine potential outdoor recreation areas as to their:
   a. feasibility for acquisition and ownership.
   b. prior history of recreational and/or other activities.
   c. the need for urgency of acquisition.
   d. relation to transportation corridors for public access.

5. Develop a trails plan as a subsection of the overall recreation plan.
6. Indicate the need for suitable indoor recreation areas.
7. Provide both urban and rural open space recreation areas.
8. Explore the functional inter-relationships between local, state, and federal recreational programs and coordinate programs whenever possible.

2.8.3 Demand-Supply and Need for Open Space

The following table summarizes the recreation activity needs for the Skagit area to the year 1990. The data included in the table is a refinement of detailed information developed by the Skagit County Planning Department for the Skagit County Parks and Recreation Commission. The detailed information is contained in two volumes: 1. Park Study - Demand, and 2. Park Study - Standards, Needs, Costs. These studies are available for review at the Skagit County Planning Department.

2.8.5 Inventory of Existing Recreation Facilities

The Skagit River, and to a lesser extent the Samish River, are main attractions for the popular area recreation activities of fishing and boating. The forested, field, and marsh areas are generally used by the public for hunting, hiking, and nature activities, where allowed by private landowners.

There are no Federal parks within the Northwest area. On the state level; the Washington State Park and Recreation Commission maintains Bayview State Park and part of Larrabee State Park. The Washington State Game Department maintains several public fishing access points, and other state agencies own property used for recreation in the county. The park system of Burlington contains about 4 acres of developed playgrounds, 4 acres of developed playfields and 7 acres of neighborhood parks.

Under the provisions of Washington's Open Space Tax Law of 1973, the granting authority may impose certain conditions when giving approval to Timber and Open-Space Open Space designated applications. The Planning Commission has considered and recommends approval of these two classifications with the following conditions: The applicant allow reasonable public access for the purpose of recreational activities commensurate with that area, except that the applicant may restrict his land for camping and motor vehicles.

Thus, the public has reasonable access to areas other than parks or private campgrounds for various forms of recreational activities.

2.8.6 Inventory of Potential Outdoor Recreation Areas

The following is a list of potential park sites found in the Northwest area. These sites, listed by priority of acquisition and development, were gathered from two separate park studies; Skagit County Potential Park Inventory done in 1971 by the Skagit County Planning Department, and, Skagit County Comprehensive Park and Recreation Plan done in 1973 by Jongejan/Gerrard/Associates, Inc, and Lee Johnson & Associates, Inc., both of which are availible for reference at the Skagit County Planning Department. The priorities array is only a recommended outline for federal, state and local agencies to follow in order to provide and maintain a well balanced, diversified recreational program. The priority numbers are a part of the total county priority array illustrated in the Skagit County Potential Park Inventory.

Priority	Site	Size	Activities
	Chuckanut	15 acres	Roadside stop, picnics
	Edison-Samish Mouth	10 acres	Fishing, boat launch, boating
18	Fisk & Scotts Point	15 acres	Picnic, camping, swimming, boating, boat launch
	Gages Lake	10 acres	Swimming, fishing, picnic
	Padilla Bay	72 acres	Pleasure drive, roadside stop picnic, playfields
	Samish Island	20 acres	Hiking, picnic, playfields, scenic area, pleasure drive
	Samish Point	40 acres	Picnic, camping, scenic area
	Windy Point	10 acres	Scenic area, boating, boat launch, swimming, roadside stop, playfield

For an in-depth analysis of the countywide open space program, consult the 701 Program Report and other recreation and park plans available at the County Planning Department office. These reports present demand and supply data along with cost estimates and funding sources for acquisition and development of areas by the appropriate agencies. Demands and uses are countywide and any specific area open space program must coordinate with and be a part of a county or regional program.

The Washington State department of Highways is presently considering designating Chuckanut Drive, SR 20 and SR 537 as a part of their bicycle route log. There is a potential need in the near future for a recreational trails study and inventory for Skagit County which would assist in this sort of designation process.

2.8.7 Supplemental Information

The Skagit County Board of Commissioners have recently adopted a county-wide Park Plan, entitled Skagit County Park & Recreation Comprehensive Plan. This Comprehensive Plan supercedes the previous Open Space and Recreation Element of the Skagit County Comprehensive Plan.

2.9 COMMUNITY FACILITIES

2.9.1 Orientation

Previous portions of this plan have dealt with a variety of characteristics which together form the environment of the community. This portion deals with the capital outlays that have been made to make the overall characteristics of the community better suited to the needs of its residents.

Existing public utilities, services, and facilities are delineated here. An inventory of this type is necessary to determine what should be changed or expanded to serve the projected needs of the community.

The Community Facilities portion of this report is composed of the following:

2.9.2) Educational Facilities
2.9.3) Personal Services
2.9.4) Sewer, Water, Drainage Facilities

2.9.2 Educational Facilities

The maintenance of a sound school system is not only a benefit to the children of the area, but it is also an asset to the area as a whole. Besides the primary result of supplying a child with the best possible education, there are secondary and tertiary effects of a good school system. The schools tend to unite the community through P.T.A., sports events, school concerts, joint use of school and public facilities, and other activities. The community is also benefited by the increase in the overall education of its present and future members. In this way, the people can be better prepared to determine their own future.

2.9.2.1 Intermediate School District 108

Education in the study area is conducted under the general supervision of Intermediate School District 108 (ISD 108) headquartered in Bellingham. ISD 108 is a four-county organization of school districts, which encompasses the school districts of Whatcom, Skagit, Island, and San Juan Counties. This District has a records keeping function as mandated by state law, acting primarily in

the capacity of a coordinating and service agency for the public and private school districts in the four-county North Sound area. Serving the Northwest area, the B-E school Dist. #100, a first class district, falls within the general supervision of ISD 108.

Finding ways of objectively and accurately examining existing educational facilities is a great problem. Any evaluation of educational facilities, unless conducted by an unbiased expert, will contain biases and weaknesses. It is for this reason that it is up to the people of the Northwest area and the Burlington-Edison School District to join with their educators in evaluating their own goals and priorities. The following is a brief evaluation of the educational resources of this area.

2.9.2.2 Northwest Educational Facilities

As noted, the Northwest area is served by the Burlington-Edison District #100. The District also serves areas east of I-5 and south of SR20 which do not fall within the scope of this planning effort.

The total number of students in 1973 was approximately 2,705 with a student teacher ratio of approximately 20 to 1. There are six schools within the district; five elementary and one high school.

Schools Grade	1973 Enrollment	Sq. Ft./Sq. Ft. per pupil	Acreage	Year Built/ Additions
Roosevelt (K-3)	118	7438/63.0	1.0	1936
Allen (K-8)	475	35,758/72.6	12.0	1967
Edison (K-8)	261	24,000/91.6	8.0	1924
West View (1-8)	447	37,000/76.9	10.0	1953
Lucille Umbarger (1-8)	515	38,000/73.9	10.0	1959
Burlington/Edison High School (9-12)	880	136,000/158.5	29.0	1926/'59 '65, '71

6.4 Population Projections

This Comprehensive Plan projects that population in the Northwest area will increase from the existing population of 7804 to between 8,272 and 10,275 persons by the year 2000. The population will be distributed relatively evenly between those residing in urban and rural areas. The land areas designated for residential development in the Northwest area would house a population of 20,170. This represents an approximate supply of 200% over the projected need.

6.5 Estimated Plan Costs

A precise estimate of developmental costs is not possible, however, the costs associated with this plan would be very similar to those of the Composite Land Use Alternative, as the recommended plan is basically a modification of the Composite Land Use Alternative.

The cost of development, therefore, would be similar to that estimated for the Composite Land Use Alternative with the following general exceptions:

Water and road cost would be somewhat to moderately greater, while sewer cost should be slightly lower. The cost of the Composite Land Use Alternative was:

Water	$ 8,345,100
Sewer	8,412,923
Roads	12,380.260
Libraries	669,981
Police Protection	986,316
Parks	
TOTAL	$30,794,580

These costs were developed for the entire downriver area and have not been refined specifically for the Northwest area.

6.6 Plan Policies

The following planning policies are adopted to augment the other provisions of this Comprehensive Plan for the Northwest Area.

6.6.1 General Land Use Recommendations

6.6.1.1 The existing agricultural, pasture and forestry lands, especially those in the floodplain, are to be protected from other forms of development. The prime agricultural lands should be protected from encroachment by higher uses.

6.6.1.2 The agricultural areas should be provided with at least 20 year flood frequency protection.

6.6.1.3 The Open Space Taxation Laws of 1970 and 1973 should be retained as viable and useful methods of land use control.

6.6.1.4 It is recommended that the urban area of Burlington follow a policy of non-growth into the surrounding agricultural areas.

6.6.1.5 The communities existing on the agricultural floodplain should not expand further into those lands.

6.6.1.6 Future development should be directed into the uplands areas for the more intense levels of development.

6.6.1.7 Low density development of a significant degree should occur in upland areas where the physical environment is compatible and the resource production and extraction activities do not occur.

6.6.1.8 The urban area should take advantage of the existing vacant land area and fill in these areas at approximately the same level as the adjacent neighborhoods, prior to expansion of existing boundaries.

6.6.1.9 Where possible, planned unit residential development should be used to cluster neighborhoods and to create open space areas within residential areas.

6.6.1.10 The area designated for high density residential development should only be fully developed when all urban services are available.

6.6.1.11 The task of providing sewers in the Burlington Hill area should be pursued to allow for a planned residential development.

6.6.1.12 Burlington should not annex west of Interstate 5. This would cause development pressures upon the existing agricultural lands besides presenting a flood protection problem.

6.6.1.13 Burlington should consider residential expansion to the northeast of the city in relation to minimizing the possible floodplain hazards of the entire area.

6.6.1.14 Residential development on Samish Island should continue in the same density, provided adequate water and sewer conditions are present. High density development should occur only if public water and a sewerage system are installed to serve the area.

6.6.1.15 The creation of land in Padilla Bay or Samish Bay by means of diking, drainage, and fill procedures should be discouraged.

6.6.1.16 Dredge disposal sites should be located so as not to adversely effect Swinomish Channel, the Skagit River or other waters in terms of fish migration, wildlife habitat, agriculture or aquaculture operations.

6.6.1.17 Use and utilization of Padilla Bay and Samish Bay for aquacultural enterprises should be encouraged.

6.6.1.18 A pre-arranged system of flotation devices should be utilized to contain a major oil spill.

6.6.1.19 The land use control ordinance of Skagit County should be regularly amended to accommodate changes in community standards and needs.

6.6.1.20 The elements and policies of the Shoreline Master Plan Program and the River Basin - Water Pollution Abatement Program should be integrated into this plan upon their adoption by the Skagit County Board of Commissioners.

6.6.1.21 During the next revision of the Comprehensive Plan, those land areas currently zoned for a use not designated by this Comprehensive Plan and not developed for that zoned use, should be reclassified to the use indicated in this Comprehensive Plan.

6.6.2 Industrial/Commercial

6.6.2.1 Commercial and industrial development should be directed to upland areas, away from the prime agricultural and pastoral lands and out of the danger of flooding and the seasonally high ground water table.

6.6.2.2 The existing developed areas within the floodplain should be utilized to their fullest capacity and should not be further expanded.

6.6.2.3 Industrial expansion should take place largely in the form of well-planned industrial parks which are compatible with an urban area. The importance of specific design standards must be reiterated, especially when considering the impact of industrial land upon adjacent residential areas and the tourist economy of the entire countywide area.

6.6.2.4 The City of Burlington should study the future potential of its central business district and adhere to the plan adopted.

6.6.2.5 Commercial expansion should be lcoated north and south of Gages Slough, between I-5 and Old 99.

6.6.2.6 Industrial expansion should occur south of Gages Slough between Old 99 and the Burlington Northern tracks.

6.6.2.7 A buffer should be established between the industrial/commercial activities and the residential area along Gages Slough.

6.6.2.8 Any commercial areas, especially those related to the proposed SR 20 realignment, should be in cluster form having specific design specifications.

6.6.2.9 A buffer zone or proper screening should be established and maintained within the entire periphery of Port property on Bay View Ridge.

6.6.2.10 The Bay View Airport area should be recognized as a potential regional industrial park. Proper design and standards should be utilized in its development.

6.6.2.11 The Skagit County Planning Department endorses the idea of utilizing professional planning personnel to prepare comprehensive plans for the Airports development.

6.6.2.12 Noise abatement measures should be implemented around airport operations or the problem should be mitigated at the source of said noise.

6.6.2.13 Skagit County should consider adoption of an Airport zone in order to protect the lives and property of airport users as well as those of adjacent landowners.

6.6.2.14 Commercial development at highway intersections should only be used for highway related commercial activities.

6.6.3 Transportation

6.6.3.1 The Skagit County Planning Department should have design review authority over any development, prior to construction, adjacent to any scenic highway or major arterial (density, depth and type of screening to be determined on each individual proposal).

6.6.3.2 The favored alternative route for the realignment of SR 20 from I-5 to Sedro-Woolley is the southerly route, close to the river, which would serve as a levee to provide flood protection for the City of Burlington, provide view opprotunities of the river for tourists, use less prime agricultural land, and would not cut thru the City of Burlington.

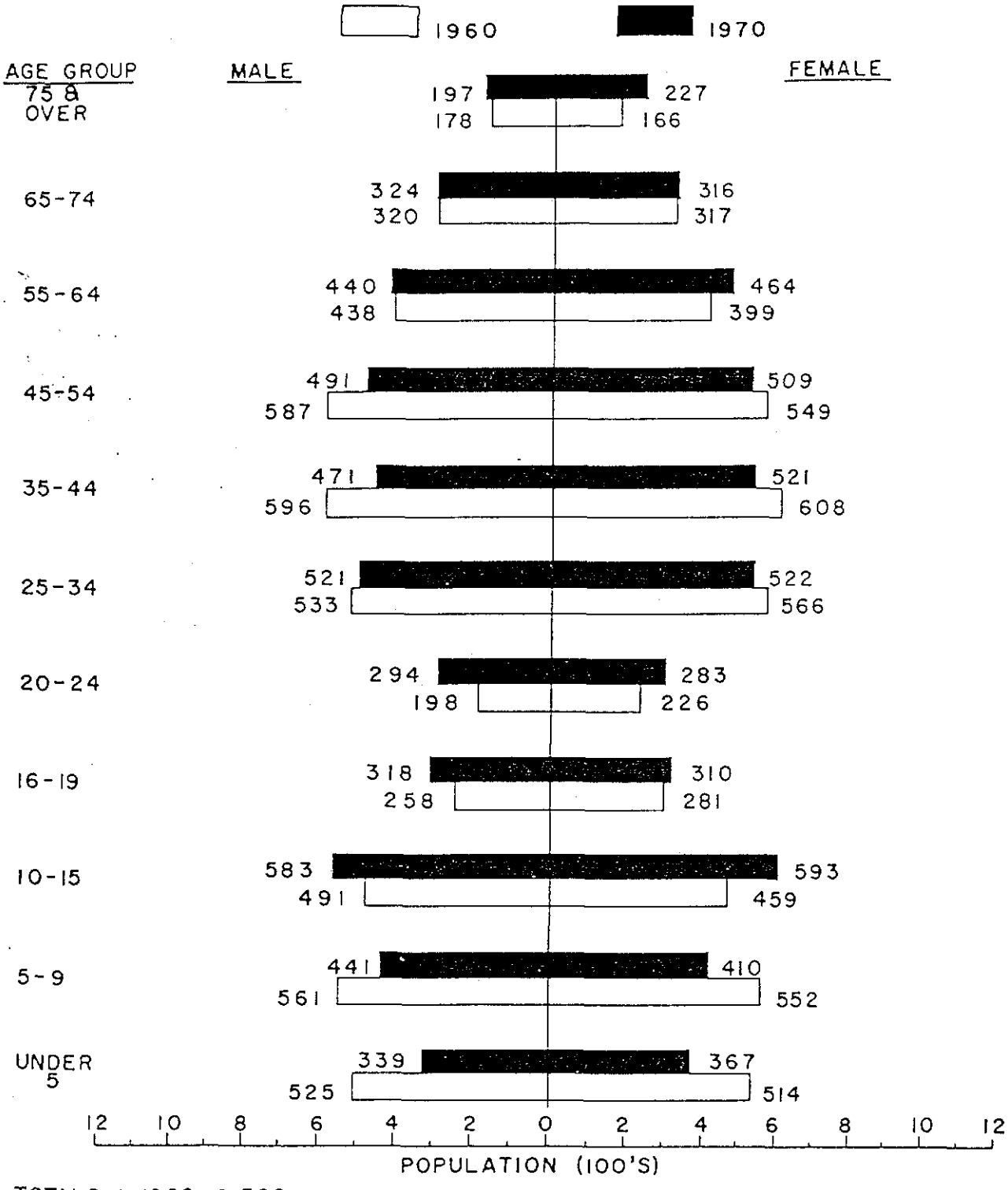
6.6.3.3 The route for the SR 20 realignment from I-5 to Fredonia should be determined so as to displace the least amount of agricultural land, not dissect parcels so as to be unusable, while utilizing to the maximum the present SR 20 route facilities.

6.6.3.4 The realignment of SR 20 should not be routed south of Burlington Hill or farther north at Cook Road. The former alternative would in effect cut off Burlington Hill from the rest of the city, also, depending upon traffic volumes, the noise level caused by the proximity of the hill may reach unacceptable levels. The latter alternative would cause an encroachment into agricultural lands.

6.6.4 Open Space/Recreation

6.6.4.1 The tourist industry and recreational activities should be pursued to add to this significant aspect of the Northwest area economy.

2.9.2.3 BURLINGTON/EDISON NO. 100 AGE & SEX DISTRIBUTION 1960-1970



TOTALS 1. 1960 = 9,322

2. 1970 = 8,941

3. NUMBER OF WOMEN OF CHILD-BEARING YEARS (16-45) - 1960 = 1,679, 1970 = 1,636

4. NUMBER OF BIRTHS (PLUS NET MIGRATION AGES UNDER 10) - 1950-'60 = 2,152, 1960-'70 = 1,557

In 1960 population of the Burlington-Edison District was 9,372. In 1970 this figure decreased to 8,941. This was a net decrease of 381 or approximately 4%.

By examining the age/sex pyramid (Table 2.9.2.3) for the Burlington-Edison District (including the areas not in the Northwest area) it can be seen that the number of children under five years of age declined sharply in the last decade. The number of children between the ages of five and nine also decreased. This decrease in the younger age groups (595 children in the 0-9 year categories betweeen 1960 to 1970) has a significance in terms of the future needs of the district in both enrollment trends and construction projects. As can be seen too, the number of women of childbearing age and the number of births in the district have also decreased.

These figures, combined with the State estimations of Skagit County's population growth, point to a reduction in the growth trend in the district. Providing that no major economic changes occur (i.e., sporadic increases due to possible construction impacts of the nuclear power plant), a slow overall growth rate would be indicated.

Facilities Construction/Repair: The main focus should be a program to keep in pace with structural obsolesence. The construction and completion of a new high school main building being the primary concern. All aspects of educational facilities should be examined to determine their relevance to the continuing educational excellence and goals of the district.

2.9.2.4 State Assistance Requirements

The state plays an important role in school district planning because of its assistance in financing projects. Financial capability and capital outlay expenditure is dependent upon bond monies. A ceiling amounting to 20% of the assessed valuation for school bond indebtedness has been established by state law. School districts must be bonded to at least 10% of their 20% capacity to qualify for state assistance in their construction programs. State funds are made available to school districts which qualify by placing them on a "priority of needs" list, which is referred to as the state "Gray Book." This book lists the school districts which are entitled to assistance and the corresponding percentage of state participation that they may expect.

The state standards for financial assistance are based upon a square footage allocation for each unhoused pupil in the school district. The allocation for elementary students is 70 sq. ft. per pupil and the allocation for junior high school students is 90 sq. ft. per pupil. In addition, the state also sets a ceiling for construction costs beyond which they will not participate. The state will participate with the school district in the percentage previously mentioned, up to a total cost per square foot of $27.11. Thus, any construction costs exceeding $27.11 per square foot would have to be assumed by the school district.

The formula for state assistance would be:

A percentage of the number of unhoused students x 70 sq. ft./pupil or 90 sq. ft./pupil x $27.11/sq. ft.

2.9.2.5 Summary

Nearly all public school districts in Skagit County are experiencing a diminishing rate of growth insofar as student population is concerned. This is primarily a reflection of two unrelated events: 1) birth control is overcoming the cyclic effect of the WW II baby boom, and 2) there are relatively few promotional opportunities for young adult families in the planning area. Thus, young career oriented county residents must migrate to urban centers where greater opportunities exist.

This diminished rate of growth is allowing school districts to reduce student per classroom ratios and this reduces the demand for additional classrooms. Nearly all school districts are at 100% of capacity and some of this capacity is housed in substandard facilities which reduce educational opportunities and substantially increase the maintenance cost per student. However, recent voter reluctance to approve levies and the existence of high interest rate of bonds for long range capital acquisition combine to create great difficulties in updating educational facilities.

2.9.3 Personal Services

2.9.3.1 Emergency Services

A revision of the Skagit County Emergency Services Operations Plan was completed in October 1972 by the Skagit County Department of Emergency Services. Further details involving emergency services may be obtained by consulting the above

cited document and the Emergency Services Department.

The emergency services operation plan is primarily used as a guidelines to develop a county civil defense network that is prepared for both military attack and natural disasters, as well as to provide for the effective utilization of all available governmental and private resources within the county, both manpower and materials, to minimize the effects of such a disaster. Coordination of the activities of all the organizations and manpower that may be involved in an emergency is a major element of the plan. It would also provide for effective utilization of all resources available from sources outside Skagit County.

Although Federal and State levels of government have responsibilities and controls in an emergency, the Skagit County Department of Emergency Services is the coordinator of all county and city officers and employees, together with those volunteer forces enrolled to aid them during a disaster, and all groups, organizations, and persons who may be agreement or law be charged with the protection of life and property during such an emergency.

Direction and control during a disaster would channel from the governor's office to the County Board of Commissioners.

For the purposes of coordination with the land use plan for the Northwest Region, this report regards the Emergency Services Operations Plan for Skagit County as the minimum standards for which emergency services should be maintained.

2.9.3.2 Law and Justice

The following recommendations are cited from An Improvement Plan for Law and Justice, 1971, developed by the Northwest Regional Council, which is endorsed in this report. (A new and revised Law and Justice Plan is expected to be completed for the Regional Council in late 1974.) The Northwest Regional Council is a four-county association composed of Skagit, San Juan, Island, and Whatcom Counties. The primary function of this council is to develop and adopt plans and recommendations to improve law and justice service throughout the region.

The expertise of this council in this detailed and critical area of public service has been utilized in the development of this planning program,

therefore, the following summary recommendations and conclusions are used as the basis for the Law and Justice Section of this report.

2.9.3.2.1 Planning Recommendations

1) Full governmental and law enforcement agency participation in the minimum recruitment and training standards of the Washington State Law Enforcement Training Commission will be encouraged. A regional goal will be that by 1973, all law enforcement personnel will have satisfactorily completed a basic training program prescribed by the Washington Law Enforcement Officers Training Commission.
2) County and local police jurisdiction will devise "back up" programs to assist all agencies in participating in the minimum standards training program.
3) Recruitment programs in high schools, vocational schools, colleges and universities will be undertaken to interest highly motivated and qualified young men and women to pursue law enforcement careers.
4) This region strongly recommends that the Washington State Legislature, the Washington State Law and Justice Committee, and the Washington State Law Enforcement Training Commission expand the capacity of the State's basic law enforcement training program so that there are more basic training sessions available for local law enforcement agencies.
5) Since crime problems are not confined to city and county boundary lines, there is a need for police planning to be extended and coordinated on a regional basis. This planning could involve an exchange of information and intelligence as to specific criminal investigations, an adequately equipped crime laboratory to serve the region or a limited consolidation of communication systems.
   a. A "Consolidated Jail Plan" is currently being developed for the Regional Council (completion in late 1974) which will have an impact on correctional and law enforcement agencies and facilities. The regional jail would handle the sentenced offender and would allow Skagit County facilities the opportunity to handle the pre-adjudicated individuals and provide better care and facilities for those who are held in the present accomodations.

b. With the possibility of the construction of a nuclear power plant bringing non-resident construction workers into the County during the construction period, and that as a direct result, increased burdens being placed upon law enforcement agencies in the county, Puget Power has agreed to make "Construction Impact Payments" to assist law enforcement agencies in meeting these increased burdens.

Note: The Skagit County Sheriff's Department is the largest law enforcement agency in the county (a staff of 30). It has assumed a great deal of responsibility within the county, including almost all of the criminal investigative work. The future development of the Northwest Region will put more demands on this department, although these demands will vary somewhat according to the pattern and form of development. A more nodal urbanized situation in the Burlington area would cause the municipal department to grow with the increased population and concentration of development. The Sheriff's Department would also have to increase its personnel to assist the city and to handle the spillover effects of an urbanized situation. A more rural dispersed pattern of development would obviously cause an increase in the demand for direct law enforcement services supplied by the Sheriff's Department.

It is difficult to predict the exact needs of area law enforcement agencies in the future for much of the level of service provided is determined by public sentiment and availability of qualified personnel. Standards pertaining to law enforcement levels for various densities of development also seems to be quite rare, if not non-existent.

2.9.3.3 Health Service Delivery

The field of Health Services Delivery is addressed more fully in the documents developed by, and being developed by, the Comprehensive Health Planning Council of Whatcom, Skagit, Island, and San Juan Counties. This Council is a four-county organization of elected officials and interested citizens, as well as health delivery professionals. The Council is partially supported by a grant from the U.S. Public Health Services. The Skagit Regional Planning Council has endorsed the ongoing activities of the Comprehensive Health Planning Council.

The Skagit County Planning Department solicits recommendations regarding Health Service Delivery from the Comprehensive Health Planning Council of Whatcom, Skagit, Island, and San Juan Counties.

2.9.4 Water, Sewage, and Drainage Facilities

The Skagit County Water, Sewerage, and Drainage Facilities Plan, was completed for the Skagit Regional Planning Council (June, 1970), by Stevens, Thompson & Runyan. This comprehensive planning report adopts the recommendations of that document, with the assumption that it will be revised as a part of the current River Basins Study.

As a result of this report, it is hoped that water, sewer, and drainage systems will orient toward the uplands areas of the Northwest region in future utility development efforts. It should be noted here that prior to construction of any facility or segment of a facility, a detailed feasibility study for that particular feature must be made, encompassing not only engineering and financial aspects, but also needs and future physical and social ramifications of such a facility. The point here is that a long-range plan for initial ideas is not a substitute for a detailed analysis of each specific proposal.

There is need for area and countywide coordination in community facilities including sewer, water, and drainage facilities. There is a great need to attain an optimum level of services for the greatest possible number of people in the most efficient and economically manner possible. Many times an organization will create an "economy of scale" that would not have been realized under a traditional fractionated district form, thereby effecting a savings of a certain amount of tax dollars.

For the Northwest region it was suggested by the STR report that the cities and communities would eventually have to provide some facilities to its citizens:

The city of Burlington was urged to develop a separate industrial waste disposal system to collect and treat wastes from the food processing industries. It was considered non-feasible to convey the wastes to Mount Vernon for treatment nor to combine them with domestic sewage.

The communities of Bow, Edison and Blanchard, most of which are in the flood-

plain of the Samish River, have no public sewerage system at the present. Indications are that soils in the area are not suited for the use of septic tank systems for sewage disposal.

In Bayview, there are no sewage facilities existing; domestic waste disposal is accomplished by the use of individual septic tanks. However, the predominant soils of the area are not suited to use as drainfields for septic tank effluent, and it is believed that substantial additional residential development will require a system of public sewerage.

Sewerage from the Bayview Airport is to be sent to a treatment facility in Burlington following completion of the sewer line in 1975, as noted in the Comprehensive Sewerage Plan, completed for the City of Burlington (June 1972) by Stevens, Thompson & Runyan, in order to prepare a comprehensive plan for sewerage collection and treatment facilities serving the city and adjacent areas.

The conclusions and recommendations of the Skagit County Water, Sewerage, and Drainage Facilities Plan and the Comprehensive Sewerage Plan for the City of Burlington both conform with the goals and objectives of this comprehensive plan. These plans are available at the Planning Department Office.

2.9.5 Solid Waste Disposal

The majority of the County is now served by two main landfills and by the end of 1975, the County's solid waste system will be served by three major landfills (Inman, Gibralter and Upriver) and a series of "Green Boxes" to serve the communities and rural areas.

Inman Pit, located approximately 1½ miles North of Bayview Airport will handle an estimated 100 tons per day of industrial and domestic wastes, 80-85% of the county total. Equipment on the site will include a compactor, tire shedder and debris burner.

3 COMMUNITY GOALS AND OBJECTIVES

The two previous chapters of the Comprehensive Plan for the Northwest area have dealt with the Physical Environment and the Developmental Characteristics of the Northwest part of Skagit County. Together, these chapters form the background against which information about the needs of the Northwest area can be examined.

Citizen attitudes about potential land use patterns are addresssed in this chapter. These citizen attitudes provide a tempering for the development of a comprehensive plan.

This chapter of the Northwest area comprehensive plan, is composed of the following sections:

3.1 Level of Analysis

After the information relevant to the physical, developmental, and community facilities characteristics has been gathered and analyzed, it becomes necessary to use that information in accordance with the desires and needs of the community. This section attempts to provide that tempering.

Citizen attitudes were explored by several techniques: simulation exercises, surveys, public hearings, and technical advisory committees. The outcome of these attitude assimilation techniques are discussed in the chapter on Planning Policy Objectives.

3.2 Land-Use Simulation Exercise

3.2.1 Intent

The Land-Use Simulation Exercise is a land-use game which evolved from a need for alternative forms of citizen involvement. It performs a number of functions, helpful both to the planning program and to the general public. Benefits resulting from participation in the simulation exercise include:

3.2.1.1 Expression of public goals through direct involvement in decision making processes.

3.2.1.2 Public awareness of the planning process.

3.2.1.3 Determination of public sentiment toward various land use proposals.

3.2.1.4 Public exposure for planning activities.

3.2.2 Purpose

The purpose of the simulation exercise was to develop the "best" land use pattern for Skagit County based on a population projection of 75,000 people by the year 2000 (an approximate increase of 25,000 people).

The game was played during the development of the 701 Program Report (1972-73). A more thorough analysis of the rules, guidelines, and results can be found in the 701 Report, Comprehensive Land Use Planning Alternatives for the Skagit River Floodplain and Related Uplands. This game is only one segment of the citizen participation element of the 701 Study and the Comprehensive Plan for the Northwest area.

3.2.3 Analysis of Results for the Northwest Area

The game has been played enough times to make some generalizations about the results as they apply to the Northwest portion of the county.

3.2.3.1 Two general developmental patterns are favored: the dispersed pattern where residential, commercial, and industrial uses are spread out over a larger land area; and, the more concentrated or nodal pattern where existing urban services are more highly valued and growth is concentrated about these existing centers except for some dispersal of residential development to view property on Bow Hill and at Bayview.

3.2.3.2 Residential uses in both patterns were out of the floodplain.

3.2.3.3 A high regard for preserving the agricultural resources was demonstrated with additional development allowed only for agriculturally related, industrial and commercial activities.

3.2.3.4 Industrial development, were it to occur in the Northwest area, should be located at Bayview Airport where it is both away from the agricultural areas and out of the floodplain.

3.2.3.5 In general, the rivers and hills were seen as particularly fine assets which the county should develop or preserve. Parks and open space were most often oriented to the Skagit and Samish Rivers, the coast-line, and to non-water oriented areas such as Bayview and Chuckanut Mountain.

3.2.3.6 Sewer systems for the Bow Hill and Bayview areas were reflected as proposals in the extension of various utilities within the area.

3.2.4 Conclusion

The game results have shown a considerable degree of concern for Skagit County's natural beauty, as well as its agricultural economic base.

Probably more important than anything else is the dialogue that arises between the players of the game. They soon become aware of the importance of their decisions and the trade-offs that have to be made when determining land-use policies. Through the game they became familiar with various developmental decisions.

3.3 Citizen Input Survey

3.3.1 Purpose

This survey, in the form of a questionnaire printed in the Skagit Valley Herald, served to direct the development of the alternative land-use plans with regard to recommended lot sizes, distribution of development areas, and promoting development in the upland areas of the county.

3.3.2 Analysis of Results

Compilation and review of the 351 responses (0.6% of county population) by Planning Department staff allows some generalizations to be made as they apply to the planning area. It is believed that the countywide responses are also indicative of attitudes of the Northwest area residents.

3.3.2.1 People like the rural lifestyle of the area.

3.3.2.2 People dislike the lack of career employment opportunities.

3.3.2.3 Sixty per cent (60%) of the respondents did not want a change in the general appearance of the area. Of those who wanted a change, a majority wanted a more rustic appearance. Physical aspects most often cited were the mountains, forested areas, and aquatic environments.

3.3.2.4 Poorly maintained residences and urban clutter rated as the two most unattractive aspects of the area.

3.3.2.5 People seemed satisfied with the type and variety of housing available. Low income housing was not favored, except for the elderly.

3.3.2.6 Approximately sixty-three per cent (63%) felt that future residential development in the floodplain should be curtailed.

3.3.2.7 The people want a wide distribution of lot sizes throughout the county. The preferred size was a split between a 1/4 acre lot and a one or more acre size lot. Also, respondents favored a 30 acre minimum lot size in the agricultural zone.

3.3.2.8 73.5% did not feel floods represented a serious threat to them personally. However, 50% are in favor of increasing flood protection, but were not agreeable to sharing the expenses; 39% agreed that the costs should be borne by those benefitting from the protection.

3.2.9 Agriculture was very important to 83% of the respondents. A majority (57%) were in favor of policy and standards for preserving farm land and a greater number feared that this resource could be threatened by urban related speculation and development.

3.3.2.10 Outdoor recreation qualities rated high with the respondents with a majority favoring the development of a moderate recreation/tourism program.

3.3.2.11 Regarding industrial development, all answers exhibited a strong preference for industry that did not conflict with the beauty and lifestyle of the area.

3.3.3 Conclusions

The Comprehensive Plan for the Northwest Area should protect the agricultural lands, strive to protect the rural atmosphere, and expand indoor and outdoor recreation facilities, while allowing for reasonable, well-planned industrial and commercial growth.

3.4 Technical Advisory Committees

Technical Advisory Committees, organized and utilized during the 701 study, involving various areas of expertise (natural resources, community development, regulatory and personal protection, transportation and utilities and cultural and personal services) were formed to aid and advise the planning staff. The members included experts in various fields, as well as interested local citizens.

The members of the Natural Resources Committee, the Transportation and Utilities Committee, and the Cultural and Personal Services Committee, were of particular value in examining such questions as the effects of certain developments upon fish, wildlife, and the environment in general, alternative means of flood protection, alternative road and highway alignments, and various future social and cultural needs.

Although the meetings held were quite fruitful, the overall success of the initial technical advisory committee approach was rather disappointing. Time allotted for this function was not sufficient to complete a thorough investi-

gation. However, the success of both the Land-Use Simulation Exercise and the opinion survey more than compensate for any deficiencies in the technical advisory approach to public involvement.

3.5 Citizens Groups and Public Hearings

Further citizen input and involvement has been enhanced by the formation of a Citizen Advisory Committee and by recording attitudes and concensus at public hearings.

The present Citizens Advisory Committee has been meeting monthly to discuss planning goals and objectives and developmental models and patterns for the Northwest area and other projects. Their input has been invaluable in aiding the Department staff on establishing policies and recommendations for the Comprehensive Plan.

All proceedings at public hearings including citizen comments and opinions are recorded and reviewed by the Planning Department staff. This input has been likewise correlated with findings of the Land-Use Simulation Exercise, the input questionnaire, the technical advisory committees, and the citizens committee to form the basis for policy making and planning recommendations for the Northwest Comprehensive Plan.

3.6 Planning Policy Objectives

After tabulating and reviewing the citizen input from the preceding techniques, the staff developed the following planning policy objectives. These objectives have formed the basis and rationale for the alternative models and subsequent alternative plans discussed in the following sections.

3.6.1 These planning policy objectives are:

3.6.1.1 Provide and maintain lifestyles which best preserve the natural beauty of the area, minimize public investments, and which allows private investment the greatest possible latitude within the interests of community health, safety, and welfare.

.6.1.2 Preserve the agricultural base of the area, so as to retain both the primary economic base and the rural atmosphere of this area.

3.6.1.3 Protect agricultural lands from flooding to a 20 year frequency.

3.6.1.4 Protect existing urban areas from flooding to a 50 year frequency.

3.6.1.5 Exclude further development in the agricultural lands for economic, safety, and aesthetic reasons; and conversely, to encourage the location of future development in suitable well-planned uplands areas.

3.6.1.6 The location and quantity of land designated for urban related uses, i.e., residential, commercial, and industrial, should be based upon estimates of present and future needs, environmental impact, various private and public economic criteria, and the resulting social ramifications.

3.6.1.7 Provide the public services required to fulfill state and federal regulations in a manner compatible with the general attitudes of the people of the Northwest area.

3.6.1.8 The coordination of urban services should be handled on a metropolitan level to insure efficiency and economy of operation, and to provide specialized regional facilities.

3.6.1.9 Municipal, public, quasi-public, and private standards, plans, regulations, and efforts should be coordinated with those of the area, the county and the region, realizing that successful integration of development cannot be accomplished without coordination of efforts.

3.6.1.10 Future municipal annexations by the City of Burlington should consider such elements as flood problems, drainage, topography, soils, septic suitability, population, the ability of the city to provide proper sewer and other utilities and services, regional land-use policies, and future land use ramifications of the annexations.

4.1 Level of Analysis

The evaluation of alternatives has been done at two levels of analysis. The broadest level is a comparison between uplands and lowlands land-use models. These models were developed for the downriver area and more urban areas of the Skagit Region. They are directly applicable to the Northwest Planning area. The second and more specific level of analysis is of four alternative land-use plans of the downriver area. The alternative plans are also directly applicable to the Northwest Planning area.

4.2 No Comprehensive Plan

The alternative of not having a comprehensive plan is not applicable in this instance, as the Revised Code of Washington requires comprehensive plans. In the instance of Skagit County and the Northwest area a Comprehensive Plan already exists for these ares.

4.3 Uplands vs. Lowlands Land Use Models

In the broad set of alternatives, the major comparison made is between the cost of developing in the floodplain versus the cost of developing in naturally flood proof areas.

The uplands and lowlands land use models were developed to facilitate an analysis of the desirability of each form of development.

Each of these land-use models is described below, while the main concentration is directed to the entire downriver area, emphasis has been placed on the Northwest Planning area wherever practicable.

4.3.1 Uplands Land Use Model (Alternate A)

4.3.1.1 Goals & Objectives

4.3.1.1.1 To maintain existing levels of flood protection for all areas in the floodplain.

4.3.1.1.2 To concentrate development in areas free from danger of flood and high water table. (i.e., uplands)

4.3.1.1.3 To protect the agricultural economic base of the county.

4.3.1.1.4 To allow for reasonable development in accord with population growth while maintaining the general rural atmosphere of the county.

4.3.1.1.5 To plan for existing cities to carry the major portion of population growth in areas away from the floodplain. (This is economically important due to the

4 ALTERNATIVE LAND USE MODELS

The previous sections of this plan have dealt with the various elements that comprise a comprehensive plan. This section is an attempt to deal with the major alternatives available for land use in the Northwest area. This is a hypothetical discussion of these alternative forms of development.

The major comparison made is between the cost of developing in the floodplain versus the cost of developing in naturally floodsafe areas.

The alternatives discussed in this section were developed to facilitate an analysis of the desirability of each form of development.

This section is composed of the following chapters:

4.1) Level of Analysis
4.2) No Comprehensive Plan
4.3) Uplands vs Lowland Land Use Models

proximity of various utilities and services).

4.3.1.2 Land Use Patterns

.3.1.2.1 Floodplain Management

a. Provide and maintain the degree of flood protection attained to date.

.3.1.2.2 Residential development patterns:

a. The main areas of growth would be centered in those parts of the larger cities which are out of flood danger.

b. Other more "rural-type" development would be scattered throughout the upland areas in much the same manner or density as presently occurs.

c. Other areas of low density residential development include portions of Bow Hill, Samish Island, Bayview, and along parts of the Samish River.

4.3.1.2.3 Commercial development:

a. Commercial development for the Burlington area would consist of expanding present facilities out of the floodplain.

b. Smaller neighborhood commerical areas would be necessary according to certain patterns of growth.

.3.1.2.4 Industrial development:

a. The Bayview Airport Industrial Park, if properly developed, could add extensively to the regions present industrial lands. Its location above the floodplain also adds to its overall feasibility.

4.3.1.2.5 Agriculture and pasture:

a. All land on the floodplain presently used for agriculture and pasture purposes should remain as such to assure the continuation of this economic activity and to deter the possibility of great losses of life and property due to flooding.

4.3.1.2.6 Transportation

a. I-5 should continue to be upgraded.

b. SR 20 should continue to be improved.

c. The development of a limited access highway with only two interchanges at Bayview and the Swinomish Channel, should continue.

d. A connector road between Bayview Airport and the proposed SR 20 Project be developed. (Possible upgrading of existing SR 537 should occur).

4.3.1.2.7 Community Facilities

a. Parks - besides the continued maintenance of existing parks, certain additional areas should be set aside as park or open space.
   1. Part of Bow Hill north to Chuckanut should be used as open space park areas.
   2. A narrow strip around Bayview Ridge (connected to Bayview State Park) should be developed for a trails park. This would serve as a buffer between the proposed industry and other incompatible existing uses, as well as provide a different type of recreational opportunity.

b. Schools
   1. The proper educational facilities should be provided in proportion to the growth of certain areas. Maintenance and expansion of existing facilities is also important.

c. Utilities and other services (fire, police, hospitals, community facilities, etc.)
   1. Higher density around Burlington is predicated on the fact that the extension of urban utilities and services is desireable in some areas.
   2. Likewise, the areas depicted for lower density were predicated on the limiting features of soils, slope, land value, and the lack of sewers and other urban-type facilities.
   3. Some areas depicted for lower density actually lie in a state of transition, they could proceed to a higher density, given a certain amount of growth and availability of urban services. The areas in the Northwest area that most likely fit into this unstable transition stage are: Bow Hill and parts of Bayview.

4.3.1.3 Uplands Model Extension

4.3.1.3.1 Expansion of the Uplands Model far into the future depicts some of the ramifications of this type of development.

a. Agriculture would remain the dominant activity on the floodplain due to its more resistant characteristics with regard to flooding.

b. Most development has occurred out of the danger of flooding.

4.3.5 CAPITAL COST INFORMATION OF ALTERNATIVE LAND USE MODELS

4.3.5.2 Uplands - Downriver Area

Water	
Lines and pumps	$ 5,640,500
Sewage	
Lines	4,755,700
Secondary Waste Treatment at: Mount Vernon, Burlington, Sedro Woolley, Bayview, Bow/Alger, LaConner, Big Lake	18,308,200
Package Plants at: Bayview, Clear Lake, Samish Island, Conway Pleasant Ridge	2,209,800
Drainage	
Lines	3,641,900
TOTAL	$34,556,100

Additional Costs to be Considered

(Information was not available in time for the computing of costs for the two alternative models)

1. Hospitals
2. Schools
3. Libraries
4. Police Protection
5. Fire Protection
6. Community Centers

c. The most likely center of concentrated economic growth would be the city of Burlington.

d. Areas likely to evolve into higher density situations (given the expenditures of proper facilities to allow such development) would be Bayview and possibly the Bow Hill/Alger areas.

e. The lighter forms of residential use are seen as a result of the continuation of the rural lifestyle of the county as a whole.

f. Most of the industrial activity would also take place out of the floodplain (i.e., Bayview Airport).

4.3.2 Lowlands Land Use Model (Alternate B)

4.3.2.1 Goals & Objectives

4.3.2.1.1 To give 100 year flood protection, thus allowing more diversified development of the low floodplain areas.

4.3.2.1.2 To use existing facilities such as roads, water lines, and sewer lines in determining the pattern of development.

4.3.2.1.3 To develop the lowlands according to market and other economic demands.

4.3.2.2 Land-Use Patterns

4.3.2.2.1 Flooplain Management

To attain the amount of flood protection needed for a lowland pattern of development:

a. The proposed route of Highway 20 (Alternative C) would act as a levee along the Skagit between Mount Vernon and Burlington.

b. Extensive levee and channel improvements near the cities, and especially south of the proposed Avon Bypass.

c. The Avon Bypass should be reactivated and constructed to expand the level of flood protection for the delta area of the Skagit River.

4.3.2.2.2 Residential Development Patterns:

a. The existing road network should be used for single family residential development.

b. Subdivision type development should locate near existing cities or interconnecting roads.

c. The area adjacent to Avon, south of the proposed bypass, is suitable for both subdivision and roadway types of residential development.

d. This is also true for the area west of Burlington.

e. The cities themselves will actually account for a major percentage (approx, 40%) of the residential growth.

4.3.2.2.3 Commercial Development

a. A new shopping complex should be constructed near the intersection of the Wilson Road and the freeway. This would service the residential areas west and north of Burlington. Development should be in proportion to the needs of these areas.

b. An increase in the commercial area between Burlington and Sedro-Woolley on SR 20 should be provided.

4.3.2.2.4 Industrial Development

a. Industrial development should be encouraged south of Burlington.

b. The proposed Bayview Industrial Park should be developed.

4.3.2.2.5 Agriculture and Pasture

a. Agricultural land should be retained.

4.3.2.2.6 Transportation (Proposed)

a. SR 20 (Anacortes to Sedro-Woolley Alternative C) should be limited access.

b. Other secondary roads should be improved to handle increases in volume caused by residential, commercial and industrial development in that area.

4.3.2.2.7 Community Facilities

a. Parks

1. Burlington Hill should be used as a park.
2. The area along the proposed Avon bypass should be developed as a park.
3. A strip of land along Bayview Ridge should be saved as a trails park. This will also act as a buffer between the industry and other uses.

b. Schools - additional schools must be provided in the areas of heaviest residential growth.

c. Utilities - proper adequate utilities must be provided to all aeas of potential development. They may easily parallel existing roadways.

d. Fire, police, hospitals, community facilities, etc. - according to population locations and densities.

4.3.2.3 Lowlands Model Extension

4.3.2.3.1 Expansion of the lowlands model into the future depicts some of the ramifications of this alternative.

a. With the $200 million required to floodproof the river, all development would have to take place in the lowlands to approach a justification of the expenditure in the region.

b. As a result, the agriculture land in the floodplain will be infiltrated by strip residential development along the roads. This will gradually evolve into high intensity residential areas expending out from the cities.

c. The commercial areas of the cities will also expand outward due to the same economic pressures of full flood protection.

d. This situation leaves the development in the uplands in a state of "Limbo". Economically speaking, expenditures on new residential, commercial, or industrial developments and the services needed for their proper expansion would not be feasible, in view of the money already spent on flood proofing.

e. This is very true of industry, specifically the Bayview Airport. The Airport, along with everything else, would have to be located in the area for which the money was spent. This would cause a great increase in industrial activity in and out from the existing cities.

f. Development of a superport facility would be justified because:

1. The spoils from the dredging of the Avon Bypass could be used as fill for the port facility.
2. The impact of a successful facility would cause a demand for growth and expansion of the floodplain to support its existence.

4.3.3 Feasibility Statement - Lowlands Model

4.3.3.1 The high cost of flood protection greatly exceeds the potential value of developing the lowlands.

4.3.5 CAPITAL COST INFORMATION OF ALTERNATIVE LAND USE MODELS

4.3.5.1 Lowlands - Downriver Area

Water	
Lines and pumps	$ 5,093,500
Sewage	
Lines	4,777,400
Secondary Waste Treatment at: Mount Vernon, Burlington, Sedro Woolley, Bayview, and LaConner	18,137,800
Package Plants at: Bayview, Samish Island, Big Lake, Conway, Clear Lake	1,873,400
Drainage	
Lines	4,369,600
TOTAL	$34,251,700
Flood Control - Alternative "A" of Puget Sound and Adjacent Water Study for 100 year protection	
Levee - Improvements	$ 10,080,000
Sedro Woolley Levee	4,320,000
Hamilton Levee	4,032,000
Avon Bypass - 60,000 c.f.s.	41,616,000
Sauk Dam	184,000,000
	$244,048,000
Plus water, sewage, and drainage	34,251,700
TOTAL	$278,299,700
Additional Flood Control Projects	
Avon Bypass - 100,000 c.f.s	$ 52,272,000
Nookachamps Levee - 135,000 c.f.s.	3,600,000
Upper Baker Dam - Increase Storage	133,000*

* Annual power losses in 1968 dollars

4.3.3.2 Population projections indicate insufficient growth to justify the expenditure for this type of protection.

4.3.3.3 Encroachment of development into agriculture land while allowing for some personal gain, is an overall liability to the general public:

a. Because it destroys the agricultural economic base by which this county prospers.

b. Because the high water table and poor septic suitability soils would still exist, causing extra dollars in utility provisions and maintenance.

c. Despite immense flood control spending, the possibility of flood damage still remains.

d. Increased development could cause disruption of ground water recharge, affecting water supplies for irrigation of remaining agriculture land.

e. The pocketing and enclosure of agriculture would cause growers to lose the economy of scale. And vice versa-the developers could only meet costs by filling in the strip type development, thus pushing out the agricultural land completely.

f. Extensive development could cause pollution of the ground water.

g. Development would require development of sewer systems since the of the area to use septic tank systems would be greatly exceeded.

4.3.3.4 The Padilla Bay Port Facility, a necessity for lowlands development, would be unlikely because of the number, location, and quality of other port facilities already existing in the Puget Sound region.

4.3.4 Summary Comparison of Alternative Land Use Models.

The evaluation of the uplands versus the lowlands alternative land use plan is primarily an evaluation of the economic demands required to flood-proof the river delta areas, as compared to the total potential for developing the lowlands area.

The analysis of the data and conclusions in the Physical Characteristics, Flood Characteristics, Developmental Characteristics and Community Facilities Sections of this report all point to an uplands development pattern.

The Land-Use Simulation Exercise, the citizens input questionnaire results,

the citizens advisory committee, and the public hearing process all advocate the use of an uplands form of development.

Additionally, the existing Skagit County Comprehensive Plan adopted by the Skagit County Board of Commissioners in 1968, established a precedent for upland development trends.

5 ALTERNATIVE LAND USE PLANS

Alternative land use plans have been developed to reflect the various aspects of the physical environment, the developmental characteristics and citizen attitudes. These plans are more detailed in designating land use patterns than the plans in the previous section.

This section develops one of four upland land use plans, the "Composite Plan", for the Northwest area. By various means of determination, the "Composite" land use alternative has been designated as the model of upland development to be followed. For a more indepth analysis of the other three land use plan alternatives, consult the 701 text entitled "Comprehensive Land Use Planning Alternatives for the Skagit River Floodplain and Related Uplands".

From this set of alternatives, a Comprehensive Plan for the Northwest area has been developed.

This section contains the following chapters:

5.1) Level of Analysis
5.2) Methods Used to Develop Alternatives
5.3) Planning Policy Constants
5.4) Composite Plan

5.1 Level of Analysis

The set of alternative land use plans are more specific than the comparison of uplands versus lowlands forms of development in the preceding section, and are portions of possible alternatives for the downriver area of Skagit County. As in the preceding section, emphasis has been placed upon the Northwest Planning area whenever possible.

The analysis of these alternative land use plans, especially the Composite Plan, was used to determined the recommended "Northwest Comprehensive Land Use Plan".

5.2 Policies Used to Develop Alternatives

The four alternatives project various land use patterns which the Northwest area could assume in planning to the year 2000 and beyond. The amount of land shown in each land use classification is greater than the actual projected need in all cases. This was done to prevent the resulting Northwest Comprehensive Plan from becoming overly restrictive and hence possibly artifically inflating land values.

It is also recognized, however, that overemphasizing the projected need for any one land use category produces a false sense of higher valuation for many landowners. This situation might also tend to spread investment resources too thin. This demonstrates the necessity for scaling land-use patterns when developing alternative plans.

5.2.1 Method for Determining Densities

In computing the areas required for residential use and the subsequent population loads of each plan the following general factors were used:

	High Density	Low Density
Lot Size	.25 - 1.00 Acre	1-5 Acres
Average Lot Size	.50 Acre	2.5 Acres
Average Family Size	3.2	3.20
Housing Units Per Acre	2.0	.4
Persons Per Acre *	6.4	1.28

* Average Family Size x Units/Acre = Persons/Acre

5.3 Planning Policy Constants

The following land-use planning recommendations are felt to be of great significance to Regional planning regardless of which alternative land-use plan is chosen. Any of the strategies leading to a Comprehensive Plan for the Skagit Region should adopt these conclusions and recommendations.

5.3.1 General Recommendations and Conclusions

5.3.1.1 Existing agricultural and pasture lands in the floodplain should be protected from encroachment by other land uses.

5.3.1.2 The Open Spaces Taxation Law of 1970 & 1973 are viable and popular land-use control methods within Skagit County and should be retained.

5.3.1.3 Existing urban areas should be protected from flooding to a 50 year frequency, either by means of dikes, or by additional upriver storage.

5.3.1.4 Future commercial and industrial developments should concentrate in the uplands areas, away from the prime agricultural/ pastoral lands and out of the danger of flooding and the seasonal high ground water table.

5.3.1.5 Future urban expansion, especially residential, should focus on adjacent upland areas.

5.3.1.6 Expansion of city limits within flood hazard areas should not be proposed unless protected from floods to a 50 year flood frequency level.

5.3.1.7 The unincorporated upland areas with good physical characteristics are suitable for light residential use. The degree to which these areas are utilized varies with each alternative plan.

5.3.1.8 Some unincorporated areas within the floodplain are shown in a particular use category because they presently exist as such. Expansion in some of these areas is not recommended.

5.3.1.9 The areas shown as high intensity residential should have all the urban services including sewer systems. The light residential areas should have septic tanks or package plants.

5.3.1.10 The county, as well as the various municipalities, should adopt specific design standards for industrial parks.

an encroachment into agricultural land, beginning with the back logging of development adjacent to the proposed Cook Road alignment.

g. Two alternatives for SR 20 for the City of Burlington better than those previously mentioned, are available. One would be a southerly route close to the river, which could act as a dike to provide flood protection for the city, would provide a good view of the river for tourists, use less prime agricultural land, and would not cut through the city's heart. The other alternative would be a route around the northern base of Burlington Hill, joining with the existing alignment at some point east of the hill. This would create a very tangible northern boundary for the city, avoid the heart of the city, allow expansion of the city to the north, and not encroach on the agricultural land. It would have to be a firm policy of the city, however, to limit the expansion of any use other than agriculture/pasture on the north side of this alignment.

h. The City of Burlington should study the future potential of its central business district and adhere to the plan adopted.

i. Commercial expansion should be located in the central business district south of Gages Slough between Interstate 5 and Old 99, and in cluster form at major highway interchanges.

j. Industrial expansion should occur south of Gages Slough between Old 99 and the Burlington Northern tracks.

k. The use of Gages Slough as a buffer between the industrial/commercial activities and the residential area should be explored.

l. The area south of the central business district between Spruce Street and the Burlington Northern tracks should be developed as an industrial park, using specific design standards.

m. Wooded areas and green-space along the Skagit River and Gages Slough should be preserved as park or open space.

5.3.2.2 *Burlington/Bayview Proper (excluding the city)*

a. All agricultural/pastoral land should be maintained as such.

b. Regardless of the plan to be adopted, the Bayview Airport area should be utilized as a regional industrial park with specific design standards

5.3.1.11 New commercial development, especially along major arterials and highways should not be of the "strip" type. Highway commercial uses should be located in "cluster" form at strategic interchanges.

5.3.1.12 The county and various municipalities should adopt specific design criteria for commercial districts.

5.3.1.13 Five years after the adoption of a Regional Comprehensive Plan, the land zoned for industrial use on the floodplain that has not been utilized for industrial purposes, should be backzoned to its existing use.

5.3.1.14 The Shoreline Master Plan and River Basins Plan will be integrated into this plan at the time of their completion.

5.3.1.15 Planned unit developments could be used to create cluster neighborhoods in new residential areas, if possible.

5.3.2 Land-Use Recommendations

5.3.2.1 The City Burlington

a. Burlington's major growth areas are along the river out of the floodway and on Burlington Hill.
b. Burlington should adopt a policy of "filling-in" to its existing boundary.
c. The task of providing sewers in the Burlington Hill area should be pursued to allow for a planned residential development.
d. Burlington should not annex west of Interstate 5, except for the Markwood area. This would cause development pressures upon the existing agricultural lands besides presenting a large flood protection problem.
e. The spots of residential land along the existing SR 20 Highway east of Burlington represent existing usage only and should not be considered as a viable growth area for Burlington.
f. The new State Route 20 should not be routed south of Burlington Hill or farther north at Cook Road. The former alternative would in effect cut off the Burlington Hill area (the major flood safe area for residential expansion in the city) from the rest of the city. Also, depending upon traffic volumes, the noise level caused by the proximity of the Hill may reach levels beyond the norm. The latter alternative would cause

applied. The area between the hill and the rail lines should be considered as industrial park reserve, to be used only after the full utilization of the primary airport area.

c. The wooded areas surrounding the airport site should be kept as a buffer zone between the industrial park and the residential areas.

d. The recommendations and conclusions of the airport study conducted by Lee Johnson and Associates for the Port Authorities, are adopted by reference.

5.3.2.3 Bow/Alger/Samish Proper

a. The prime agricultural lands should be protected from encroachment.

b. The small communities existing on the agricultural floodplain should not expand further into those lands

5.3.3 Community Facilities Planning Constants

a. Plans for new utilities (sewer, water, solid waste) should be coordinated on a regional basis to attain more efficient, equitable, and cheaper levels of service throughout the community.

b. The use of package plant sewage systems should be utilized where possible in the rural areas of the county. Efficient systems at a reasonable price would greatly facilitate residential development in the outlying areas.

c. The Urban Arterial Plans and proposals of the county and the various municipalities are recommended for adoption where they conform to the provisions of the alternative land-use plans. The Urban Arterial networks combined with the existing arterial system provides an excellent circulation pattern for the area.

d. Library service within the county should become coordinated at the regional level to assure a more equitable, cheaper, efficient system throughout the county. This could also be accomplished through a statewide library system. Once these are accomplished, a more comprehensive service plan can be developed.

e. The various school districts which have not already prepared a comprehensive plan should do so. These plans, when completed, will be adopted by reference in the Comprehensive Regional Plan for Skagit County.

f. The Planning Department will continue to give assistance to the various school districts to aid them in their planning efforts.

5.4 Composite Plan

5.4.1 Orientation of Composite Plan

This land-use plan assumes some portions of each of the other alternatives to produce the widest range of lifestyles for the people of the areas. It allows an ample opportunity for urban type growth, but still has a substantial degree of dispersed rural type development.

5.4.2 Population Projection - Downriver Area

The population pattern is also more evenly dispersed between urban and rural with 44,600 people living within the higher density perimeters of the cities and 18,400 people in the various outlying areas. This creates a population level of approximately 63,000 people, which falls somewhere in between those of the other alternative plans..

5.4.3 Composite Plan Costs - Downriver Area

Water	$ 8,345,100
Sewer	8,412,923
Roads	12,380,260
Schools (See Educational Facilities and School Cost Estimates of the 701 Study)	
Libraries	669,981
Police Protection	986,316
Parks (See Parks and Open Space Element of the 701 Study)	
TOTAL	$30,794,580

For further details see chapter on Developmental Costs in the 701 Study.

5.4.4 General Conclusions and Recommendations

a. The planning policy constants outlined earlier are basic to this alternative land-use plan.

b. Future development would be directed into the uplands areas of the existing municipalities.

c. There would be a significant degree of low density development in areas where the physical characteristics and the desireability facilitate development.

d. This alternative land-use plan combines some of the features of each of the other three alternative plans in terms of dispersal of some residences and the maintenance of the vitality of existing commercial centers.

5.4.5 Urban Areas Recommendations

5.4.5.1 Burlington

a. The adjacent agricultural land would be retained for farming activity.
b. The numerous vacant or light agricultural areas within the existing corporate boundaries would be filled in with medium-to-high density residential and commercial services.
c. Industrial development would occur in and around the southerly portions of Burlington.

5.4.6 Sub-Area Recommendations

5.4.6.1 The physically desireable areas on Bow Hill and Colony Mountain would be well suited for light residential activity.

5.4.6.2 The land areas around the perimeter of Bayview Hill would be used for light residential activity.

5.4.7 Community Facilities

a. Community facilities would be developed on a regional basis. Each existing community would provide the variety and type of service required by the population within their respective service areas.
b. The recommended goals and objectives in the preceding section on community facilities would apply to this alternative land-use plan.
c. The cities would expand their present service levels as the population grows.
d. Police and fire protection would increase their respective service capabilities to serve both urban high density areas and rural low density areas.
e. The schools, parks, and health services would be provided as specified in the Community Facilities Section of the Nodal Plan.

APPENDIX A

TERRESTRIAL WILDLIFE

OF

WESTERN SKAGIT COUNTY

6 NORTHWEST AREA COMPREHENSIVE PLAN

This section contains the Comprehensive Plan for the Northwest Area of Skagit County.

All of the information in the previous sections has been evaluated in the development of this Comprehensive Plan.

This section is composed of the following chapters:

6.1) Derivation and Orientation of Plan
6.2) Areas Designated for Development
6.3) Density & Intensity of Development
6.4) Population Projections
6.5) Estimated Costs of Plan
6.6) Plan Policies

6.1 Derivation & Orientation of Plan

6.1.1 Derivation

This land use plan is derived basically from the Composite Land Use Alternative (Section 5.4.1). The primary characteristics of the Composite Plan have been retained, however, additional areas designated for residential and commercial land uses have been added. These additional land use areas were developed to accommodate a general public demand for substantial growth areas within an uplands development plan. This public demand has been expressed in numerous public hearings on land use control matters.

The plan attempts to use to advantage the beneficial aspects of the physical environment; areas have been designated for development where slope, soils, geology, and septic suitability are favorable for various forms of development, and where those areas occur out of the floodplain.

This plan is an amendment to earlier comprehensive planning efforts. The plan has refined earlier land use development trends, and by means of this refinement, has substantially reduced and redistributed the amount of land area designated for various forms of development. This was done to reflect the expressed desires of the community and because projections do not demonstrate a need for a superabundance of development designated areas.

6.1.2 Orientation

The primary orientation of this plan is to preserve and, where possible, expand resource productive areas; i.e., agriculture, forestry, fisheries. The secondary level of orientation is to preserve the lifestyle currently enjoyed in Skagit County while leaving sufficient areas available for intense developments that are buffered from the resource productive and rural living areas. The third significant orientation of the plan is to provide a pattern of development in which the public costs associated with community growth can be controlled.

The reduction in land area available for development will produce continued use of resource productive areas, rather than a non-productive holding for development of those areas not suitable or needed for the continued growth of the Northwest area.

The redistribution of land area designated for development is a reflection of current community standards and provides an opportunity for development in these areas that has not occurred in areas designated by earlier comprehensive planning efforts.

6.2 Areas Designated for Development

6.2.1 High Density Residential

This plan provides an extremely wide range of land uses for the current and projected population of the Northwest area. Within and immediately adjacent to the major urban area, Burlington, this plan recommends high density single family residential densities and multi-family residential densities, when served by both sewer and water systems.

6.2.2 Low Density Residential

The lower density rural residential areas are located primarily north and west of the Burlington area and would use the public and commercial services of the urban area. The rural residential areas are proposed for Samish Island, and the area surrounding Bayview.

Additional low density areas are designated in the rural open space areas on Colony Mountain and Bow Hill, areas on Bay View Ridge, and a small area in the vicinity of Allen.

6.2.3 Commercial and Industrial

The urban area of Burlington should continue to supply the vast majority of commercial services for the Northwest area and most of the other industrially oriented activity.

Bayview Airport, owned by the Port of Skagit County and Port of Anacortes, and the land directly south to SR 20 have been designated as suitable for heavy industrial activities.

Highway service commercial is designated at major intersections of the interstate route.

6.2.4 Agriculture Forestry & Fisheries

The agricultural areas are located primarily north, east, and west of Burlington with almost all within the 100 year floodplain of the Skagit and Samish Rivers.

The forestry area is primarily on Chuckanut Mountain with parts of the designation on Colony Mountain.

The Skagit and Samish Rivers are designated to retain their existing qualitative and quantitative levels, so as to preserve the excellent fisheries provided in the Skagit and Samish River Basins.

6.2.5 Period of Plans Effect

The plan projects land use patterns to the year 2000 and beyond. The amount of land shown for each land use classification is greater than the projected demand. However, the land projected is scaled so as to not spread investment resources to thin, and hence lower the overall quality of development for the Northwest area.

This plan provides an ample opportunity for urban type growth, but still has large areas available for dispersed rural residential development. The areas projected for higher densities of development are also projected to receive the level of service that acccmpanies an urban situation, while the rural residential areas would not receive a high level of public services.

6.3 Densities and Intensity of Development

6.3.1 Residential

In computing the areas for required residential, commercial, industrial, and public land uses, the following general densities are projected.

Urban densities are approximately three dwelling units per acre for single family and ten dwelling units per acre for multi-faimly. In rural residential areas the densities are one dwelling unit per acre, either single family or townhouse. The rural open space density is one dwelling unit per five acres. The residential density for agricultural areas is one dwelling unit per 30 acres. In forestry areas the residential density is one dwelling unit per 40 acres.

6.3.2 Commercial

The intensity in commercial areas is related to the areas of service and nature of the operation. Shopping centers and neighborhood commercial activities are located near arterial and secondary roads of sufficient capacity to accommodate the additional generated traffic, turning movements, ingress and egress, as well as through traffic.

Indiscriminate strip commercial development along thoroughfares is discouraged in this Comprehensive Plan for the Northwest area.

6.3.3 Industrial

The land areas allocated for industrial development are proportionate to the demand. Over allocation of industrially designated land has been avoided as being wasteful of valuable land. The land designated industrial has been chosen to give industrial expansion the choice of either leasing land from a local entity, the Port of Skagit County, or having land available for private purchase. Approximately 83% of the land designated as industrial in the Northwest area is administered by the Port of Skagit County, and/or Port of Anacortes.

While not designated for any specific areas, it is the strong recommendation that industrial parks, which can use the physical environment to advantage, should be encouraged for the industrial designated areas.

Areas shown to contain commercial quantities of mineral or material deposits have been reserved for use and need a Surface Mining Permit from Department of Natural Resources and a Conditional Use Permit from the Planning Department for their operation.

6.6.4.2 A buffer zone should be maintained along I-5 on Bow Hill to the northern county line.

6.6.4.3 The northwestern tip of Samish Island should be reserved for a future park location.

6.6.4.4 Bay View State Park should be expanded.

6.6.4.5 The park areas designated on the Airport property should be developed by the Port of Skagit County and the Port of Anacortes. Such areas could be utilized for a variety of recreational experiences.

6.6.4.6 Chuckanut Drive should be maintained as a scenic route.

6.6.4.7 Wooded areas and green space along the Skagit River near and adjacent to the City of Burlington should be preserved as a park or open space.

6.6.4.8 The Planning Department should develop a Recreational Trails and Open Space Plan for Skagit County. This plan would identify and list the present and potential sites for future recreational activities and incorporate a variety of areas for utilization by the varied pursuits of the recreating public.

6.6.5 Community Facilities

6.6.5.1 Plans for new utilities (sewer, water, solid waste) should be coordinated on a regional basis to attain more efficient, equitable, and cheaper levels of service throughout the community.

6.6.5.2 The use of package plant sewage systems or other new technology systems should be utilized where possible in the rural areas of the county. Efficient systems at a reasonable price would greatly facilitate residential development in the outlying areas.

6.6.5.3 Library service within the county should become coordinated at the regional level to assure a more equitable, cheaper, efficient system throughout the county. Once accomplished, a more comprehensive service would develop.

6.6.5.4 The various school districts which have not already prepared a comprehensive plan should do so. These plans, when completed, will be incorporated into the Comprehensive Regional Plans for Skagit County. Burlington-Edison School District #100 should develop and adopt a Comprehensive Plan.

6.6.5.5 The Urban Arterial Plans and proposals of the county and the various municipalities are recommended for approval and endorsement where they conform to the provisions of this Comprehensive Plan.

6.6.5.6 The Open Space Recreation and Trails Plan in other sections of this report are recommended for adoption to expand the available level of community facilities in the planning area.

6.6.5.7 The Comprehensive Plan adopts by reference the recommendations of the four studies completed under the auspices of the Skagit County Development Association in 1972. (These recommendations are summarized in the Economic Base Analysis Section of this report.)

a. Skagit County: A Strategy for Environmental Protection and Economic Development, Urban Land Institute, Wash. D.C.
b. Skagit County Agriculture: An Economic Mainstay, Department of Agriculture, Washington State University
c. A Tourist and Recreation Strategy for Skagit County, Northwest American, Seattle,
d. Skagit County Industrial Site Survey, The Latourell Associates, Seattle.

6.6.5.8 The Comprehensive Plan for the Northwest Area approves and endorses the objectives of the Skagit County Parks and Recreation Comprehensive Plan.

6.6.5.9 The Comprehensive Plan for the Northwest Area approves and endorses the objectives of the Skagit County Urban Arterials Board on Federal Aid Secondary.

6.6.5.10 The Comprehensive Plan for the Northwest Area approves and endorses the recommendations of the Skagit County Department of Emergency Services Plan (1972).

6.6.5.11 The Skagit County Planning Department solicits recommendations regarding health service delivery from the Comprehensive Health Planning Council of Whatcom, Skagit, Island and San Juan Counties and recommends that a Comprehensive Health Plan be prepared and adopted as soon as possible.

6.6.5.12 Full governmental and law enforcement agency participation in the minimum recruitment and training standards of the Washington State Law Enforcement Training Commission will be encouraged. A regional goal will be that by 1974 all law enforcement personnel will have satisfactorily completed a basic training program prescribed by the Washington Law Enforcement Officers Training Commission.

6.6.5.13 County and local police jurisdiction are encouraged to devise "back up" programs to assist all agencies in participating in the minimum standards training program.

The following key is necessary to explain the symbols used in the body of Table B-1. They are somewhat complicated but will enable the user to determine the abundance, seasonality, distribution, and habitat preference of the species included. The bird list and key were taken from Wahl and Paulson[6] and Larrison and Sonnenberg[1].

BREEDING: * - known to breed regularly in the state

REGIONS (left set of columns):

C - coast; includes all coastal and estuarine areas
W - west of Cascades in lowlands (to 3000' elevation)
M - mountains (above 3000')

SEASONALITY (in columns under REGIONS):

R - resident; present all year, although abundance may vary seasonally
S - summer visitor only (includes spring and fall)
W - winter visitor only (includes fall and spring)
M - migrant only (spring and fall)

HABITATS (right set of columns):

SW - open saltwater. This includes not only the outer coast but all straits, bays, and estuaries of the state.

RS - rocky shore. Areas where the coastline is near vertical affording little habitat for shorebirds, except for species that forage on rocks exposed by low tide.

SS - sandy shore. This includes flat sandy areas and mud flats along the coast and Sound.

FW - freshwater (including marsh and shore). This includes marshes, alkaline ponds, lakes, and acid bog ponds.

WC - wet coniferous forest. This includes the forest areas of the western hemlock and Pacific silver fir vegetation zones.

BF - broadleaf forest. Includes areas of deciduous tree growth (i.e., red alder, bigleaf maple).

RW - riparian woodland (along watercourses). This includes tree growth (i.e., willows, cottonwoods, alder) in bands along streams or around lakes.

WM - wet meadow (includes alpine meadow). This includes boggy areas in coniferous forest and lowland wet meadows.

ST - shrubby thickets (in or out of forest). This includes areas in or out of coniferous and broadleaf forest where many species of angiosperm shrubs and young trees occur, usually densely spaced.

PG - parks and gardens (cities). This is an urban habitat.

FL - farmland. These are habitats of pasture and agricultural land.

ABUNDANCE (in columns under HABITATS):

C - common; often seen or heard in appropriate habitats.

U - uncommon; usually present but not seen or heard on every visit to appropriate habitats.

R - rare; present in appropriate habitats only in small numbers and seldom seen or heard.

Capital letter -- breeding habitat; lower case letter--nonbreeding habitat.

PROJECT ENVIRONS

+ Species that should occur within a 5-mile radius of the Site. (Terence Wahl, personal communication)[3].

TABLE A-1

HABITATS AND RELATIVE ABUNDANCE OF BIRDS THAT RANGE IN THE WESTERN SKAGIT COUNTY AREA

Genus	Species	Common Name	Regions C	W	M	Habitats SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
GAVIIDAE																
Gavia	immer	Common Loon*+	W	M	S	c	-	-	U	-	-	-	-	-	-	-
Gavia	adamsii	Yellow-billed Loon	W	-	-	r	-	-	-	-	-	-	-	-	-	-
Gavia	artica	Arctic Loon	W	-	-	c	-	-	r	-	-	-	-	-	-	-
Gavia	stellata	Red-throated Loon	W	-	-	c	-	-	-	-	-	-	-	-	-	-
PODICIPEDIDAE																
Aechmophorus	occidentalis	Western Grebe	W	M	-	c	-	-	c	-	-	-	-	-	-	-
Podiceps	grisegena	Red-necked Grebe	W	-	-	c	-	-	u	-	-	-	-	-	-	-
Podiceps	auritus	Horned Grebe	W	M	-	c	-	-	u	-	-	-	-	-	-	-
Podiceps	caspicus	Eared Grebe	W	M	-	c	-	-	c	-	-	-	-	-	-	-
Podilymbus	podiceps	Pied-billed Grebe*+	W	R	-	u	-	-	C	-	-	-	-	-	-	-
PROCELLARIIDAE																
Puffinus	griseus	Sooty Shearwater	S	-	-	c	-	-	-	-	-	-	-	-	-	-
PHALACROCORACIDAE																
Phalacrocorax	auritis	Double-crested Cormorant*	R	S	-	C	C	-	U	-	-	-	-	-	-	-
Phalacrocorax	penicillatus	Brandt's Cormorant*	R	-	-	C	C	-	-	-	-	-	-	-	-	-
Phalacrocorax	pelagicus	Pelagic Cormorant*	R	-	-	C	C	-	-	-	-	-	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
ARDEIDAE																
Ardea	herodias	Great Blue Heron*+	R	R	-	-	C	C	C	-	-	-	-	-	-	-
Nycticorax	nycticorax	Black-crowned Night Heron*	-	M	-	-	-	-	C	-	-	-	-	-	-	-
Butorides	virescens	Green Heron*	-	R	-	-	-	u	U	-	-	-	-	-	-	-
Botaurius	lentiginosus	American Bittern*	-	S	-	-	-	-	C	-	-	-	-	-	-	-
Olor	columbianus	Whistling Swan+	W	M	-	u	-	-	u	-	-	-	-	-	-	-
Olor	buccinator	Trumpeter Swan+	-	W	-	-	-	-	u	(winters near Mt.Vernon)						
Branta	canadensis	Canada Goose*+	R	R	-	u	-	-	C	-	-	-	-	-	-	-
Branta	nigricans	Black Brant	W	-	-	c	-	-	-	-	-	-	-	-	-	-
Philacte	canagica	Emperor Goose	W	-	-	r	-	-	-	-	-	-	-	-	-	-
Anser	albifrons	White-fronted Goose	M	M	-	u	-	-	r	-	-	-	-	-	-	-
Chen	coerulescens	Snow Goose	W	-	-	c	-	-	r	(primarily Skagit County)						
Anas	platyrhynchos	Mallard*+	R	R	-	c	-	-	C	-	-	-	-	-	-	-
Anas	strepera	Gadwall+	W	W	-	u	-	-	c	-	-	-	-	-	-	-
Anas	acuta	Pintail+	W	W	-	c	-	-	c	-	-	-	-	-	-	-
Mareca	americana	American Widgeon+	W	W	-	c	-	-	c	-	-	-	-	-	-	-
Spatula	clypeata	Shoveler+	W	W	-	c	-	-	c	-	-	-	-	-	-	-
Anas	discors	Blue-winged Teal*+	M	S	-	r	-	-	C	-	-	-	-	-	-	-
Anas	cyanoptera	Cinnamon Teal*+	M	S	-	r	-	-	C	-	-	-	-	-	-	-
Mareca	penelope	European Widgeon	W	W	-	r	-	-	r	-	-	-	-	-	-	-
Anas	carolinensis	Green-winged Teal+	W	W	-	c	-	-	c	-	-	-	-	-	-	-
Aix	sponsa	Wood Duck*+	-	R	-	-	-	-	U	-	-	-	-	-	-	-
Aythya	americana	Redhead+	W	W	-	r	-	-	c	-	-	-	-	-	-	-
Aythya	valisineria	Canvasback*+	W	W	-	c	-	-	c	-	-	-	-	-	-	-
Aythya	collaris	Ring-necked Duck+	W	W	-	r	-	-	c	-	-	-	-	-	-	-
Aythya	marila	Greater Scaup	W	M	-	c	-	-	u	-	-	-	-	-	-	-
Aythya	affinis	Lesser Scaup	W	W	-	c	-	-	c	-	-	-	-	-	-	-
Bucephala	clangula	American Goldeneye	W	W	-	c	-	-	c	-	-	-	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
Bucephala	islandica	Barrow's Goldeneye*+	W	W	S	c	-	-	C	-	-	-	-	-	-	-
Bucephala	albeola	Bufflehead+	W	W	-	c	-	-	c	-	-	-	-	-	-	-
Clangula	hyemalis	Oldsquaw	W	-	-	u	-	-	r	-	-	-	-	-	-	-
Histrionicus	histrionicus	Harlequin Duck*	W	-	S	u	-	-	R	-	-	-	-	-	-	-
Melanitta	deglandi	White-winged Scoter	W	M	-	c	-	-	r	-	-	-	-	-	-	-
Melanitta	perspicillata	Surf Scoter	W	M	-	c	-	-	r	-	-	-	-	-	-	-
Oidemia	nigra	Common Scoter	W	-	-	u	-	-	-	-	-	-	-	-	-	-
Oxyura	jamaicensis	Ruddy Duck	W	W	-	u	-	-	c	-	-	-	-	-	-	-
Mergus	cucullatus	Hooded Merganser*+	W	R	-	r	-	-	U	-	-	-	-	-	-	-
Mergus	merganser	Common Merganser*+	W	R	-	u	-	-	U	-	-	-	-	-	-	-
Mergus	serrator	Red-breasted Merganser	W	M	-	c	-	-	r	-	-	-	-	-	-	-
CATHARTIDAE																
Cathartes	aura	Turkey Vulture*+	-	S	-	-	-	-	-	U	U	U	-	-	-	-
ACCIPITRIDAE																
Accipiter	gentilis	Goshawk*+	-	R	R	-	-	-	-	U	-	-	-	-	-	-
Accipiter	striatus	Sharp-shinned Hawk*+	-	R	R	-	-	-	-	U	u	u	-	-	-	-
Accipiter	cooperii	Cooper's Hawk*+	-	R	R	-	-	-	-	u	U	U	-	-	-	-
Buteo	jamaicensis	Red-tailed Hawk*+	-	R	R	-	-	-	-	C	C	C	C	-	-	C
Buteo	lagopus	Rough-legged Hawk	-	W	-	-	-	-	-	-	-	-	c	-	-	u
Aquila	chrysaetos	Golden Eagle*	-	R	S	-	-	-	-	-	-	-	U	-	-	-
Haliaeetus	leucocephalus	Bald Eagle*+	R	R	-	-	C	C	-	C	-	-	-	-	-	-
Circus	cyaneus	Marsh Hawk*+	-	R	M	-	-	-	C	-	-	-	C	-	-	u
PANDIONIDAE																
Pandion	haliaetus	Osprey*+	S	S	-	-	-	U	U	-	-	-	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
FALCONIDAE																
Falco	rusticolus	Gyrafalcon	-	W	-	-	-	r	-	-	-	-	r	-	-	r
Falco	peregrinus	Peregrine Falcon	R	R	-	-	-	R	-	R	-	-	-	-	-	r
Falco	columbrianus	Pigeon Hawk*+	-	R	-	-	-	-	-	U	U	-	-	-	u	u
Falco	sparverius	Sparrow Hawk*+	-	R	S	-	-	-	-	U	U	U	C	-	-	c
TETRAONIDAE																
Dendragapus	obscurus	Blue Grouse*+	-	R	R	-	-	-	-	C	-	-	-	u	-	-
Canachites	canadensis	Spruce Grouse*	-	-	R	-	-	-	-	U	-	-	-	-	-	-
Bonasa	umbellus	Ruffed Grouse*+	-	R	-	-	-	-	-	C	C	C	-	-	-	-
Lagopus	leucurus	White-tailed Ptarmigan*	-	-	R	-	-	-	-	-	-	-	U	-	-	-
PHASIANIDAE																
Lophortyx	californica	California Quail*	-	R	-	-	-	-	-	-	-	-	-	C	C	-
Phasianus	colchicus	Ring-necked Pheasant*+	-	R	-	-	-	-	-	-	-	-	U	C	-	C
GRUIDAE																
Grus	canadensis	Sandhill Crane	-	M	-	-	-	-	u	-	-	-	-	-	-	-
RALLIDAE																
Rallus	limicola	Virginia Rail*+	-	R	-	-	-	-	C	-	-	-	-	-	-	-
Porzana	carolina	Sora Rail*	-	S	-	-	-	-	C	-	-	-	-	-	-	-
Fulica	americana	American Coot*+	W	R	-	c	-	-	C	-	-	-	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
HAEMATOPODIDAE																
Haematopus	bachmani	Black Oystercatcher*	R	-	-	-	U	-	-	-	-	-	-	-	-	-
CHARADRIIDAE AND SCOLOPACIDAE																
Squatarola	squatarola	Black-bellied Plover	W	M	-	-	-	c	u	-	-	-	-	-	-	u
Charadrius	semipalmatus	Semipalmated Plover	M	M	-	-	-	c	r	-	-	-	-	-	-	-
Charadrius	vociferus	Killdeer*+	W	R	S	-	-	u	C	-	-	-	C	-	-	C
Numenius	phaeopus	Whimbrel	M	-	-	-	-	c	r	-	-	-	-	-	-	-
Tringa	solitaria	Solitary Sandpiper+	M	M	M	-	-	r	u	-	-	-	-	-	-	-
Actitis	macularia	Spotted Sandpiper*+	M	S	S	-	-	c	C	-	-	-	-	-	-	-
Totanus	melanoleucus	Greater Yellowlegs+	M	M	-	-	-	c	c	-	-	-	-	-	-	-
Totanus	flavipes	Lesser Yellowlegs	M	M	-	-	-	u	c	-	-	-	-	-	-	-
Pluvialis	dominica	American Golden Plover	M	M	-	-	-	u	r	-	-	-	-	-	-	r
Limnodromus	griseus	Short-billed Dowitcher	M	-	-	-	-	c	r	-	-	-	-	-	-	-
Limnodromus	scolopaceus	Long-billed Dowitcher	M	M	-	-	-	c	c	-	-	-	-	-	-	-
Aphriza	virgata	Surfbird	W	-	-	-	c	-	-	-	-	-	-	-	-	-
Arenaria	interpres	Ruddy Turnstone	M	-	-	-	u	c	r	-	-	-	-	-	-	-
Arenaria	melanocephala	Black Turnstone	W	-	-	-	c	u	-	-	-	-	-	-	-	-
Numenius	americanus	Long-billed curlew*	M	-	-	-	-	r	r	-	-	-	-	-	-	-
Erolia	ptilocnemis	Rock Sandpiper	W	-	-	-	u	-	-	-	-	-	-	-	-	-
Heteroscelus	incanum	Wanderling Tattler	M	-	-	-	c	-	-	-	-	-	-	-	-	-
Erolia	melanotos	Pectoral Sandpiper	M	-	-	-	-	c	c	-	-	-	-	-	-	-
Caroptrophorus	semipalmatus	Willet	M	-	-	-	-	r	r	-	-	-	-	-	-	-
Calidris	canatus	Knot	M	-	-	-	-	c	r	-	-	-	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions C	W	M	Habitats SW	RS	SS	EW	WC	BF	RW	WM	ST	PG	FL
HAEMATOPODIDAE																
Haematopus	bachmani	Black Oystercatcher*	R	-	-	-	U	-	-	-	-	-	-	-	-	-
CHARADRIIDAE AND SCOLOPACIDAE																
Squatarola	squatarola	Black-bellied Plover	W	M	-	-	-	c	u	-	-	-	-	-	-	u
Charadrius	semipalmatus	Semipalmated Plover	M	M	-	-	-	c	r	-	-	-	-	-	-	-
Charadrius	vociferus	Killdeer*+	W	R	S	-	-	u	C	-	-	-	C	-	-	C
Numenius	phaeopus	Whimbrel	M	-	-	-	-	c	r	-	-	-	-	-	-	-
Tringa	solitaria	Solitary Sandpiper+	M	M	M	-	-	r	u	-	-	-	-	-	-	-
Actitis	macularia	Spotted Sandpiper*+	M	S	S	-	-	c	C	-	-	-	-	-	-	-
Totanus	melanoleucus	Greater Yellowlegs+	M	M	-	-	-	c	c	-	-	-	-	-	-	-
Totanus	flavipes	Lesser Yellowlegs	M	M	-	-	-	u	c	-	-	-	-	-	-	-
Pluvialis	dominica	American Golden Plover	M	M	-	-	-	u	r	-	-	-	-	-	-	r
Limnodromus	griseus	Short-billed Dowitcher	M	-	-	-	-	c	r	-	-	-	-	-	-	-
Limnodromus	scolopaceus	Long-billed Dowitcher	M	M	-	-	-	c	c	-	-	-	-	-	-	-
Aphriza	virgata	Surfbird	W	-	-	-	c	-	-	-	-	-	-	-	-	-
Arenaria	interpres	Ruddy Turnstone	M	-	-	-	u	c	r	-	-	-	-	-	-	-
Arenaria	melanocephala	Black Turnstone	W	-	-	-	c	u	-	-	-	-	-	-	-	-
Numenius	americanus	Long-billed curlew*	M	-	-	-	-	r	r	-	-	-	-	-	-	-
Erolia	ptilocnemis	Rock Sandpiper	W	-	-	-	u	-	-	-	-	-	-	-	-	-
Heteroscelus	incanum	Wanderling Tattler	M	-	-	-	c	-	-	-	-	-	-	-	-	-
Erolia	melanotos	Pectoral Sandpiper	M	-	-	-	-	c	c	-	-	-	-	-	-	-
Catoptrophorus	semipalmatus	Willet	M	-	-	-	-	r	r	-	-	-	-	-	-	-
Calidris	canatus	Knot	M	-	-	-	-	c	r	-	-	-	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
Erolia	alpina	Dunlin+	W	W	-	-	-	c	r	-	-	-	-	-	-	-
Erolia	barrdii	Baird's Sandpiper	M	M	-	-	-	u	c	-	-	-	-	-	-	-
Crocethia	alba	Sanderling	W	M	-	-	-	c	u	-	-	-	-	-	-	-
Erolia	minutilla	Least Sandpiper+	M	M	-	-	-	c	c	-	-	-	-	-	-	-
Limosa	fedoa	Marbled Godwit	M	M	-	-	-	r	r	-	-	-	-	-	-	-
Capella	gallinago	Common Snipe*+	W	R	M	-	-	u	C	-	-	-	C	-	-	-
Ereunetes	mauri	Western Sandpiper+	M	M	-	-	-	c	c	-	-	-	-	-	-	-
PHALAROPODIDAE																
Steganopus	tricolor	Wilson's Phalarope*	M	M	-	-	-	u	C	-	-	-	-	-	-	-
Phalaropus	fulicarius	Red Phalarope	M	-	-	u	-	r	-	-	-	-	-	-	-	-
Lobipes	lobatus	Northern Phalarope	M	M	M	c	-	u	c	-	-	-	-	-	-	-
STERCORARIIDAE																
Stercorarius	parasiticus	Parasitic Jaeger	M	-	-	c	-	-	-	-	-	-	-	-	-	-
Stercorarius	longicaudus	Long-tailed Jaeger	M	-	-	r	-	-	r	-	-	-	-	-	-	-
LARIDAE																
Larus	hyperboreus	Glaucous Gull	W	-	-	r	-	r	r	-	-	-	-	-	-	-
Larus	glaucescens	Glaucous-winged Gull*+	R	W	-	C	C	C	u	-	-	-	-	-	-	c
Larus	occidentalis	Western Gull*	R	-	-	C	C	C	-	-	-	-	-	-	-	-
Larus	argentatus	Herring Gull	W	M	-	c	-	c	u	-	-	-	-	-	-	-
Larus	californicus	California Gull*+	M	M	-	c	-	c	C	-	-	-	-	-	-	c
Larus	delawarensis	Ring-billed Gull*+	M	W	-	u	-	u	C	-	-	-	-	-	-	c
Larus	canus	Mew Gull+	W	W	-	c	-	c	u	-	-	-	-	-	-	c
Larus	philadelphia	Bonaparte's Gull+	W	M	-	c	-	c	c	-	-	-	-	-	-	-
Larus	thayeri	Thayer's Gull	W	-	-	c	-	c	-	-	-	-	-	-	-	-
Rissa	tridactyla	Black-legged Kittiwake	W	-	-	c	-	-	-	-	-	-	-	-	-	-

TABLE A-I (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
Xema	sabini	Sabine's Gull	M	-	-	u	-	-	-	-	-	-	-	-	-	-
Sterna	forsteri	Forster's Tern*	M	-	-	r	-	r	U	-	-	-	-	-	-	-
Sterna	hirunda	Common Tern	M	-	-	c	-	c	-	-	-	-	-	-	-	-
Chlidonias	niger	Black Tern	M	-	-	-	-	-	C	-	-	-	-	-	-	-
ALCIDAE																
Uria	aalge	Common Murre	R	-	-	C	-	-	-	-	-	-	-	-	-	-
Cepphus	columba	Pigeon Guillemot	R	-	-	C	-	-	-	-	-	-	-	-	-	-
Brachyramphus	marmoratus	Marbled Murrelet	R	-	-	C	-	-	-	-	-	-	-	-	-	-
Synthliboramphus	antiquum	Ancient Murrelet	W	-	-	u	-	-	-	-	-	-	-	-	-	-
Ptychoramphus	aleutica	Cassin's Auklet*	S	-	-	C	-	-	-	-	-	-	-	-	-	-
Cerorhinca	monocerata	Rhinoceros Auklet*	R	-	-	C	-	-	-	-	-	-	-	-	-	-
Lunda	cirrhata	Tufted Puffin*	S	-	-	C	-	-	-	-	-	-	-	-	-	-
COLUMBIDAE																
Columba	fasciata	Band-tailed Pigeon*+	-	R	-	-	-	-	-	C	U	-	-	-	U	u
Columba	livia	Rock Dove*+	-	R	-	-	-	-	-	-	-	-	-	-	C	C
Zenaidura	macroura	Mourning Dove*+	-	S	-	-	-	-	-	-	-	C	-	-	-	C
TYTONIDAE																
Tyto	alba	Barn Owl*+	-	R	-	-	-	-	-	-	-	U	-	-	U	C
STRIGIDAE																
Otus	asio	Screech Owl*+	-	R	-	-	-	-	-	-	C	C	-	-	U	-
Bubo	virginianus	Great Horned Owl+	-	R	R	-	-	-	-	C	C	C	-	-	U	U
Nyctea	scandiaca	Snowy Owl	W	W	-	-	-	r	-	-	-	-	r	-	-	r

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	NM	ST	PG	FL
Surnia	ulula	Hawk-Owl	-	W	W	-	-	-	-	r	-	-	-	-	-	-
Glaucidium	gnoma	Pigmy Owl*+	-	R	R	-	-	-	-	U	-	-	-	-	-	-
Strix	occidentalis	Spotted Owl*	-	R	-	-	-	-	-	R	-	-	-	-	-	-
Strix	nebulosa	Great Gray Owl*	-	R	R	-	-	-	-	R	(status uncertain)					
Asio	otus	Long-eared Owl*+	-	W	-	-	-	-	-	-	-	U	-	-	-	-
Asio	flammeus	Short-eared Owl*+	-	R	-	-	-	-	-	-	-	-	C	-	-	C
Aegolius	acadicus	Saw-whet Owl*+	-	W	R	-	-	-	-	C	-	u	-	-	u	-
Aegolius	funereus	Boreal Owl	-	W	-	-	-	-	-	r	-	-	-	-	-	-
CAPRIMULGIDAE																
Chordeiles	minor	Nighthawk*+	-	S	S	-	-	-	-	-	-	-	-	-	C	C
APODIDAE																
Cypseloides	niger	Black Swift*+	-	S	S	-	-	-	(ranges widely)					-	-	-
Chaetura	vauxi	Vaux's Swift*+	-	S	S	-	-	-	-	C	C	-	-	-	-	-
TROCHILIDAE																
Selasphorus	rufus	Rufous Hummingbird*+	-	S	S	-	-	-	-	C	C	C	-	-	C	-
Calypte	anna	Anna's Hummingbird+	-	W	-	-	-	-	-	-	-	-	-	-	r	-
Stellula	calliope	Calliope Hummingbird*	-	-	S	-	-	-	-	C	-	C	-	-	-	-
ALCEDINIDAE																
Megaceryle	alcyon	Belted Kingfisher*	W	R	S	-	-	c	C	-	-	-	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions C	W	M	Habitats SW	RS	SS	FW	WC	BF	RW	WN	ST	PC	FL
PICIDAE																
Colaptes	cafer	Red-shafted Flicker*+	-	R	R	-	-	-	-	C	C	C	-	-	C	-
Asyndesmus	lewis	Lewis Woodpecker*	-	R	-	-	-	-	-	-	-	C	-	-	-	-
Dryocopus	pileatus	Pileated Woodpecker*+	-	R	R	-	-	-	-	U	-	-	-	-	-	-
Sphyrapicus	varius	Yellow-bellied Sapsucker*	R	S		-	-	-	-	C	C	C	-	-	u	-
Sphyrapicus	thyroideus	Williamson's sapsucker*-	-	S		-	-	-	-	U	-	-	-	-	-	-
Dendrocopos	villosus	Hairy Woodpecker*+	-	R	R	-	-	-	-	C	-	-	-	-	-	-
Dendrocopos	pubescens	Downy Woodpecker*+	-	R	-	-	-	-	-	-	C	C	-	u	U	-
Picoides	tridactylus	Northern three-toed woodpecker	-	-	R	-	-	-	-	R	-	-	-	-	-	-
TRYANNIDAE																
Tyrannus	tyrannus	Eastern Kingbird*+	-	S	-	-	-	-	-	-	C	C	-	-	-	C
Tyrannus	verticalis	Western Kingbird	-	M	-	-	-	-	-	-	-	C	-	-	-	C
Empidonax	traillii	Traill's Flycatcher*+	-	S	-	-	-	-	-	-	C	C	-	-	-	-
Empidonax	hammondii	Hammond's Flycatcher+	-	S	S	-	-	-	-	C	-	-	-	-	-	-
Epidonax	difficilis	Western Flycatcher*+	-	S	-	-	-	-	-	C	-	U	-	-	-	-
Contopus	sordidulus	Western Wood Pewee*+	-	S	-	-	-	-	-	U	C	C	-	-	-	-
Nuttallornis	borealis	Olive-sided Flycatcher*+	S	S		-	-	-	-	C	-	-	-	-	-	-
Empidonax	oberholseri	Dusky Flycatcher+	-	M	-	-	-	-	-	c	-	-	-	-	-	-
ALAUDIDAE																
Eremophila	alpestris	Horned Lark*	W	R	S	-	-	u	-	-	-	-	-	-	-	C
HIRUNDINIDAE																
Tachycineta	thalassina	Violet-green Swallow*+	-	S	S	-	-	-	-	C	C	C	-	-	C	C
Iridoprocne	bicolor	Tree Swallow*+	-	S	S	-	-	-	-	C	C	C	-	-	C	C

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats									
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
Riparia	riparia	Bank Swallow*	-	M	M	-	-	-	C	(sand banks)				-	-	-
Stelgidopteryx	ruficollis	Rough-winged Swallow*+	-	S	M	-	-	-	C	C	C	C	(sand banks)		-	
Hirundo	rustica	Barn Swallow*+	-	S	M	-	-	-	-	-	-	C	C	C	C	C
Petrochelidon	pyrrhonota	Cliff Swallow*+	-	S	M	-	-	-	-	-	-	C	C	C	C	C
Progne	subis	Purple Martin*	-	S	-	-	-	U	U	-	-	-	-	-	U	-
CORVIDAE																
Cyanocitta	stelleri	Stellers Jay*+	-	R	R	-	-	-	-	C	-	-	-	-	C	-
Psrisoreus	canadensis	Gray Jay*	-	R	R	-	-	-	-	C	-	-	-	-	-	-
Pica	pica	Black-billed Magpie*	-	M	-	-	-	-	-	-	-	C	-	-	-	C
Corvus	corex	Raven*+	-	R	R	-	-	-	-	C	-	-	-	-	-	U
Corvus	brachyrhynchos	Common Crow*+	-	R	R	-	C	C	-	C	C	C	-	-	C	C
Nucifraga	columbiana	Clark's Nutcracker*	-	-	R	-	-	-	-	C	-	-	-	-	-	-
PARIDAE																
Parus	atricapillus	Black-capped Chickadee*+	R	-		-	-	-	-	c	C	C	-	C	C	-
Parus	rufescens	Chestnut-backed Chickadee*+	-	R	R	-	-	-	-	C	u	-	-	-	C	-
Parus	gambeli	Mountain Chickadee*	-	W	R	-	-	-	-	C	-	-	-	r	r	-
Psaltriparus	minimus	Common Bushtit+		R	-	-	-	-	-	C	C	-	-	C	C	-
SITTIDAE																
Sitta	carolinensis	White-breasted Nuthatch*	R	-		-	-	-	-	-	C	C	-	-	U	-
Sitta	canadensis	Red-breasted Nuthatch*+	-	R	R	-	-	-	-	C	U	u	-	-	u	-
CERTHIIDAE																
Certhia	familaris	Brown Creeper*+	R	R	-	-	-	-	-	C	-	-	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats								
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
Riparia	riparia	Bank Swallow*	-	M	M	-	-	-	C	(sand banks)				-	-	-
Stelgidopteryx	ruficollis	Rough-winged Swallow*+	-	S	M	-	-	-	C	C	C	C	(sand banks)		-	
Hirundo	rustica	Barn Swallow*+	-	S	M	-	-	-	-	-	-	C	C	C	C	C
Petrochelidon	pyrrhonota	Cliff Swallow*+	-	S	M	-	-	-	-	-	-	C	C	C	C	C
Progne	subis	Purple Martin*	-	S	-	-	-	U	U	-	-	-	-	-	U	-
CORVIDAE																
Cyanocitta	stelleri	Stellers Jay*+	-	R	R	-	-	-	-	C	-	-	-	-	C	-
Psrisoreus	canadensis	Gray Jay*	-	R	R	-	-	-	-	C	-	-	-	-	-	-
Pica	pica	Black-billed Magpie*	-	M	-	-	-	-	-	-	-	C	-	-	-	C
Corvus	corex	Raven*+	-	R	R	-	-	-	-	C	-	-	-	-	-	U
Corvus	brachyrhynchos	Common Crow*+	-	R	R	-	C	C	-	C	C	C	-	-	C	C
Nucifraga	columbiana	Clark's Nutcracker*	-	-	R	-	-	-	-	C	-	-	-	-	-	-
PARIDAE																
Parus	atricapillus	Black-capped Chickadee*+		R	-	-	-	-	-	c	C	C	-	C	C	-
Parus	rufescens	Chestnut-backed Chickadee*+	-	R	R	-	-	-	-	C	u	-	-	-	C	-
Parus	gambeli	Mountain Chickadee*	-	W	R	-	-	-	-	C	-	-	-	r	r	-
Psaltriparus	minimus	Common Bushtit+		R	-	-	-	-	-	C	C	-	-	C	C	-
SITTIDAE																
Sitta	carolinensis	White-breasted Nuthatch*		R	-	-	-	-	-	-	C	C	-	-	U	-
Sitta	canadensis	Red-breasted Nuthatch*+	-	R	R	-	-	-	-	C	U	u	-	-	u	-
CERTHIIDAE																
Certhia	familaris	Brown Creeper*+	R	R	-	-	-	-	-	C	-	-	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
CINCLIDAE																
Cinclus	mexicanus	Dipper*+	-	R	R	-	-	-	C (streams)				-	-	-	-
TROGLODYTIDAE																
Troglodytes	aedon	House Wren*	-	S	-	-	-	-	-	-	C	C	-	C	C	-
Troglodytes	troglodytes	Winter Wren*+	-	R	-	-	-	-	-	C	-	-	-	-	-	-
Thryomanes	bewickii	Bewick's Wren*+	-	R	-	-	-	-	-	-	C	C	-	C	C	-
Telmatodytes	palustris	Long-billed Marsh Wren*+	-	R	-	-	-	-	C	-	-	-	-	-	-	-
MIMIDAE																
Mimus	polyglottos	Mockingbird	-	W	-	-	-	-	-	-	-	-	-	-	r	-
TURDIDAE																
Turdus	migratorius	Robin*+	-	R	S	-	-	-	-	C	C	C	-	-	C	-
Ixereus	naevius	Varied Thrush*+	-	R	S	-	-	-	-	C	-	-	-	-	c	-
Myadestes	townsendi	Townsend's Solitare+	-	W	S	-	-	-	-	C	-	u	-	-	u	-
Hylocichla	guttatis	Hermit Thrush*+	-	M	S	-	-	-	-	C	-	-	-	-	c	-
Hylocichla	ustulata	Swainson's Thrush*+	-	S	S	-	-	-	-	C	C	C	-	-	-	-
Sialia	mexicana	Western Bluebird*	-	S	-	-	-	-	-	-	-	U	-	-	U	u
Sialia	corrucoides	Mountain Bluebird*	-	W	S	-	-	-	-	U	-	-	-	-	-	C
SYLVIIDAE																
Regulus	satrapa	Golden-browned Kinglet*+	R	R		-	-	-	-	C	c	c	-	u	c	-
Regulus	calendula	Ruby-crowned Kinglet*+	-	W	S	-	-	-	-	c	c	c	-	u	c	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
MOTACILLIDAE																
Anthus	spinoletta	Water Pipit*+	-	W	S	-	-	c	-	-	-	-	C	-	-	c
BOMBYCILLIDAE																
Bombycilla	garrulus	Bohemian Waxwing+	-	W	W	-	-	-	-	u	u	u	-	-	u	-
Bombycilla	cedrodum	Cedar Waxwing*+	-	S	M	-	-	-	-	c	C	C	-	-	C	-
LANIIDAE																
Lanius	excubitor	Northern Shrike+	-	W	-	-	-	-	-	u	-	u	u	-	-	u
STURNIDAE																
Sturnus	vulgaris	Starling*+	-	R	R	-	-	-	-	U	C	C	c	-	C	C
VIREONIDAE																
Vireo	solitarius	Solitary Vireo*+	-	S	S	-	-	-	-	C	U	-	-	-	-	-
Vireo	huttoni	Hutton's Vireo*+	-	R	-	-	-	-	-	U	U	-	-	-	U	-
Vireo	olivaceus	Red-eyed Vireo*+	-	S	-	-	-	-	-	-	C	C	-	-	-	-
Vireo	gilvus	Warbling Vireo*+	-	S	S	-	-	-	-	U	C	C	-	-	-	-
PARULIDAE																
Vermivora	celata	Orange-crowned Warbler*+	S	S		-	-	-	-	-	C	-	-	C	C	-
Vermivora	ruficapilla	Nashville Warbler*	-	M	S	-	-	-	-	-	u	c	c	-	c	-
Dendroica	petechia	Yellow Warbler*+	-	S	-	-	-	-	-	-	C	C	-	-	C	-
Dendroica	coronata	Myrtle Warbler	-	W	-	-	-	-	u	u	u	-	-	-	u	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions C	Regions W	Regions M	Habitats SW	Habitats RS	Habitats SS	Habitats FW	Habitats WC	Habitats BF	Habitats RW	Habitats WM	Habitats ST	Habitats PG	Habitats FL
Dendroica	townsendi	Townsend's Warbler*+	-	S	S	-	-	-	C	-	-	-	-	-	u	-
Dendroica	occidentalis	Hermit Warbler*	-	S	S	-	-	-	U	-	-	-	-	-	-	-
Oporornis	tolmiei	MacGillivray's Warbler*+	-	S	S	-	-	-	C	C	C	-	C	-	u	-
Geothlypis	trichas	Yellow-throat*+	-	S	-	-	-	C	-	-	-	-	-	-	-	-
Dendroica	nigrescens	Black-throated Gray Warbler*+	-	S	-	-	-	-	C	-	-	-	-	-	c	-
Wilsonia	pusilla	Wilson's Warbler*+	-	S	S	-	-	-	C	C	-	-	-	C	-	-
Mniotilta	varia	Black-and-white Warbler	-	M	-	-	-	-	-	r	r	r	-	-	r	-
Dendroica	auduboni	Audubon's Warbler+	-	S	S	-	-	-	C	-	-	-	-	-	c	-
PLOCEIDAE																
Passer	domesticus	House Sparrow*+	-	R	-	-	-	-	-	-	-	-	-	-	C	C
ICTERIDAE																
Sturnella	neglecta	Western Meadowlark*+	-	R	-	-	-	-	-	-	-	-	C	-	-	C
Agelaius	phoeniceus	Red-winged Blackbird*+	-	R	-	-	-	-	C	-	-	-	-	-	c	c
Xanthocephalus	xanthocephalus	Yellow-headed Blackbird*		M	-	-	-	-	C	-	-	-	-	-	-	u
Icterus	bullockii	Bullock's Oriole*+	-	S	-	-	-	-	-	-	C	C	-	-	C	-
Euphagus	cyanocephalus	Brewer's Blackbird*+	-	R	M	-	-	-	-	-	-	-	C	-	C	C
Molothrus	ater	Brown-headed Cowbird*+	-	S	S	-	-	-	-	C	C	C	-	C	-	C
THRAUPIDAE																
Piranga	ludoviciana	Western Tanager*+	-	S	S	-	-	-	-	C	-	-	-	-	-	-
FRINGILLIDAE																
Pheucticus	melanocephalus	Black-headed Grosbeak*+	-	S	-	-	-	-	-	-	C	C	-	-	-	-

TABLE A-1 (Con'd)

Genus	Species	Common Name	Regions			Habitats										
			C	W	M	SW	RS	SS	FW	WC	BF	RW	WM	ST	PG	FL
Hesperiphona	vespertina	Evening Grosbeak*+	-	R	R	-	-	-	C	c	-	-	-	-	c	-
Carpodacus	purpureus	Purple Finch+*	-	R	-	-	-	-	-	C	-	-	-	-	C	-
Carpodacus	mexicanus	House Finch +	-	R	-	-	-	-	-	-	-	C	-	-	C	-
Carpodacus	cassinii	Cassin's Finch*	-	-	S	-	-	-	-	-	-	c	-	-	c	-
Passerina	amoena	Lazuli Bunting*+	-	S	-	-	-	-	-	-	-	C	-	C	-	-
Pinicola	enucleator	Pine Grosbeak*	-	W	R	-	-	-	-	U	-	-	-	-	r	-
Leucosticate	tephrocotis	Gray-crowned Rosy Finch*	W	S	-	-	-	-	-	-	-	C	-	-	-	-
Acanthis	flammea	Common Redpoll	-	W	-	-	-	-	-	-	u	-	-	-	-	u
Spinus	pinus	Pine Siskin*+	-	R	R	-	-	-	-	C	c	c	-	-	c	-
Spinus	tristis	American Goldfinch*+	-	R	-	-	-	-	-	-	C	C	-	-	C	C
Loxia	curvirostra	Red Crossbill*+	-	R	R	-	-	-	-	C	-	-	-	-	-	-
Loxia	leucoptera	White-winged Crossbill*-	W	R	-	-	-	-	-	R	-	-	-	-	-	-
Pipilo	erthrophthalmus	Rufous-sided Towhee*+	-	R	-	-	-	-	-	C	C	C	-	C	C	-
Passerculus	sandwichensis	Savannah Sparrow*+	-	R	-	-	-	-	-	-	-	-	C	-	-	C
Zonotrichia	querula	Harris Sparrow	-	W	-	-	-	-	-	-	-	-	-	r	r	-
Pooecetes	gramineus	Vesper Sparrow*	-	S	-	-	-	-	-	-	-	-	C	-	-	-
Zonotrichia	albicollis	White-throated Sparrow	-	W	-	-	-	-	-	-	-	-	-	r	r	-
Junco	hyemalis	Slate-colored Junco+	-	W	-	-	-	-	-	u	u	u	-	u	u	-
Junco	oreganus	Oregon Junco*+	-	R	R	-	-	-	-	C	c	c	-	C	c	-
Spizella	passerina	Chipping Sparrow*+	-	S	-	-	-	-	-	-	C	-	-	-	-	-
Spizella	arborea	Tree Sparrow	-	W	-	-	-	-	-	-	u	u	-	u	-	u
Zonotrichia	leucophrys	White-crowned Sparrow*+	-	R	S	-	-	-	-	C	c	c	-	C	C	c
Zonotrichia	atricapilla	Golden-crowned Sparrow+	-	W	M	-	-	-	-	c	c	c	-	c	c	-
Passerella	iliaca	Fox Sparrow*+	-	R	S	-	-	-	-	-	c	c	-	U	-	-
Melospiza	lincolnii	Lincoln Sparrow*+	-	M	S	-	-	-	-	-	-	-	-	C	-	-
Melospiza	melodia	Song Sparrow*+	-	R	S	-	-	-	C	C	C	C	-	C	C	-
Calcarius	lapponicus	Lapland Longspur	-	W	-	-	-	u	-	-	-	-	-	-	-	u
Plectrophenax	nivalis	Snow Bunting	-	W	-	-	u	-	-	-	-	-	-	-	-	r

TABLE A-2

RESULTS OF THE 1968-1972 BREEDING BIRD SURVEYS ALONG STATE ROUTE 20 FROM EAST OF NEWHALEM TO EAST OF ROCKPORT.[a]

	1972		1971		1970		1969		1968	
	b	c	b	c	b	c	b	c	b	c
Common Merganser	-	-	1	1	-	1	-	1	-	-
Blue Grouse	-	-	2	4	1	6	-	-	-	1
Ring-necked Pheasant	1	1	-	-	-	-	-	1	-	2
Killdeer	4	7	2	3	-	1	2	3	1	1
Spotted Sandpiper	1	1	-	2	-	3	1	2	1	1
Band-tailed Pigeon	-	-	2	2	-	4	1	6	-	10
Rock Dove	-	-	-	-	-	-	-	-	1	1
Black Swift	-	-	-	-	-	2	-	-	-	-
Common Nighthawk	-	-	-	-	-	1	-	-	-	-
Vaux's Swift	-	-	-	-	-	2	-	2	-	-
Rufous Hummingbird	4	15	1	6	2	8	-	7	3	6
Belted Kingfisher	-	-	-	-	-	-	-	-	-	1
Red-shafted Flicker	-	-	-	1	-	-	-	-	-	-
Pileated Woodpecker	-	1	-	-	3	3	-	4	-	4
Hairy Woodpecker	-	-	-	3	4	6	-	-	-	4
Downy Woodpecker	-	-	-	-	2	2	-	2	2	2
Eastern Kingbird	2	2	-	-	1	3	2	4	-	-
Traill's Flycatcher	5	24	4	13	2	26	2	34	5	30
Hammond's Flycatcher	-	1	-	-	-	-	-	-	-	-
Western Flycatcher	4	9	3	19	1	10	4	8	3	8
Western Wood Pewee	-	1	-	-	-	-	-	-	-	-
Olive-sided Flycatcher	2	2	-	-	-	-	1	2	-	-
Violet-green Swallow	3	37	4	27	5	24	6	23	5	28
Tree Swallow	1	6	4	6	5	9	-	5	2	6
Rough-Winged Swallow	-	11	-	4	-	9	-	4	-	5
Barn Swallow	3	10	2	5	4	6	6	13	2	2
Cliff Swallow	2	4	22	23	-	1	4	6	2	2
Steller's Jay	-	-	-	1	-	1	-	2	-	-
Common Raven	-	2	-	3	1	5	2	2	-	-
Common Crow	35	70	8	44	13	58	8	41	5	34
Black-capped Chickadee	2	4	-	1	-	9	3	10	-	2
Chestnut-backed Chickadee	-	1	-	-	2	8	-	1	-	-
Red-brested Nuthatch	-	-	-	-	-	1	-	1	-	-
Brown Creeper	-	1	-	-	-	-	-	1	-	-
Winter Wren	3	7	-	1	1	7	-	1	-	2
Bewick's Wren	-	2	-	-	-	-	1	1	-	-
Robin	8	45	19	53	14	47	12	36	15	59
Varied Thrush	-	7	-	3	-	3	-	-	-	4

a - information provided by Terence Wahl

b - total for last 10 stops or last 5 miles of survey

c - total for all 50 stops

TABLE A -2(Con'd)

	1972		1971		1970		1969		1968	
	b	c	b	c	b	c	b	c	b	c
Hermit Thrush	-	9	-	3	-	8	-	2	-	9
Swainson's Thrush	13	44	10	47	9	49	9	54	4	46
Golden-crowned Kinglet	-	1	-	1	-	1	-	-	-	2
Cedar Waxwing	11	31	5	21	8	37	12	37	17	34
Starling	2	9	10	16	29	34	10	14	12	23
Solitary Vireo	-	-	-	-	-	-	1	1	2	4
Red-eyed Vireo	10	60	10	47	8	54	13	69	7	63
Warbling Vireo	-	9	1	7	1	7	-	10	-	6
Orange-crowned Warbler	-	5	-	2	-	6	-	2	-	7
Yellow Warbler	3	8	3	13	-	10	4	19	3	10
Audubon's Warbler	2	8	1	3	1	4	-	5	-	7
Black-throated Gray Warbler	2	10	1	11	3	15	3	21	-	17
Townsend's Warbler	-	6	-	5	-	6	-	1	-	-
MacGillivray's Warbler	6	35	11	56	5	42	4	31	3	19
Nashville Warbler	-	-	-	3	-	-	-	-	-	-
Wilson's Warbler	-	-	2	4	-	-	-	-	1	1
House Sparrow	-	-	-	-	-	-	-	-	1	2
Western Meadowlark	1	1	-	-	-	-	-	-	1	1
Red-winged Blackbird	1	1	-	-	-	-	2	2	-	-
Bullock's Oriole	-	-	-	-	-	1	-	-	-	-
Brewer's Blackbird	12	13	9	11	14	14	6	7	5	5
Brown-headed Cowbird	6	19	9	26	12	27	2	19	5	11
Western Tanager	1	5	-	6	1	9	1	12	-	6
Black-headed Grosbeak	-	3	-	4	-	2	1	1	1	3
Lazuli Bunting	2	4	2	3	2	4	2	5	-	-
Evening Grosbeak	-	-	-	-	2	13	-	4	1	10
Purple Finch	2	6	1	1	1	3	1	1	2	4
House Finch	-	-	-	-	1	1	-	-	-	-
Pine Siskin	9	29	-	-	3	11	2	9	1	5
American Goldfinch	1	4	-	3	3	6	-	2	1	3
Red Crossbill	-	4	-	-	-	-	-	-	-	-
Rufous-sided Towhee	-	2	1	2	-	3	-	-	-	4
Savannah Sparrow	1	1	1	2	1	1	4	5	2	4
Oregon Junco	-	9	-	13	-	21	1	22	-	12
Chipping Sparrow	1	2	1	4	-	3	1	3	-	3
White-crowned Sparrow	-	10	2	12	2	12	-	15	1	14
Song Sparrow	6	13	3	10	3	15	4	13	6	17

a - information provided by Terence Wahl
b - total for last 10 stops or last 5 miles of survey
c - total for all 50 stops

TABLE A-3

HABITATS AND RELATIVE ABUNDANCE OF MAMMALS THAT RANGE IN THE WESTERN SKAGIT COUNTY AREA(10).

Order	Family	Genus	Species	Common Name	Habitat	Abundance in Life Zones(a) Humid Transition	Canadian
Marsupalia	Didelphiidae	Didelphis	virginiana	Opossum	Farm, mixed woodland	C	-
Insectivora	Soricidae	Sorex	obscurus	Dusky shrew	Most habitats	C	C
		Sorex	vagrans	Vagrant shrew	Wet areas in or out of forest	A	R
		Sorex	palustris	Northern water shrew	Streams, bogs, mountains	-	C
		Sorex	bendirii	Pacific water shrew	Swamp, marsh, stream banks	A	C
		Sorex	cinereus	Masked shrew	Moist situations in or out of forest	R	-
		Sorex	trowbridgii	Trowbridge shrew	Coniferous forest	A	C
	Talpidae	Scapanus	townsendii	Townsend mole	Moist areas in or out of forest	A	-

(a) A - Abundant; C - Common; R - Rare.

TABLE A-3 (Con'd)

Order	Family	Genus	Species	Common Name	Habitat	Abundance in Life Zones[a] Humid Transition	Canadian
		Scapanus	orarius	Pacific mole	Dry or moist areas in or out of forest	A	-
		Neurotrichus	gibbsii	Shrew-mole	Moist area in or out of forest	A	-
Chiroptera	Vespertilionidae	Myotis	lucifugus	Little brown myotis	--	A	C
		Myotis	californicus	Californ-nia myotis	--	A	-
		Myotis	volans	Long-legged myotis	Open forest	C	-
		Myotis	evotis	Long-ear-ed myotis	Woods	R	-
		Myotis	yumanensis	Yuma myotis	Open woods	A	-
		Lasionycteris	noctivagans	Silvery-haired bat	Forest areas	A	C
		Eptesicus	fuscus	Big brown bat	Wooded area	A	-

TABLE A-3 (Con'd)

Order	Family	Genus	Species	Common Name	Habitat	Abundance in Life Zones(a) Humid Transition	Canadian
		Plecotus	townsendii	Western Big-eared Bat	Caves	R	-
Lagomorpha	Ochotonidae	Ochotona	princeps	Pika	Talus slopes	-	C
	Leporidae	Lepus	americanus	Snowshoe hare	Forest, thickets	A	A
		Sylvilagus	floridanus	Eastern cotton-tail	Thickets, fields	-	-
Rodentia	Aplodontiidae	Aplodontia	rufa	Mountain beaver	Forest, thickets, moist area	A	-
	Sciuridae	Marmota	caligata	Hoary marmot	Talus slopes	-	R
		Eutamias	townsendii	Townsend chipmunk	Coniferous forest, brush	A	-
		Tamiasciurus	douglasii	Douglas squirrel	Coniferous forests	A	A
		Glaucomys	sabrinus	Northern flying squirrel	Coniferous and mixed forests	C	-

TABLE A-3 (Con'd)

Order	Family	Genus	Species	Common Name	Habitat	Abundance in Life Zones[a] Humid Transition	Canadian
	Castoridae	Castor	canadensis	Beaver	Ponds, slow streams	A	C
	Cricetidae	Peromyscus	maniculatus	Deer mouse	All habitats	A	A
		Synaptomys	borealis	Northern bog vole	Alpine meadows	-	-
		Clethrionomys	gepperi	Gapper red-backed vole	Forests, meadows	-	A
		Neotoma	cinerea	Bushy-tailed woodrat	Rocky areas	-	C
		Microtus	orègoni	Oregon vole	Grassland, forest	A	A
		Phenacomys	intermedius	Heather vole	Forests, meadows	-	C
		Microtus	longicaudus	Long-tailed vole	Wet meadows	R	C
		Microtus	richardsoni	Richardson vole	Marsh, streams, wet meadows	-	C

TABLE A-3 (Con'd)

Order	Family	Genus	Species	Common Name	Habitat	Abundance in Life Zones(a) Humid Transition	Canadian
		Clethrionomys	californicus	California red-backed vole	Coniferous forest	A	-
		Ondatra	zibethica	Muskrat	Marsh, ponds	A	-
		Microtus	townsendii	Townsend vole	Wet meadows	A	-
	Muridae	Rattus	rattus	Black Rat	Dwellings, coniferous forest	-	-
		Rattus	norvegicus	Norway rat	Dwellings, dumps	-	-
		Mus	musculus	House mouse	Dwellings, fields	-	-
	Zapodidae	Zapus	trinotatus	Pacific jumping mouse	Meadows in coniferous forests	A	C
Carnivora	Canidae	Canis	latrans	Coyote	Open areas, woodland	C	C
		Vulpes	fulva	Red fox	Semi-open country, mountains	C	-

TABLE A-3 (Con'd)

Order	Family	Genus	Species	Common Name	Habitat	Abundance in Life Zones[a] Humid Transition	Canadian
	Ursidae	Ursus	americanus	Black bear	Wooded areas	A	A
	Procyonidae	Procyon	lotor	Raccoon	Many habitats, near water	A	C
	Mustelidae	Martes	pennanti	Fisher	Mixed forest	R	R
		Martes	americana	Marten	Coniferous forest	-	A
		Mustela	vision	Mink	Marshes, lakes streams	C	C
		Mustela	frenata	Long-tailed weasel	All habitats	A	C
		Mustela	erminea	Short-tailed weasel	Wooded areas	R	C
		Mephitis	mephitis	Striped skunk	Brushy and country	A	-
		Spilogale	putorius	Spotted skunk	Most habitats	A	-
		Lutra	canadensis	River otter	Rivers, marshes, lakes	C	R

TABLE A-3 (Con'd)

Order	Family	Genus	Species	Common Name	Habitat	Abundance in Life Zones(a) Humid Transition	Canadian
	Felidae	Felis	concolor	Mountain lion	Coniferous forests	R	R
		Lynx	rufus	Bobcat	Many habitats	C	C
Artiodactyla	Cervidae	Odocoileus	hemionus columbianus	Black-tailed deer	Most habitats	A	C
		Cervus	canadensis	Elk	Forest and meadows	-	A

TABLE A-4

HABITATS OF AMPHIBIANS AND REPTILES
THAT RANGE IN THE WESTERN SKAGIT COUNTY AREA.[a]

Order	Family	Genus	Species	Common Name	Habitats
REPTILES					
Squamata	Anguidae	Gerrhonotus	coeruleus	Northern Alligator Lizard	Forest
	Boidae	Charina	bottae	Northwestern Rubber Snake	Forest, dry woodland
	Colubridae	Thamnophis	ordinoides	Northwestern Garter Snake	Most habitats
		Thamnophis	elegans	Western Garter Snake	Most habitats, near water
		Thamnophis	sirtalis	Common Garter Snake	Most habitats, near water
AMPHIBIANS					
Caudata	Ambystomatidae	Dicamptodon	ensatus	Pacific Giant Salamander	In or near streams or mountain lakes
		Ambystoma	gracile	Northwestern Salamander	In or near ponds
		Ambystoma	macrodactylum	Long-toed Salamander	Many habitats near water
	Salamandridae	Taricha	granulosa	Pacific Northwest Newt	In or near ponds
	Plethodontidae	Plethodon	vehiculum	Western Red-backed Salamander	Forest

TABLE A-4 (Con'd)

Order	Family	Genus	Species	Common Name	Habitats
		Ensatina	eschscholtzi	Oregon Red Salamander	Forest
Salientia	Ascaphidae	Ascaphus	truei	Tailed Frog	Mountain streams
	Bufonidae	Bufo	boreas	Western Toad	Many habitats, near water
	Hylidae	Hyla	regilla	Pacific Treefrog	Many habitats, near water
	Ranidae	Rana	aurora	Western Wood Frog	Forest, near ponds
		Rana	cascadae	Washington Frog	Ponds, streams, above 3,000 ft.
		Rana	pretiosa	Western Spotted Frog	Ponds, streams
		Rana	catesbeiana	Bullfrog	Ponds

a - Taken from Slater (13) (14), Stebbins (15)

TABLE A-5

NAMES, FORAGING STRATA, AND CONSUMER ROLES OF MAMMALS OF THE THOMPSON SITE, CEDAR RIVER WATERSHED, WASHINGTON.(a)

Scientific name	Common name	Foraging stratum(b)	Consumer role (c)
Canis latrans	Coyote	G	II^o
Cervus canadensis	Elk (wapiti)	G,S	I^o
Chiroptera	Bats	C	II^o
Eutamias townsendi	Townsend's chipmunk	G,S	I^o
Lepus americanus	Snowshoe hare	G,S	I^o
Lynx rufus	Bobcat	G	II^o
Microtus oregoni	Oregon vole	G	I^o
Mustela erminea	Shorttail weasel	G	II^o
Mustela frenata	Longtail weasel	G	II^o
Neotoma cinerea	Bushytail woodrat	G,S	I^o
Neurotrichus gibbsi	Shrew-mole	B,L	II^o
Odocoileus hemionus	Black-tailed deer	G,S	I^o
Peromyscus maniculatus	Deer mouse	L,G	I^o
Sorex trowbridgei	Trowbridge shrew	L	II^o
Sorex vagrans	Vagrant shrew	L	II^o
Tamiasciurus douglasi	Chickaree	G,S,C	I^o
Ursus americanus	Black bear	L,G,S	I^o
Zapus trinotatus	Jumping mouse	G	I^o

(a) - Table taken from Miller[16]

(b) B = soil layer; L = litter layer; G = ground layer, under 1 foot; S = shrub layer, 1 to 6 feet; C = crown layer, area occupied by living crowns of forest overstory.

(c) I^o = primary consumer, eats mostly plant material; II^o = secondary consumer, eats mostly animal matter.

TABLE A-6

NAMES, FORAGING STRATA, AND CONSUMER ROLES OF BIRDS OF THE THOMPSON SITE, CEDAR RIVER WATERSHED, WASHINGTON[a]

Scientific name	Common name	Foraging stratum[b]	Consumer role[c]
Bombycilla cedrorum	Cedar waxwing	C	I^o
Bonasa umbellus	Ruffed grouse	L,G,S,C	Io
Bubo virginianus	Great horned owl	C	IIo
Colaptes cafer	Red-shafted flicker	G,C	IIo
Columba fasciata	Band-tailed pigeon	L,S,C	Io
Corvus brachyrhynchos	Common crow	G	IIo
Corvus corax	Common raven	G	IIo
Dendragapus obscurus	Blue grouse	L,G,S,C	Io
Dendrocopos villosus	Hairy woodpecker	S,C	IIo
Dendroica nigrescens	Black-throated gray warbler	S,C	IIo
Empidonax spp.	Empidonax flycatchers	S,C	IIo
Hylocichla ustulata	Swainson's thrush	L,G	II^o
Ixoreus naevius	Varied thrush	L,G	II^o
Junco oreganus	Oregon junco	L,G	I^o
Loxia curvirostra	Red crossbill	C	I^o
Molothrus ater	Brown-headed cowbird	G	I^o
Oporornis tolmiei	MacGillivray's warbler	S,C	II^o
Parus rufescens	Chestnut-backed chickadee	S,C	II^o
Passerella iliaca	Fox sparrow	G	I^o
Perisoreus canadensis	Gray jay	G,C	II^o
Pipilo erythrophthalmus	Rufous-sided towhee	G	I^o
Piranga ludoviciana	Western tanager	S,G	I^o
Regulus calendula	Ruby-crowned kinglet	C	II^o
Regulus satrapa	Golden-crowned kinglet	C	II^o
Selasphorus rufus	Rufous hummingbird	G,S	I^o
Sitta canadensis	Red-breasted nuthatch	S,C	II^o
Sphyrapicus varius	Yellow-bellied sapsucker	S,C	I^o
Spinus pinus	Pine siskin	C	I^o
Troglodytes troglodytes	Winter wren	G,S	II^o
Turdus migratorius	Robin	L,G	II^o
Vermivora celata	Orange-crowned warbler	S,C	II^o
Vireo gilvus	Warbling vireo	S,C	II^o

(a) - Table taken from Miller[16].

(b) B = soil layer; L = litter layer; G = ground layer, under 1 foot; S = shrub layer, 1 to 6 feet; C = crown layer, area occupied by living crowns of forest overstory.

(c) I^o = primary consumer, eats mostly plant material; II^o = secondary consumer, eats mostly animal matter.

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APPENDIX B

AQUATIC BIOTA OF THE SKAGIT BASIN

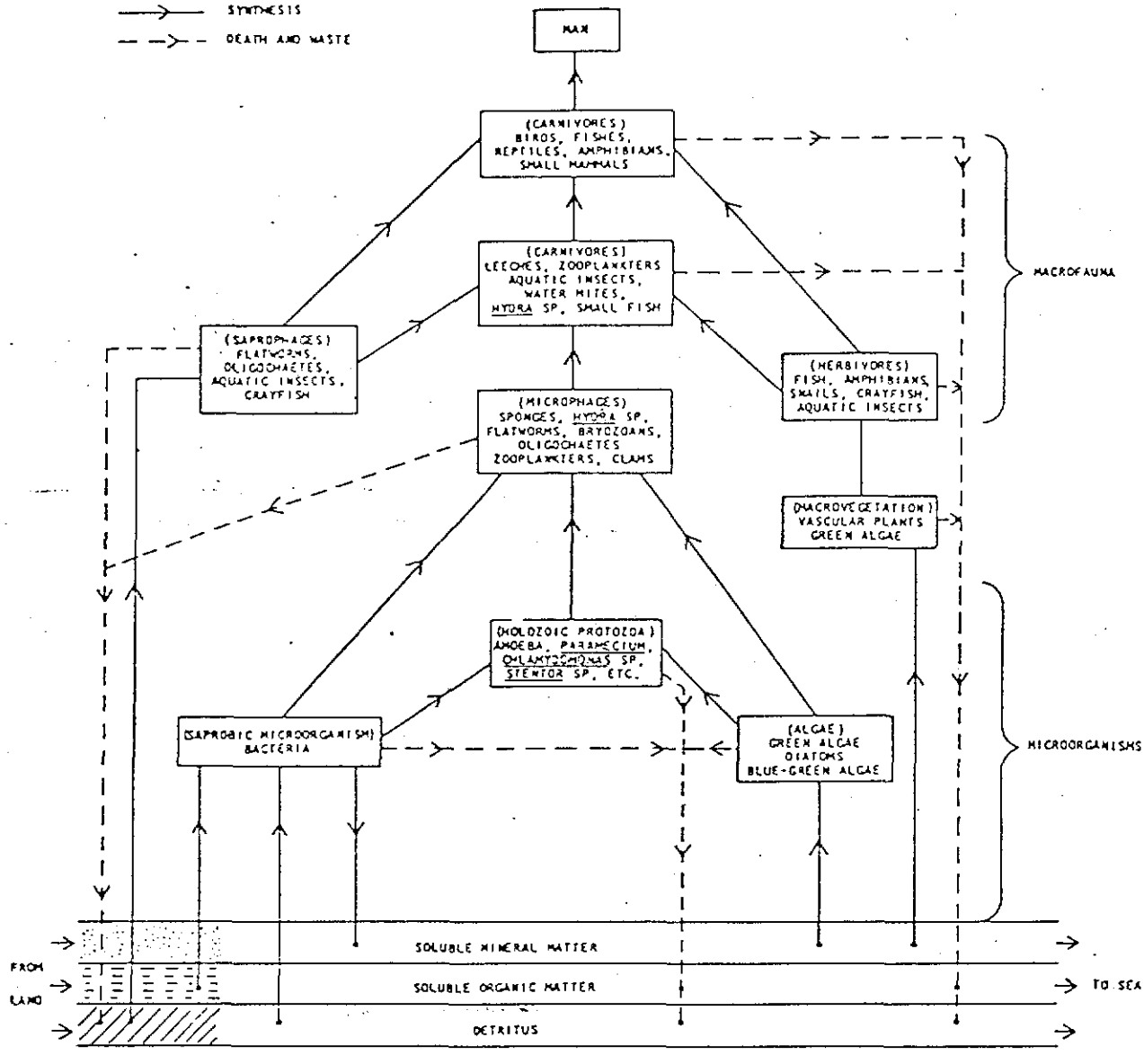

FIGURE B-1 MAJOR PATHWAYS OF MATERIAL TRANSFER IN A STREAM. MODIFIED FROM HAWKES (1962)

TABLE B-1

SIGNIFICANT SPAWNING REACHES FOR ANADROMOUS FISH AND RESIDENT GAME FISH SKAGIT BASIN

Stream	Section	Stream Mileage	Type of Spawning Area
	Sedro Woolley to Marblemount	20.0-69.0	Many broad riffles and beach gravel bars
	Marblemount to Gorge Powerhouse	69.0-84.0	Many riffles, some beach gravel bars
Cascade R.	Mouth to forks	0.0-17.0	Some riffles, considerable patch gravel
	S. Fork mouth to M. Fork	0.0- 2.0	Few riffles, some patch gravel
Sauk R.	Mouth to Darrington	0.0-18.0	Occasional broad riffles and long glides
	Darrington to forks	18.0-34.0	Intermittent riffles and glides, some patch gravel
North Fork	Mouth to falls	0.0- 1.0	Few riffles, some patch gravel
South Fork	Mouth to Cascades	0.0- 1.0	Few riffles, some patch gravel
Suiattle R.	Mouth to point upstream from Milk Creek	0.0-27.0	Some riffles, intermittent patch gravel
White Chuck R.	Mouth to Camp Creek	0.0-9.0	Few riffles, intermittent patch gravel
Baker R.	Baker Lake to Pass Creek	0.0- 8.0	Many riffles and short glides, much patch gravel

a) Additional spawning area is provided by virtually all tributaries entering within described reaches.

TABLE B-2

FISH THAT MAY BE FOUND IN THE SKAGIT RIVER BASIN

Family	Common Name	Genus Species	General Habitat
Salmonidae	Chinook Salmon	Oncorhynchus tshawytscha	Anadromous - Streams & Rivers
	Sockeye Salmon	Oncorhynchus nerka	Anadromous - Streams, Rivers & Lakes
	Coho Salmon	Oncorhynchus kisutch	Anadromous - Streams & Rivers
	Pink Salmon	Oncorhynchus gorbuscha	Anadromous - Streams & Rivers
	Chum Salmon	Oncorhynchus keta	Anadromous - Streams & Rivers
	Steelhead	Salmo gairdneri	Streams & Rivers & Lakes
	Rainbow Trout	Salmo gairdneri	Anadromous - Streams, Rivers & Lakes
	Cutthroat Trout	Salmo clarki	Anadromous - Rivers & Lakes
	Dolly Varden	Salvelinus malma	Streams & Rivers & Lakes
	Brook Trout	Salvelinus fontinalis	Streams & Rivers & Lakes
	Mountain Whitefish	Prosopium williamsoni	
Cyprinidae:	Redside Shiner	Richardsonius balteatus	Streams & Rivers & Lakes
	Northern Squawfish	Ptychocheilus oregonensis	Streams & Rivers & Lakes
	Peamouth	Mylocheilus caurinus	Rivers & Lakes
	Longnose Dace	Rhinichthys cataractae	Streams or Rivers
	Speckled Dace	Rhinichthys osculus	Streams & Rivers
	Carp	Cyprinus carpio	Rivers & Lakes
	Chiselmouth	Acrocheilus alutaceus	Rivers & Lakes
Catostomidae:	Largescale Sucker	Catostomus macrocheilus	Streams & Rivers & Lakes
Gadidae:	Burbot	Lota lota	Rivers & Lakes
	Pacific Tomcod	Microgadus proximus	Marine
Gasterosteidae:	Threespine Stickleback	Gasterosteus aculeatus	Streams, Rivers, Lakes, Marine
Centrarchidae:	Pumpkinseed	Lepomis gibbosus	Rivers & Lakes
	Black Crappie	Pomoxis nigromaculatus	Rivers & Lakes
	Largemouth Bass	Micropterus salmoides	Rivers & Lakes
Clupeidae:	American Shad	Alosa sapidissima	Anadromous - Streams & Rivers
	Pacific Herring	Clupea harengus pallasi	Marine

TABLE B-2 (Cont'd)

Family	Common Name	Genus Species	General Habitat
Osmeridae:	Eulachon	Thaleichthys pacificus	Anadromous - Streams & Rivers
	Longfin Smelt	Spirinchus thaleichthys	Anadromous - Streams & Rivers
Percidae:	Yellow Perch	Perca flavescens	Streams & Rivers & Lakes
Embiotocidae:	Shiner Perch	Cymatogaster aggregata	Marine
	Dusky Perch	Rhacochilus vacca	Marine
	Striped Seaperch	Embiotoca lateralis	Marine
Pleuronectidae:	Butter Sole	Isopsetta isolepis	Marine
	Rock Sole	Lepidopsetta bilineata	Marine
	English Sole	Parophrys vetulus	Marine
	Starry Flounder	Platichthys stellatus	Marine
Cottidae:	Prickly Sculpin	Cottus asper	Streams & Rivers & Lakes
	Mottled Sculpin	Cottus bairdi	Streams & Rivers
	Aleutian Sculpin	Cottus aleuticus	Streams & Rivers
	Buffalo Sculpin	Enophrys bison	Marine
	Staghorn Sculpin	Leptocottus armatus	Marine
	Sculpins	Artedius sp.	Marine
Ictaluridae:	Brown Bullhead	Ictaluris nebulosis	Rivers & Lakes
Acipenseridae:	White Sturgeon	Acipenser transmontanus	Anadromous - Rivers & Lakes
Chimaeridae:	Ratfish	Hydrolagus colliei	Marine
Petromyzontidae:	Pacific Lamprey	Entosphenus tridentatus	Anadromous - Streams & Rivers
Batrachoididae:	Pacific Midshipman	Porichthys notatus	Marine
Stichaeidae:	Snake Prickleback	Lumpenus sagitta	Marine
Agonidae:	Pygmy Poacher	Odontopyxis trispinosa	Marine

TABLE B-3

AQUATIC PLANTS THAT MAY BE FOUND BY SAMPLING IN THE SKAGIT RIVER BASIN

Class (Family)	Example	Common Name
Chlorophyceae:	Stigeoclonium	Green Algae
	Cladophora	
	Oedogonium	
	Ulothrix	
Chrysophyceae:	Vaucheria	Golden or Yellow-Brown Algae
Bacillariophyceae:	Gonphonema	Diatoms
	Cymbella	
	Melosira	
	Tabellaria	
	Fragillaria	
	Asterionella	
Myxophyceae:	Ocillatoria	Blue-Green Algae
	Phormidium	
Rhodophyceae:	Asterocytis	Red Algae
Tracheophyta:		Vascular Plants
(Na,adaceae)	Potomogeton	Water Nymphs
(Hydrocharitaceae)	Elodea	Frogs' Bit
(Lemnaceae)	Lemna	Duckweed
(Polygonaceae)	Polygonium	Buckwheat
(Ceratophyllaceae)	Ceratophyllum	Hornwort

TABLE B-4

AQUATIC INVERTEBRATES THAT MAY BE FOUND BY SAMPLING IN THE SKAGIT RIVER BASIN

Phylum	Class	Order	Common Name
Porifera:			Sponges
Coelenterata:	Hydrozoa:		Hydra
Platyhelminthes:	Turbellaria:		Flatworms
Bryozoa:			Bryozoans
Annelida:	Oligochaeta:		Aquatic earthworms
	Hirudinea:		Leeches
Mollusca:	Pelecypoda:		Clams & Mussels
	Gastropoda:		Snails
Arthropoda:	Crustacea:	Cladocera	Water fleas
		Copepoda	Copepods
		Ostracoda	Seed shrimps
		Mysidacea	Opossum shrimps
		Isopoda	Aquatic sow bugs
		Amphipoda	Scuds, sideswimmers
		Decapoda	Crayfishes, shrimps
	Insecta:	Collembola	Springtails
		Plecoptera	Stoneflies
		Ephemeroptera	Mayflies
		Odonata	Dragonflies, damsel flies
		Hemiptera	True bugs
		Megaloptera	Alderflies, dobson-flies
		Neuroptera	Spongilla flies
		Trichoptera	Caddis flies
		Lepidoptera	Aquatic caterpillars
		Coleoptera	Beetles
		Diptera	Flies, mosquitos, midges
	Arachnoidea:	Hydracarina	Water mites