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COMPREHENSIVE PLAN - DRAFT III

CITY OF MERRILL

FEBRUARY 1980
Includes revisions by Planning Commission & Council

Prepared by
LYNN D. STEIGER & ASSOCIATES, INC.

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Note: Bracketed text is significantly changed from the initial plan draft. These changes reflect Planning Commission and Council recommendations, and editing to reflect changes made in the urban growth boundary, and to delete duplication, and improve consistency, clarity and grammatics (hopefully without altering the meaning of the material).

INTRODUCTION

This introductory material has been included to provide citizens and local, State and Federal governmental officials a brief explanation of the Plan in order that the information can be more easily understood and utilized.

The Concept. This Comprehensive Plan is a public document prepared by the City, assisted by the Planning Commission and community residents. It provides long-range guidelines for decision-making with regard to land use suitability, development proposal evaluation, public utility, facility and street improvement planning and other considerations related to community growth.

The Plan should be used by all public bodies as the basis upon which to make community development decisions, and by businesses or private individuals to make investment or construction decisions wherein it is desirable to have some assurance that community growth will take place as projected.

The Purpose. The three basic purposes of this Plan are (1) to encourage desirable growth, (2) to accommodate anticipated development, and (3) to make provisions for those uses which may be needed by a community, but which may have such undesirable characteristics as noise, smoke, or odor.

The Plan can be used to encourage desirable growth in that it identifies those uses which are wanted, and provides areas for their development. Anticipated development, as projected in the Plan can be accommodated by constructing those road and utility improvements which will be needed in order for development to be realized. The Plan has also attempted to provide for the location of those uses which may have undesirable characteristics, but are needed to maintain or improve the economy and employment opportunities.

Flexibility. This Plan is flexible in that provisions are made for reviewing and changing or updating it as conditions in the area change. Such conditions may be economical, physical, social, legal, or environmental.

Existing Uses and Aggregate Lots. Any legal use existing at the time this Plan is adopted can be continued and allowed to expand according to Zoning Ordinance provisions, providing such use is not determined to be a nuisance. If a lot or the aggregate of contiguous lots held in a single ownership at the time of passage of the Plan, has an area or dimension which does not meet minimum requirements of the Plan classification in which the property is located, the

holdings may be occupied by any use permitted in that classification, provided that if there is an area deficiency, residential uses shall be limited to a single unit or the minimum standards of the particular classification.

Legality. The State enabling legislation stipulates that all cities and counties must have plans which (1) assure coordination and consistency (factual basis), in community development decisions, and (2) provide the basis for regulations, e.g. zoning and subdivision ordinances, which express public policy. The term coordination above refers (1) to planning interaction with other agencies at various levels of government, and (2) to transportation improvements, which are among the most important means of plan implementation. The law also requires plan review and revision as changing needs and desires arise. In December, 1974, the State Land Conservation and Development Commission (L.C.D.C.) adopted fourteen land use planning goals. The State goals do not actually have a direct affect on local standards, but do spell out what must be taken into account in preparing a plan. Cities and counties are still responsible for preparation of their own respective plans. Counties are required to coordinate all of the plans prepared within their boundaries.

Zoning. In addition to public utility, facility and transportation improvements, zoning is among the most important means of plan implementation. Zoning maps and land use plans are somewhat similar in that both delineate areas suitable for various uses, and attempt to assure use compatibility. Plans are general and flexible, and provide long-range guidelines for orderly development. Zoning is more specific, short-range and regulatory.

Since the Baker vs. Milwaukie (Oregon Supreme) Court case determined that the Comprehensive Plan has precedence over zoning, any conflicts that exist between this Plan and the Zoning Ordinance will have to be resolved. It is planned to revise the existing zoning ordinance to bring it into compliance with the new Plan and State regulations.

Format. This document has eight basic sections: the Plan map and classification descriptions, goals and policies, findings, land needs analysis, commitment/exceptions, community survey results and an adopting resolution including provisions for plan review/ revision, and Urban Growth Boundary management.

Technical Data. A supplementary document has been prepared and reproduced under separate cover to include that land use, transportation, population, economic, housing and other related information as required by LCDC. That material provided the bases of most of the findings in the Plan.

CLASSIFICATION DESCRIPTIONS AND PLAN MAP

The City of Merrill has four Plan classifications: Residential, Commercial, Industrial and Public.

The term "suitable" in the classification definitions following, takes into account existing uses, and those environmental, service and similar conditions in each location, which make that area more or less "suited" for various uses. The term "desirable" refers to an area's social, economical and political characteristics which must be taken into account in establishing the need or demand for various uses on alternative sites. This plan combines these suitability and desirability considerations in an attempt to provide a single development guideline.

The following summaries describe these plan classifications found within the Urban Growth Boundary of Merrill.

City Plan Map Classification

Residential. To provide areas suitable and desirable for single and possibly multiple family residential uses. The primary purpose of this classification is to encourage residential development near City services, commercial and educational support facilities, and employment opportunities. The area designated residential as shown on the Plan map encompasses the existing residentially-developed areas of town, as well as those unincorporated areas considered to be necessary for future expansion. These include the following four undeveloped parcels:

1. The proposed (Heaton) annexation area west of town which has a net residential acreage of 41 acres and is expected to develop to a maximum density of 4 dwelling units per acre.

2. The area between Klamath Falls/Malin Highway and Falvey Road, having a net residential acreage of 20 acres and expected to develop to a density of 4 dwelling units per acre.

3. The area southwest and west of Boyd Equipment to the river, having a net residential acreage of 59 acres, and expected to develop into large lots with an optimum density of 2 dwelling units per acre.

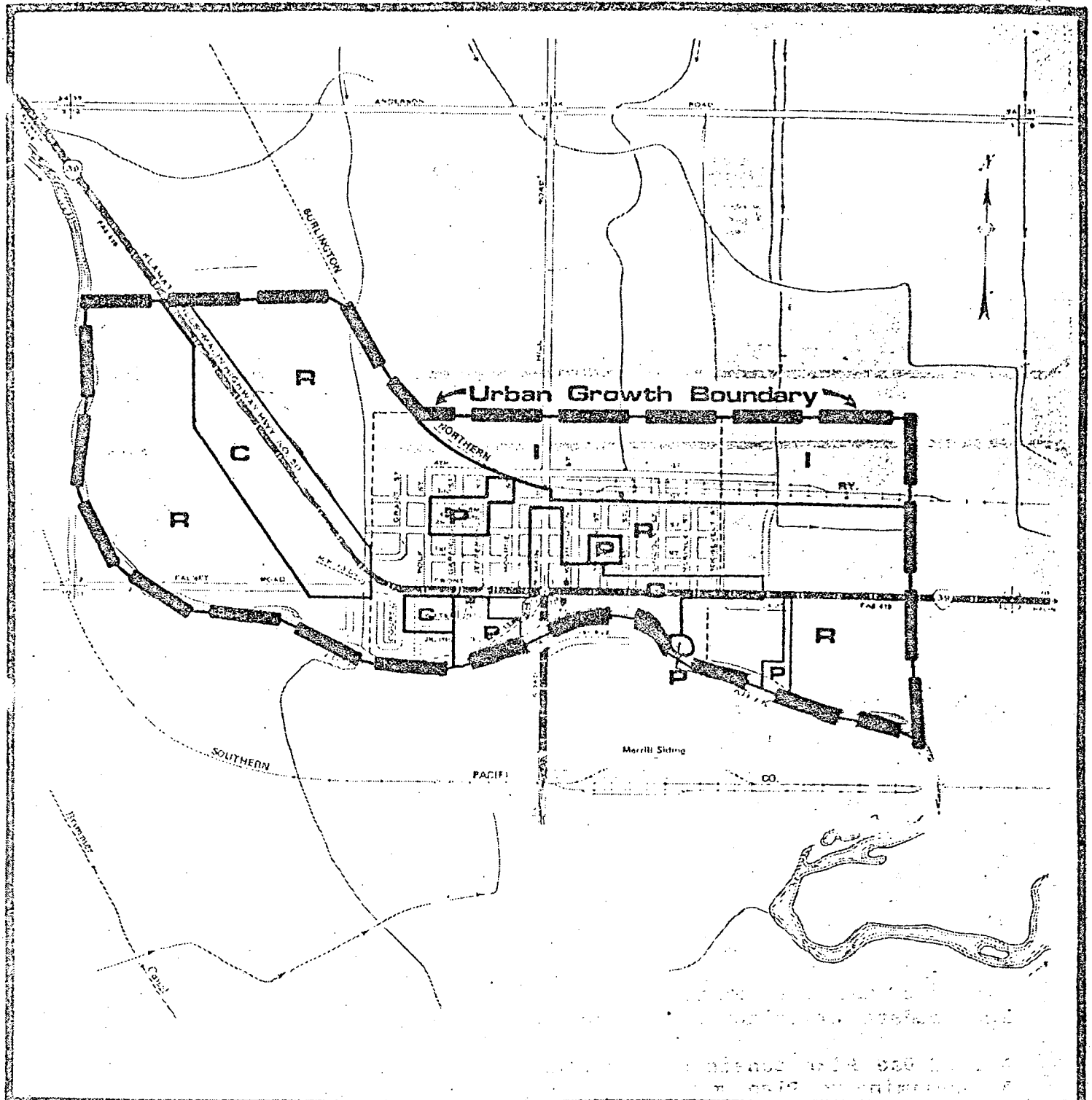
4. The area between the cemetery/cemetery road and east City limits (south of the highway), having 9 net resi-

dential acres, and expected to develop to a density of 4 dwelling units per acre.

Commercial. To provide areas suitable and desirable for retail, service, tourist, and other similar commercial activities which are needed in the community. The primary purpose of this classification is to encourage a relatively concentrated commercial center in order to maintain or improve commercial returns by maximizing customer interactions between businesses and minimizing costs of providing the relatively high level of City services commercial establishments require. Two area are designated commercial: the area extending from downtown east to Elm street, and the area along both sides of the highway coming into town. The area on the south side of the highway extends from the southern corner of Boyd Equipment to Falvey Road, paralleling the highway. The western commercial area contains 54 acres and is anticipated to provide for agriculture-related and other large-area commercial uses.

Industrial. To provide areas suitable and desirable for those industrial activities needed to maintain or improve area economy and employment. The principal purpose of this classification is to encourage new industrial development or expansion of existing industries to locate away from the residential area in order to minimize the conflicts between housing and industrial activities while maintaining proximity to utility and transportation facilities and City services. The area designated industrial includes 50 acres of agricultural land within the Urban Growth Boundary which lies parallel to and north of the Burlington Northern Line. A second industrial area lies outside of the Urban Growth Boundary south of town along the Southern Pacific Line, and may be provided municipal services at some future time but is not anticipated to be included within the Urban Growth Boundary.

Public. To indicate areas desired to be used for existing or anticipated public uses such as schools and parks and other local public, State or Federal activities or facilities. The primary purpose of this classification is to prevent incompatible uses from enroaching upon the existing public facilities and those areas where future expansion of the facilities would be most desirable. Areas designated public include the school, cemetery, park and sewage treatment plant sites. The need for additional neighborhood and community park sites is recognized east and west of town, respectively.



R RESIDENTIAL

C COMMERCIAL

I INDUSTRIAL

P PUBLIC

PRELIMINARY LAND USE PLAN

MERRILL OREGON

north

0 800

scale in feet

7/79

Prepared by LYNN D. STEINER & ASSOCIATES, Inc.

GOALS AND POLICIES

Citizen Involvement

Goal: To encourage an effective citizen involvement process that will involve citizens in all phases of the planning process.

Policies:

1. That the Citizen Involvement Plan shall be the guiding document regarding citizen involvement.

2. That the Planning Commission shall be designated as the Committee for Citizen Involvement.

3. That the primary vehicles for citizen involvement shall be "Town Hall Meetings", surveys and questionnaires.

4. That citizens shall be involved in all phases of the planning process including plan preparation, plan adoption and plan revision.

5. That notice will be given of important meetings by posting information of these meetings around town.

6. That the citizen involvement program will be reviewed and revised as necessary.

Recommendations:

1. That any vacancies on the Planning Commission be advertised widely to provide for widespread participation.

2. That planning meeting be well-advertised utilizing the newspaper, local radio, and local posters throughout the town.

3. That the background data and plan be available for citizen review both at the city hall and at the library.

4. That plan summaries be widely distributed after adoption.

5. That informational materials be prepared for distribution to schools, civic groups and other organizations and individual citizens to explain the Plans and planning processes.

Land Use Planning Process

Goal: To establish a continuing comprehensive planning program for the City of Merrill.

Policies:

1. That all City actions related to land use will be consistent with the Plan.

2. That land use decisions will take into account all applicable plan background material, inventory maps and other factual information.

3. That detailed plans or specific programs to implement the Plan goals and policies will be developed along with implementing ordinances.

4. That planning decisions will be coordinated with affected local, State or Federal agencies.

5. That the Comprehensive Plan will be kept current through semi-annual review.

6. That major Plan changes such as reivsions and reprinting will follow a process similar to Plan preparation and may be initiated by the Council, Planning Commission or citizen petition.

7. That minor Plan changes such as boundary corrections or adjustments will be made by the governing body at a public hearing.

8. That decisions will recognize the need for residential development and its surrounding land uses to be compatible.

9. That the small-town character of the community will be protected and/or enhanced.

10. That provisions will be made for a properly-located and well-designed arrangement of commercial uses, compatible with surrounding land uses.

11. That the impact of commercial uses on adjacent residential areas will be minimized.

12. That industrial areas will be compatible with surrounding land uses, while also enhancing the utility of industrial areas.

13. That environmentally compatible land uses will be protected.

14. That private investments will be protected from incompatible development.

15. That public investment in facilities and services will be protected from development which might exhaust their capacity and require additional capital improvements.

16. That future land uses will be placed so as to minimize development costs and achieve compatibility with adjacent uses.

Recommendations:

1. That an official copy of the Plan and related documents be kept on file by the City Recorder and a second copy be available for review.

2. That persons affected by Plan changes be notified of hearing time, date and place.

3. That the City Recorder maintain a listing of the local, State and Federal agencies likely to be affected by local planning decisions, and be responsible for notifying these agencies when necessary.

Agricultural Land

Goal: To conserve agricultural land for agricultural uses.

Policies:

1. That preservation of agricultural lands adjacent to Merrill will be encouraged.

2. That agricultural land uses inside the City limits will not be encouraged.

3. That land zoned for agricultural uses will be rezoned to urban uses only after the following have been considered:

    a. There is a need for more urban land.

b. The conversion is consistent with Plan goals and policies.

c. No more suitable alternative locations are available.

4. That agricultural lands be separated from adjacent urban land by buffer or transitional areas of large lot development, open space or physical boundaries, e.g. roads or ditches.

5. That extension of services into agricultural areas will be avoided whenever possible, except as may be required south of town by existing uses or for industrial development along the Southern Pacific Line.

Open Spaces, Scenic and Historic Areas and Natural Resources

Goal: To conserve open space and protect natural, cultural, historic, and scenic resources.

Policies:

1. That open space lands will be conserved by:

   - Providing adequate recreation or other open space in new developments to enhance the community's small town character.
   - Limiting development in areas that have significant natural values, or are subject to natural disasters and hazards.
   - Discouraging development of agriculture and other open space in the surrounding area.

2. That scenic resources will be kept in open space uses to the extent possible.

3. That historical and cultural resources will be protected by:

   - Encouraging preservation/restoration of historic sites and structures.
   - Identifying additional historical sites and structures.
   - Protecting and inventorying archaeological resources subject to disturbance by development.

4. That natural resources will be protected by:

- Considering the conservation of natural resources when determining the rate, location and type of growth in the City.
- Encouraging the use of acceptable mining practices in commercial development of mineral resources.
- Protecting and enhancing groundwater and surface water resources.
- Protecting geothermal resources from incompatible development to the extent possible.
- Encouraging protection of unique ecological areas.

Air, Water and Land Resource Quality

Goal: To preserve or improve the quality of air, water and land resources.

Policies:

1. That development proposals will be evaluated in terms of their impact on air, water and land resource quality.

2. That Federal and State air and water quality standards will not be compromised.

3. That air pollution management practices will be supported.

4. That noise-sensitive areas such as residences will be separated or buffered from noise sources such as the railroad.

5. That regulations to require and insure reliable and sanitary solid-waste disposal will be adopted and enforced.

6. That water and groundwater resources will be protected and improved by prohibiting undesirable discharges.

Areas Subject to Natural Disasters and Hazards

Goal: To protect life and property from natural disasters and hazards.

Policies:

1. That development in areas subject to natural disasters and hazards will be limited to compatible uses.

2. That the development limitation of areas subject to natural disasters and hazards will be recognized.

Recreation Needs

Goal: To satisfy the recreation needs of the community.

Policy:

1. That accessibility to and availability of recreational activities to people of all age groups will be insured.

2. That recreational facilities will be improved and expanded.

Recommendations:

1. That a neighborhood park be located east of town possibly in that area around the treatment plant where structures are forbidden.

2. That a 14 acre community park be located west of town and be provided access in a manner (1) least disruptive to residential development in the area, and (2) wherein bicycle/pedestrian trails may be included in subdivision planning.

Economy

Goal: To diversify and improve the economy of the City.

Policies:

1. That development of new business and industry in the community will be encouraged, so long as

   a. Such development does not threaten the air, water and land resource quality of the community.

   b. Undesirable impacts on public facility capacities can be minimized.

2. That diversification of industry within the agricultural sector will be encouraged.

3. That industrial development of geothermal energy will be encouraged.

4. That employment opportunities for current City residents should be improved.

5. That utilization of training and educational facilities will be encouraged.

6. That development and improvement of existing commercial services in the community will be encouraged.

7. That expansion of the number/type of commercial services available in the community will be encouraged.

8. That improvement of the downtown area will be encouraged.

Housing

Goal: To provide adequate and affordable housing for the citizens of the community.

Policies:

1. That the City will encourage proposals which increase the supply of housing so long as services can be provided.

2. That the City will encourage maintenance of reasonable vacancy rates in order to provide individuals and families a choice of housing.

3. That provision of more rental housing will be strongly encouraged.

4. That housing rehabilitation programs will be encouraged.

5. That provision of low-moderate priced housing will be encouraged.

6. That development of multi-family housing will be encouraged so long as it is compatible with the surrounding area.

7. That policies which unreasonably increase the cost of housing will be avoided.

8. That land will be provided for residential use such that the supply of housing will not be restricted by the availability of land.

Recommendation: That public and private assistance be sought in providing housing rehabilitation programs and low-moderate cost housing.

Public Facilities and Services

Goal: To provide an orderly and economic arrangement of public facilities and services.

Policies:

1. That development will be encouraged in areas where services are adequate to accommodate additional people.

2. That the water and sewerage plans and other provisions of the Capital Improvement Element will be recognized in any applicable public facility or service improvements.

3. That all future growth will take into consideration the limitations of City facilities and services.

4. That the City will work with the County to encourage the development of and access to schools consistent with present and future needs.

5. That development/staffing of medical facilities will be encouraged.

6. That service extensions will generally not be considered until such time as the existing systems are brought up to current needs.

7. That City services will not be extended outside the City limits, except (1) as may be necessitated by existing development south of town or (2) for industrial uses along the Southern Pacific railroad.

Transportation

Goal: To develop and maintain a safe, convenient and economic transportation system.

Policies:

1. That a street network to meet the needs of existing and anticipated movement of people will be provided.

2. That provisions will be made to increase the convenience and safety of pedestrian and bicycle transportation.

3. That the new streets be planned according to the Capital Improvement/Street Plan Element of the Comprehensive Plan.

Energy Conservation

Goal: To conserve energy.

Policies:

1. That residential development will be encouraged to be located in close proximity to Cities which can provide for the shopping, employment, recreation, education and other needs of such residents at least expenditure of energy.

2. That energy conservation programs will be encouraged.

3. That utilization of renewable energy resources will be supported.

4. That energy-saving design of housing and neighborhoods will be strongly encouraged when considering new subdivisions.

Urbanization

Goal: To provide an orderly and efficient transition from rural to urban use.

Policies:

1. That any change of the urban growth boundary will be based upon the following:

    a. Demonstrated need to accommodate additional urban population growth requirements.

    b. Need for housing, employment opportunities and/or commerce not provided for within the boundary.

    c. Orderly and economic provision of public facilities and services.

2. That vacant land within the City will be encouraged to be used before additional land is annexed.

3. That moderate population growth will be accommodated.

FINDINGS

I. CITIZEN INVOLVEMENT

1. Merrill adopted a Citizen Involvement Plan on August 25, 1976.

2. The Planning Commission is designated as the Committee for Citizen Involvement, and has had the primary responsibility for developing the Comprehensive Plan.

3. The primary vehicle for citizen involvement is "Town Hall Meetings" with surveys and questionnaires also.

4. The City recognizes the importance of involving citizens in plan preparation, plan adoption and plan revision.

II. LAND USE PLANNING PROCESS

1. Until recently, most land use proposals were considered on a case-by-case basis, with little, if any consideration of the long-range impact.

2. A majority of citizens responding to the questionnaire felt that the Plan should be updated bi-annually or every five years.

3. That a new City base map has been prepared, and inventory information has been assembled for each of the applicable State goals and included in the Technical Data Document.

4. That the subdivision ordinance has been revised and that application forms/checklists have been prepared to implement this ordinance.

5. That problems and issues have been identified in the community survey.

6. That in addition to information specifically regarding the City, additional related (secondary), data can be found in the respective elements of the County Plan.

III. AGRICULTURAL LAND

1. That much of the soil in and around Merrill is SCS Capability Class III and IV.

2. Much of the land in the surrounding area is in agricultural use.

3. A strong majority of citizens feel that it is important to preserve agricultural lands, but only a bare majority (50-40) feel that it is important to preserve agricultural lands immediately adjacent to Merrill.

4. A majority of citizens object to agricultural uses inside the City limits.

IV. OPEN SPACE, SCENIC AND HISTORIC AREAS AND NATURAL RESOURCES

1. Open space needs in the Merrill area are currently being met by:

   - The agricultural and other undeveloped land inside the City limits.
   - 6 acres of parks
   - The open space in the surrounding area.

2. There are no outstanding scenic areas in Merrill or in the immediate vicinity.

3. Several historic sites have been identified in Merrill (see Technical Data).

4. There may be some potential for archaeological resources to be found near Merrill.

5. A majority of citizens favor the protection of historic and cultural resouces.

6. Mineral resouces in the Merrill area include diatomite, peat, aggregate, pumice and cinder. None of these mineral resources will be significantly affected by expansion of the City of Merrill.

7. The quality of groundwater in the Merrill areas is generally very good.

8. Two areas with geothermal potential are located in the Merrill vicinity. The further development of the City will not infringe on these areas since they are 2 to 5 miles away.

9. Soils in the Merrill area generally have severe development limitations for septic tanks and dwelling foundations, and moderate limitations for roads.

10. Vegetation in the Merrill area varies from irrigated agriculture and riparian types to the predominant Juniper-Sage-Bitterbrush type.

11. Much of the marshland just south of Merrill provides important stopover resting areas on the Pacific Flyway bird migratory routes.

12. No significant natural area is located within or near Merrill.

V. AIR, WATER AND LAND RESOURCE QUALITY

1. The quality of Merrill's air, water and land resouces is relatively good.

2. Merrill generally has excellent air quality.

3. Motor vehicle traffic is not a significant source of air pollution in the Merrill area.

4. The major non-point source of air pollution in Merrill is agriculture tilling dust.

5. Noise is not generally a problem in Merrill, except perhaps the noise associated with truck traffic on the main highway through town.

6. The County landfill site southwest of town is currently being used as a solid waste transfer site.

7. The Lost River has a number of pollution problems, however, few are related to the City of Merrill.

VI. AREAS SUBJECT TO NATURAL DISASTERS AND HAZARDS

1. The only significant natural hazard in Merrill is high groundwater which imposes development limitations on much of the City. Such limitations can be overcome by proper construction techniques.

2. Storm water runoff is not a hazard.

VII. RECREATION AREAS

1. The need for parks is not being met in Merrill.

2. The City needs to improve existing parks and acquire additional park land.

3. There is also a need for improvement in the recreational opportunities for youth and senior citizens.

VIII. ECONOMY

1. Merrill's economy is largely dependent upon natural resouces, specifically for agriculture and tourism activities.

2. Geothermal resouces may play an important part in Merrill's future.

3. The predominant occupations of Merrill's labor force are farm laborers (25%), operatives (11%), managers and proprietors (11%), and craftsmen and foremen (11%).

4. Merrill's seasonal pattern of employment is different from the County-wide pattern due to the October-May work cycle of the potato sheds.

5. Over half of Merrill's population is of working age (20-64).

6. Nearly 1/4 of Merrill's population earned less than $2,000/year in 1970.

7. Nearly 80% of Merrill's population earned less than the County-wide median income.

8. Merrill's median income of $4,600 is a little more than half of the County-wide median income.

9. A very small percentage of Merrill's work force is employed in the basic sector of the economy.

10. Merrill serves primarily as a local service center for the nearby agricultural areas.

11. 49% of Merrill's work force is employed in retail trade and services, while 35% of the business establishments are in this sector.

12. There is a need for more industry/jobs in Merrill.

13. There is a need for more commerce/services.

IX. HOUSING

1. Merrill's housing supply increased only 4% between 1960 and 1970, but has increased more than 10% since 1970.

2. Although there are a number of vacant lots in town, the lack of available ones, and the relative condition of houses in areas where lots are available, has appreciably limited new housing starts in the City.

3. Slightly over half of the housing units in Merrill are owner-occupied.

4. Over 2/3 of the housing units in Merrill are single-family units.

5. Over 2/3 of the housing units in Merrill are over 40 years old.

6. Over half of the housing units in Merrill were considered substandard, however, many of these units have been brought up to standard by a recent housing rehabilitation program.

7. There are a large number of housing units in Malin valued at less than $5,000.

8. There may be as many as 90 households in need of housing assistance in Merrill, as they currently pay excessive portions of their income for housing.

9. The number of new housing starts in Merrill indicates that building activity is accelerating in Merrill.

10. In order to accommodate expected growth, about 312 new housing units will be needed in Merrill by 2000.

11. There is a need for more rental housing in Merrill.

12. There is a need for low-moderate income housing in Merrill.

13. There is a need for further housing rehabilitation in Merrill.

14. There are a number of single family houses and mobile homes within the unincorporated area of the Urban Growth Boundary.

15. Housing conditions in the unincorporated UGB areas are comparable to those within the City.

X. PUBLIC FACILITIES AND SERVICES

1. Overall, services in Merrill are adequate to provide for present needs.

2. The City Hall is adequate at present.

3. The police department is adequate at present, however, another patrolman might be needed as population increases.

4. The fire department is adequate at present, although paid personnel might become necessary in the future.

5. The school facilities are adequate to meet present and future needs.

6. There is apparently a need for health and medical facilities in Merrill.

7. Although the water supply system is adequate for present demands, a new well is needed.

8. Water storage is inadequate for present needs; new and larger storage facilities are needed.

9. Except for minor changes, the water distribution system is adequate for present needs; with the exception of needing more fire hydrants.

10. Merrill's sewage collection system has just recently been improved, and will be adequate for several years.

11. Merrill's sewage treatment system is presently near capacity, and improvements will be needed in the next few years.

XI. TRANSPORTATION

1. Merrill's street system allows safe and conventient transportation within the City.

2. Several streets in town are in need of repair/maintenance.

3. Alternative forms of transportation such as walking and bicycling are not well provided for in the City.

4. There are not presently enough people in Merrill to support a mass transit system.

5. The transportation needs of the elderly and handicapped population might best be met by a County-wide system.

XII. URBANIZATION

1. There are only 16 acres of vacant lots in Merrill.

2. Only a small proportion of these are available for residential development.

3. Of the 50 acres of agricultural land inside the City limits none is presently available for development.

4. The City's projected population to 2000 is 1,467, or an increase of 567 persons.

5. About 437 new housing units will be needed by the year 2000 (312 new units and 125 replacement units).

6. Plans are currently underway to expand and renovate the City's services to accommodate this growth.

7. The City does not have sufficient land inside the present City limits to accommodate projected growth.

8. The lack of vacant lots and the condition of housing in East Merrill will limit the number of new housing starts expected inside of the present City limits.

9. Land west of the City and south of Falvey Road is already urbanized. This area will need City sewer service in the near future due to septic failures.

10. Commercial area north of town and west of Highway 39 is essentially committed to this use due to the location of existing commercial use in that area. There is a need for large lots for commercial/light industrial uses.

11. The south and west edge of the UGB is the Lost River. This is the logical physical boundary and provides a smooth transition between urban and agricultural uses.

12. Irrigation canals basically provide the north boundaries of the UGB where it has been expanded beyond the City limits.

13. Land in the industrial area at north - inside existing City limits is <u>not</u> available for sale, and won't be, as long as it remains under the present ownership.

Entire section revised

LAND NEEDS ANALYSIS

BUILDABLE RESIDENTIAL LANDS are those urban and urbanizable lands that are suitable, available, and necessary for residential use.

1.	Total area within the City limits	294
2.	Land currently built upon	199
GROSS AVAILABLE LAND (VACANT LAND)		95
3.	Unsuitable land (Note: Areas subject to seasonal ponding may require special consideration.)	-
4.	Less buildable land not zoned residential	
	Commercial	8
	Agricultural	50
	Industrial	5
	Public	11
GROSS BUILDABLE RESIDENTIAL LAND		21

The next question that has to be addressed is how much land is needed?

RESIDENTIAL LAND NEEDS

1.	Projected population (2000)	1,395
2.	Projected Population in Households	*
3.	Projected Household Size	*
4.	Projected Number of New Households	312
5.	Projected housing mix:	*
6.	Projected housing density	**

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*Maximum allowable density:

3 units/acre for single family	80%
8 units/acre for multi-family	20%

**Assumed continued vacancy rate of about 8-9%

Type of Unit	%	Projected # Units	Units/Acre	Required Acres
Single Family	80	250	3	83.00
Multi-Family	20	62	8	7.75
TOTAL	100	312		90.75

COMMERCIAL/INDUSTRIAL LAND NEEDS

Estimated - based upon current ratio of commercial/industrial acres per 100 population, however this does not provide for agriculture related commercial activities such as Boyd Equipment which require large parcel sizes.

Currently there are 1.85 acres of commercial/industrial land per 100 persons.

Using population estimate, Merrill would need 9.23 more acres of Commercial/Industrial land by the year 2000, plus whatever land might be needed for agriculture commercial uses (estimated at 40 acres), or other industrial activities(estimated at 40 acres).

PUBLIC LAND

Estimated - additional land needed for parks and other public services and facilities = 40 acres

TOTAL LAND NEEDED:

Residential	83
Commercial	45
Industrial	35
Public	40
	203

The final step is to match available land within the City limits with the estimated need.

Category	Total City Buildable Land	Land After Streets	Total Land Needed	Net Unincorporated Land Required
Residential	21	15	91	76*
Industrial	50	35	35	-
Commercial	8	5	45	40
Public	-	-	40	40
TOTAL	79	55	211	156

*An additional 5 acres will likely be needed to offset the estimated 5 acres of available land that is not likely to be developed for some time as a result of housing conditions in such areas.

LAND AVAILABILITY

In order to be able to provide the acreage actually needed, and in order to recognize that development is likely to occur at less than the allowable densities, the City designated more than the minimum acreage requirements in order for the land to be available as demand occurs, and for development to occur at normal rather than maximum densities. In the Merrill area, a number of parcels indicated for development will not be available for purchase or subdivision while under the present ownership, consequently, providing more land than will actually be required, will allow for the market to operate relatively free from control of a few property owners. The table below compares unincorporated area needs with the amount of such land within the Urban Growth Boundary.

Unincorporated Area	Net Needs	Net Provided
Residential*	116	129
Commercial**	40	50
Industrial	0	0
TOTAL	156	179

*Includes Public (parks, schools, etc.)
**Estimated for agriculture and other large-area commercial

COMMITMENT/EXCEPTIONS

New section

Recognizing that the City must take exception to any State Planning Goal, from which the City Plan deviates, the following explanations of commitment (to urban uses), or justifications have been made for exceptions to Goal 3 (Agriculture Land Preservation):

1. The residential parcel south of Falvey Road and west of City limits does not require an exception because nearly all of the land has been developed into small acreage residential parcels, many of which need City sewerage service.

2. The residential parcel from the west boundary of Boyd Equipment to the Lost River, bounded by Falvey Road on the south and the highway on the north. As indicated in

the land needs analysis, some 108 net acres of unincorporated land is needed for projected population. This area includes nearly 60 net acres, and has been included because of its serviceability, potential of services being needed by the existing vicinity uses, access, natural west boundary and desirable home location. It is anticipated that this area will be developed to a density of 2 units per acre because of the large-lot character desired, and the possiblility of a community park being located therein. Septic tanks will be used (in association with City water) in the area if proven feasible.

3. The residential parcel between Boyd Equipment and Falvey Road, containing 20 net acres. This area has a developed area across Falvey Road to the south, and is suitable and needed to provide residential units to accommodate projected population. It has good access, will likely be serviced and has existing development to the north and south, and projected development to the east and west.

4. The 40 (net) acre residential parcel abutting the west City limits, is also bounded by the rail line, irrigation canal and Klamath Falls-Malin Highway. This parcel was annexed to the City at one time but removed because of a procedural appeal. It does, however, provide needed area and desirable home locations. It is well located from the standpoint of being able to be provided with City services and access. Its present physical boundaries make logical urban growth limits.

5. The parcel abutting the east City limits, bounded by the Klamath Falls/Malin Highway and City limits to the north, the cemetery road and cemetery to the east and southeast, the Lost River to the south, and the City limits to the west. This parcel contains 9+ net acres of land with good access and services readily available.

6. The commercial parcels along the Klamath Falls-Malin Highway extending from (and including) Boyd Equipment Company on the west to the west City limits. These parcels include about 40 undeveloped net acres presently zoned Agriculture by the County. This will preclude conversion from agriculture to urban uses until the need is justified, and will insure that such uses cannot be located in other more desirable locations.

As indicated in the Land Availability summary above, it is estimated that 148 net acres of land will be needed outside of the present City limits to accommodate projected growth,

and 188 acres have been so indicated on the Plan. Of that acreage, County Light Agriculture and Agriculture zoning will limit them entirely from developing into urban uses until such time as rezoning has been completed. This process will involve justifying the change, as per zoning ordinance provisions, insuring an orderly and timely conversion of agriculture land to urban uses.

In addition, that undeveloped Industrial-designated land within the City is also zoned Agriculture, further assuring that conversion of agriculture land to urban uses will only occur after justification has been established and alternative locations evaluated.

List of Issues from Community Attitude Survey - Merrill

1. What do you see as the major problems facing the community over the next 10 years?

   SERVICES (16)
   - Water service, sewer service, police force, street paving and curbs.
   - City's ability to finance needed improvements.
   - City's ability to repair existing systems and accommodate growth.

   HOUSING (1)
   - Provide the means for east-side property owners to improve property.

   ECONOMY (2)
   - Rehabilitation of business sector.
   - Unnecessary growth of commercial and business sectors.

   COMMUNITY (5)
   - Public apathy/lethargy.
   - People working together.
   - Lack of enthusiasm from the young.
   - Drugs.

   LAND USE (1)
   - The "takeover" of agricultural land for housing.

2. What would you like to see accomplished in the next 10 years?

   GROWTH (9)
   - Extend City boundaries/increased growth.
   - Plan for growth/orderly growth.
   - Growth at a moderate rate.
   - Growth involvement.
   - Growth - blending people with agriculture.
   - Minimum growth - maximum careful planning.
   - Maintain status quo.

   SERVICES (6)
   - Provide services/pave streets/expand water. system/expand sewer system/expand sewer plant/provide medical-dental services.

   RECREATION (2)
   - Provide recreation for youth and senior citizens.
   - Develop a new park with a swimming pool.

ECONOMY (2)
More businesses.
Improve downtown business area.

APPEARANCE (3)
Fix up the existing City, make it more attractive.
Clean up.
Modernize.

HOUSING (1)
More housing.

PLANNING (1)
A Plan that will prevent incompatible uses like the apartments on the west side.

COMMUNITY (1)
Cooperation among citizens.

3. What do you <u>like</u> most about your city?

Small town (10)
People (6)
Clean-quiet (4)

Resolution No. _____
Series _____

RESOLUTION ADOPTING THE CITY OF MERRILL COMPREHENSIVE PLAN AND THE MERRILL-KLAMATH COUNTY URBAN GROWTH BOUNDARY AND MANAGEMENT AGREEMENT.

This Resolution is hereby approved this ____ day of _____, 1979, to adopt the Comprehensive Plan and Urban Growth Boundary for the City of Merrill (hereinafter called City), and to establish the procedures for administering planning and related ordinances within and abutting the Urban Growth Boundary. The boundary and procedures shall become effective at such time as they are agreed upon by the County.

WHEREAS, the City Planning Commission has approved a Comprehensive Plan and Urban Growth Boundary; and

WHEREAS, a procedure is required to be adopted for administering comprehensive plan and ordinance provisions related to unincorporated land within the Urban Growth Boundary; and

WHEREAS, it is recognized that such a boundary and management agreement must be adopted by ordinance by the County to satisfy LCDC requirements for plan acknowledgement; and

WHEREAS, the primary purpose of this resolution is to adopt the City's Comprehensive Plan, and to formalize the means of coordinating City and County planning in the unincorpoated urban growth boundary areas;

NOW THEREFORE, BE IT RESOLVED, that the City hereby adopts the City Comprehensive plan, and approves the Urban Growth Boundary and management provisions below:

1. That no land outside of the boundary will be annexed into the City unless such boundary is changed to encompass the area.

2. That prior to any City action on a proposal on any land within and abutting the City limits, the County will be provided an opportunity to comment on the proposal.

3. That prior to any County action on a proposal on any unincorporated land inside or within a mile of the Urban Growth Boundary, the City will be provided an opportunity to comment on the proposal.

4. That the County will administer the County Zoning and Subdivision Ordinances in accord with the Plan

and Subdivision Ordinances in accord with the Plan approved for the unincorporated area within the Urban Growth Boundary.

5. That the County will not allow development outside of such boundary that may likely create a demand for municipal services and/or facilities not planned to be provided by the City.

6. That any changes in the Plan will follow procedures for zone changes, and will be in accord with the goals and policies found herein.

AGREED, this _____ day of _____, 1979.

City Mayor_____

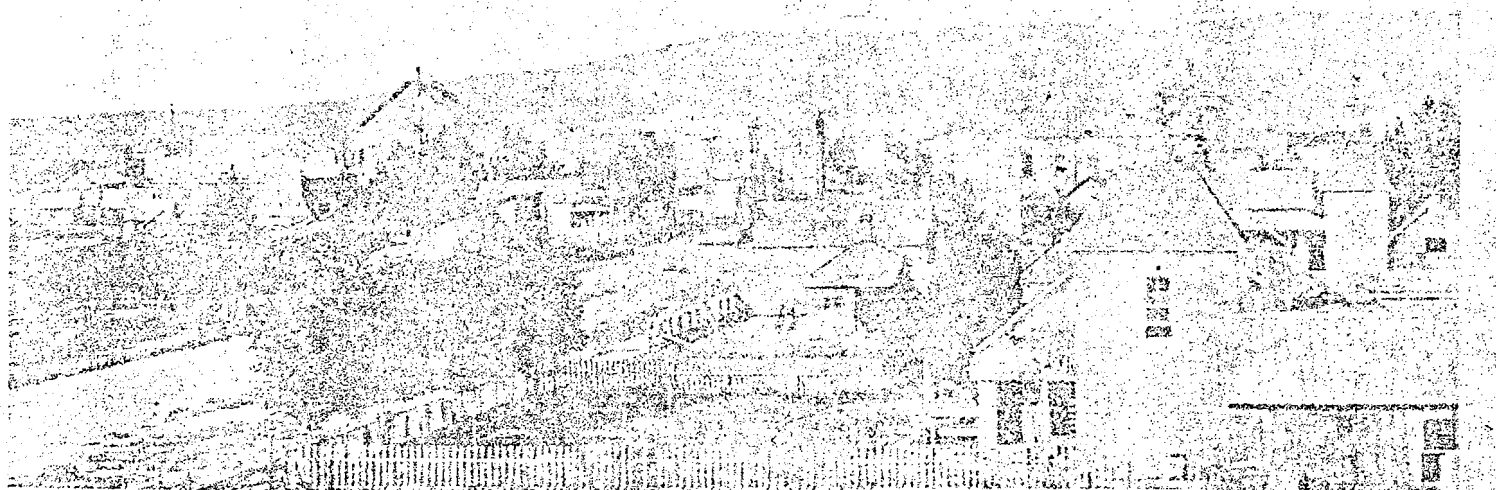
City Recorder_____

CITY of MERRILL
COMPREHENSIVE PLAN
TECHNICAL DATA

SEPTEMBER 1979

P.2

P.69



CITY OF MERRILL

MERRILL, OREGON 97633 TELEPHONE 503/798-5808

September 28, 1979

TO: Residents and other Interested Readers

Re: Letter of Transmittal - Technical Data

This "Technical Data" has been prepared as a supplement to the City's Comprehensive Plan. The material is intended to provide the information for Plan preparation and implementation decisions.

While the purpose of assembling this information was to provide necessary background information to make objective planning decisions, it has produced an interesting and informative document about the City which could be used in endeavors other than land use planning.

The preparation of this document has been possible through State Department of Land Conservation and Development grants. It is our hope that this information will be used to help insure that Merrill retains its livability in addition to providing for future development without diminishing the City's agricultural resources and the environment as we enjoy it today.

Sincerely yours,

Alonzo Hodges

Alonzo Hodges
Mayor

ACKNOWLEDGEMENTS

The City of Merrill would like to recognize and commend those individuals and agencies that have assisted us in the preparation of this document. Much of the information was provided by the County Planning Department. Particular appreciation is given Jim Brockett, Director, and staff members, Mark Beardslee, Yuchuek Hsia, Wendy Ott, Wendy Robinson and Jerry Wells. Help in data gathering was also provided by the County Assessor's and Engineer's offices, and the State Department of Economic Development (Jim Burke).

Professional planning assistance was furnished by Lynn D. Steiger and Associates, Inc., Consulting Planners. Project direction, administration and editing was provided by Lynn D. Steiger. Data collection and draft text material preparation has been the responsibility of Cathe Blevins Wilson. Additional work was contributed by Larry Lankford (graphics supervision), Dan Kjerne and Chris Simmons (graphics), Jean Evans (editing and typing) and Teri Walker (typing). Cover photo courtesy Klamath County Museum.

Special recognition should go to members of the Council and Planning Commission for the hours of time they spent in reviewing the material prior to its printing. Those individuals are listed below.

City Council

Alonzo Hodges, Mayor
Lynn Long
Jon Ongman
Russell Smith
Sam Walker

Kathleen Brickner, City Recorder-Secretrary Treasurer

Planning Commission

Bill Standridge, Chairman
Alan Mead
Dave Noonan
Carl Sharp
John Walker
Roma Walker

TABLE OF CONTENTS

GENERAL BACKGROUND AND EXPERIENCE

Introduction

Had it not been for some very liberal credit offered to a disgusted Nathan Merrill by J. Frank Adams for the purchase of 160 acres of ground with water on it, the City of Merrill might never have been established. The terms were so generous that Nathan Merrill was pursuaded to remain in the Basin on what turned out to be very productive wheatland. Construction of a flour mill in 1894 on property donated by Merrill, established a center of activity in south Central Klamath County which developed and prospered to become the present City of Merrill.

Farming lands nurtured by the first small canal systems and logging activity provided jobs in Merrill's early years. Agricultural crops, irrigated by a canal system which has grown until it now irrigates 200,000 acres, remains the dominant economic force in this community, located 23 miles southeast of Klamath Falls.

Merrill's setting along the Lost River amid fertile basin farmland coupled with sound planning by community citizens, should insure its future as a center for residential development and commercial activity and enhance its desirability as a place to live.

The Planning Framework

Definition. A comprehensive plan may be comprised of Land Use, Transportation, Public Facility and Service, Urban and Housing Elements, either collectively or separately It serves as official public policy Plan elements are adopted by local government as guides for making decisions about the physical development of the community. Preparation of a Plan (or individual elements thereof), take into account various physical, social, legal and economic data in arriving at recommended courses of action.

Purpose. The Plan is a broad, long-range guide to community development and serves a variety of important purposes:

- It provides a source of information and a statement of policy for citizens and all levels of government to use in coordinating their efforts for the well-being of the City.

- It creates a framework upon which to build detailed plans, e.g., street or utility plans.

-It provides some assurance that residential, commercial and other investments won't be undermined or otherwise limited by encroaching incompatible uses that may have adverse effects on livability, uses, taxes, resale values, or other aspects of property ownership.

-It establishes a guide to the City Council in its evaluation of various proposals for physical changes and scheduling of capital improvements.

-It establishes a tool for the City Planning Commission, City departments and other agencies to use in making recommendations for land use.

-It provides investors and developers a directional guide as to how and where various types of development are anticipated and encouraged, and permits them to avoid time and cost delays resulting from opposition, confusion and other reasons that may be overcome once a Plan has been adopted.

Keeping the Plan Current. The Plan must be kept up-to-date to maintain its effectiveness. A Plan may be changed to reflect changing policies and condition in an area. Such changes should be made only upon careful consideration and public participation.

Citizen Involvement

It is important that citizens have the opportunity to be involved in Plan preparation, adoption, and subsequent changes and revisions.

The Merrill Planning Commission was recognized as the Citizen Advisory Group on April 23, 1976, by the LCDC. The City of Merrill adopted a Citizen Involvement Plan on August 25, 1976. This Plan utilized town hall meetings, surveys and questionnaires as the primary means of achieving citizen involvement.

History

The Van Brimmer and Adams irrigation canals had just been completed in Central Klamath County in 1891 when Nathan Merrill agreed to buy 160 acres of land along the Lost River from J. Frank Adams. As part of the bargain Adams agreed to plow the ground for Merrill, who would have three years before he had to start paying on the land. Then he would have five years to pay $20.00 per acre without interest. The ground was plowed and to everyone's surprise yielded 45 bushels to the acre. The next problem was how to dispose of the wheat. The price of wheat was very low in the nearest

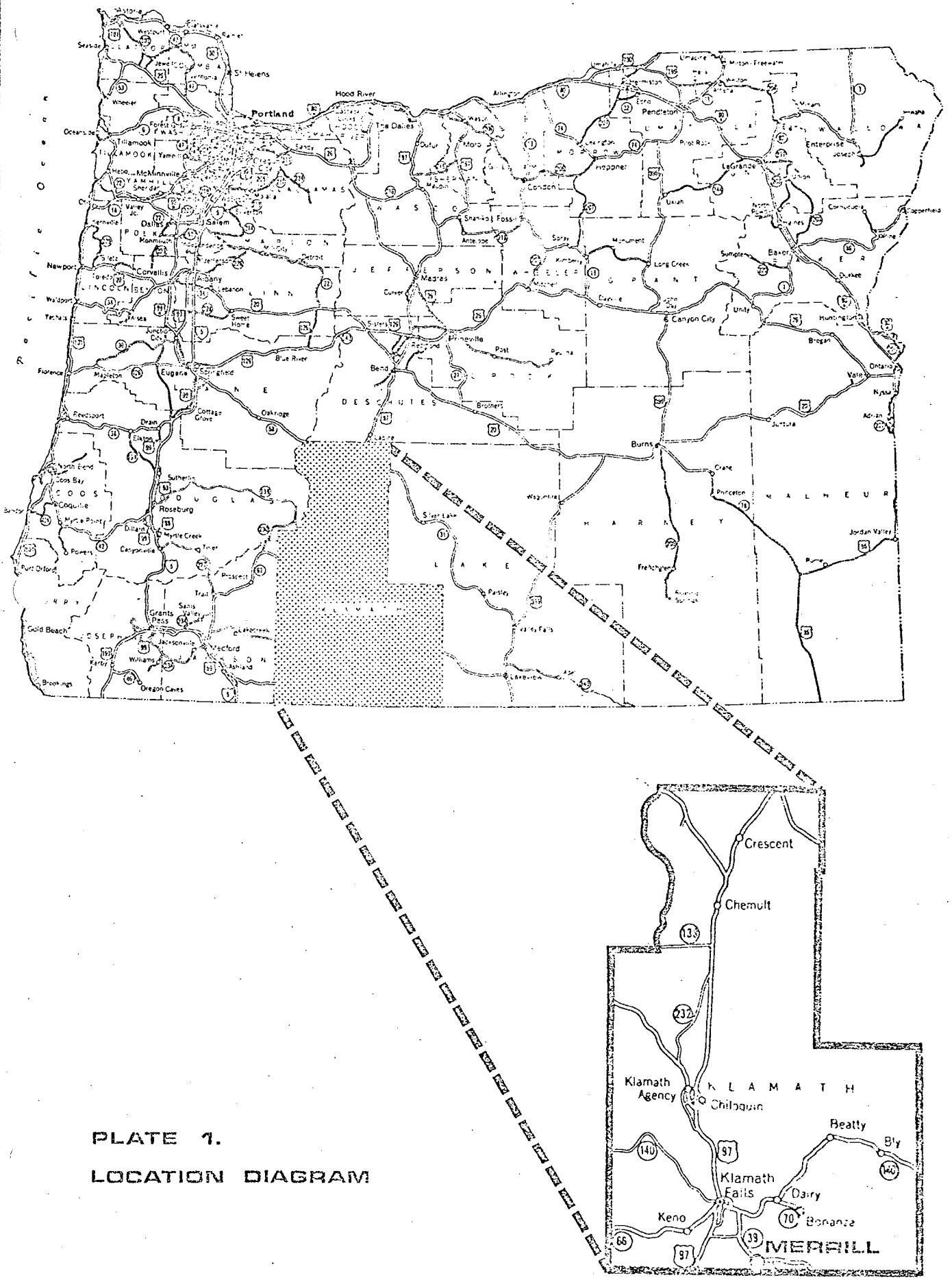


PLATE 1.

LOCATION DIAGRAM

mill which was in Klamath Falls, and could be reached only over bad roads.

Adams then decided to try and build a mill in Merrill and collected $3,500 worth of subscriptions from farmers in the area in one day. The owner of the mill in Klamath Falls, Thomas Martin, heard about the proposed mill in Merrill and, fearing the competition, offered to build a mill in Merrill himself. His proposition was accepted and the mill was completed in August, 1894. It was the first building constructed on the Merrill townsite. After the mill came a store, blacksmith shop and a few houses. The first school was built in 1895; the first post office in 1896. Merrill was incorporated in 1903.

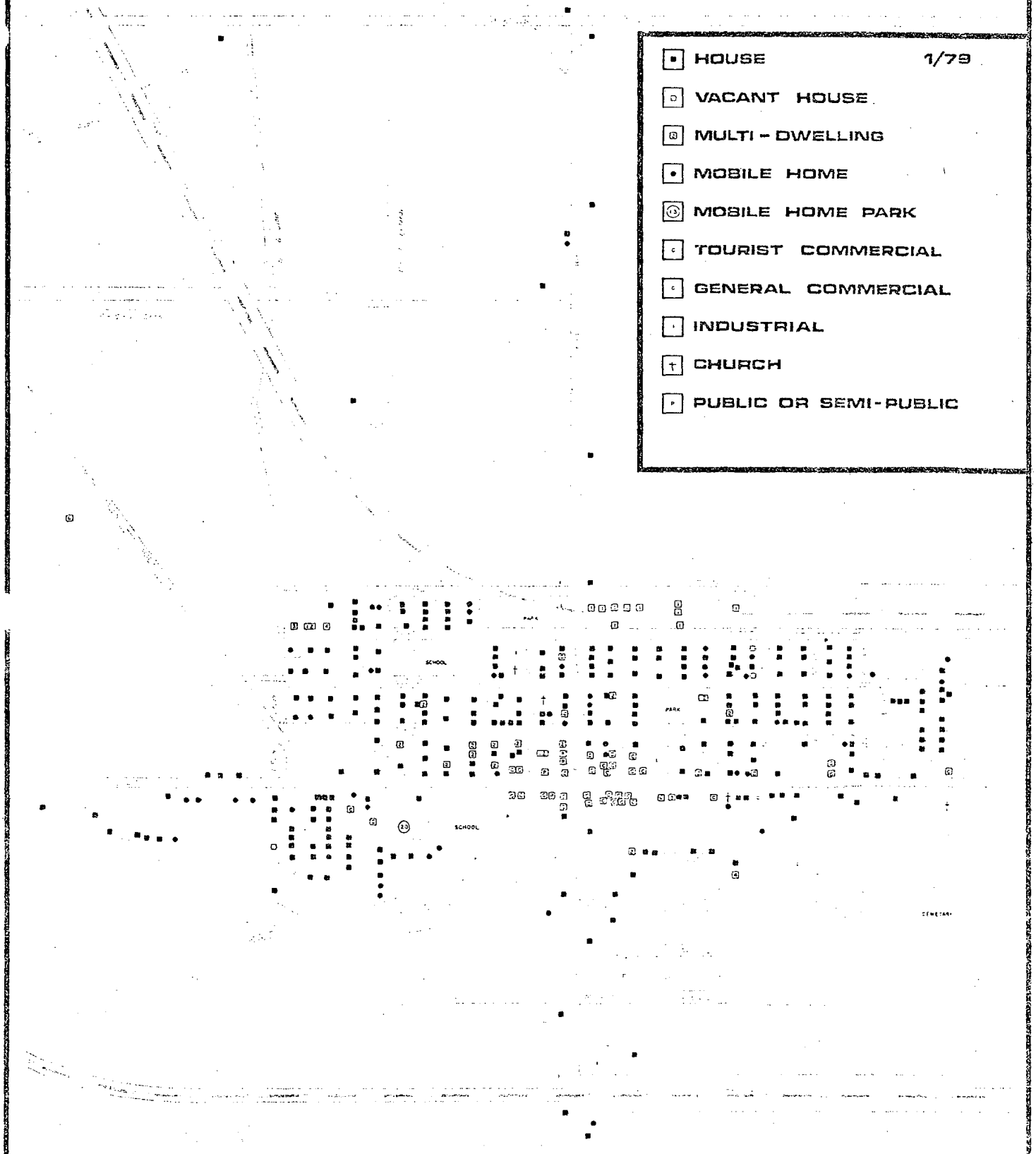
As the irrigation projects were expanded and some logging enterprises were established, people moved into the area and Merrill grew and prospered. The first 5,000 acres of land reclaimed from Tulelake by the U S. Bureau of Reclamation were made available for settlement in 1917. In all, 60,000 acres of land have been reclaimed from the waters of Tulelake and nearly 200,000 acres have been brought under irrigation by the projects in the basin.

The City of Merrill has held, in its past, numerous saloons, some lumber mills an opera house and several business which no longer exist. Despite some low points, Merrill has continued to grow steadily. Its prosperity continues to be tied to the surrounding farmland.

EXISTING LAND USE

Existing Land Use map shows present uses of the land. Existing development is the single most important factor in determining where and what type of development will occur in the future. Once land has been developed, it is unlikely to be returned to its original state. Thus, an existing developed area is likely to remain developed for many years to come, although the type or intensity of use may change gradually over time.

Existing development affects adjacent undeveloped lands by creating conditions which are not conducive to other uses. A classic example of this type of conflict is when residential subdivisions are built adjacent to agricultural land. The residents often find the noise or dust undesirable, while the farmer is often faced with trespass, vandalism, limitations on normal farming activities, and other problems.



EXISTING LAND USE
CITY OF MERRILL

north

scale in feet

Prepared by LYNN D. STEVENS & ASSOCIATES, Inc

An understanding of the forces which brought about present land use patterns can facilitate planning for future land uses. Table 1 shows the area of each land use in acres, as a percent of the total area, and percent of the developed area (excluding agricultural land and vacant lots).

Developed/Undeveloped Land

The total acreage of the City of Merrill is 294 acres. Of this, 57% (168 acres) is developed and 43% (125 acres) is undeveloped. The undeveloped area includes 109 acres of agricultural land and 16.15 acres of vacant lots. Agricultural land accounts for more than a third of the land inside the City (37%), while vacant lots account for 5% of the total land area. There are only 41 vacant lots.

Of the developed area, the largest acreages are devoted to residential uses (60 acres), and streets (61 acres). Public and quasi-public lands occupy 18.87 acres, commercial uses occupy 8.19 acres, industrial uses 8 43 acres, and the railroad right-of-way 11.36 acres.

Residential Land Uses

Residential land uses are located primarily north of Front Street, with some residential development in the southwest corner of the City along Court Drive. Residential areas occupy about 20.4% of the total acreage of the City, and 35.6% of the developed land. Most of this land is devoted to single-family type residential use (47.6 acres - 28.4%). Of the balance, 3.56 (0.5%), acres are multi-family residential, 7.08 acres are occupied by trailers, and 1.59 acres are in trailer park use.

Commercial Land Use

Commercial land uses are divided into two categories, general commercial and tourist commercial. Tourist commercial includes motels, restaurants, and stores which cater primarily to tourists, while general commercial includes all other commercial enterprises. Tourist commercial uses in Merrill are primarily located south of Front Street near Court Drive, and general commercial uses along both sides of Front, Main, and Washington Streets.

Commercial uses occupy 8.19 acres or 2.8% of the total City area (5% of the developed land). Of this, tourist commercial occupies 1.59 acres or less than 1% of the total acreage. The rest (6.6 acres) is general commercial, resulting in commercial uses occupying a relatively small portion of the City's land area.

Industrial Land Uses

Industrial land uses include grain storage, warehouses manufacturing facilities, and other similar uses, as well as things like the City sewage treatment plant, and electrical and telephone substations. Merrill's industrial land is located primarily along the railroad right-of-way in the northeast section of the City. Although rail transportation is an important factor in the location of industrial areas, highway access is equally important, as good accessibility is essential in shipping and receiving goods and raw materials.

Industrial land uses occupy 8.43 acres, or 2.9% of the total City acreage and 5% of the developed area. This category is about the same as commercial land uses. This is somewhat misleading however, since Merrill's major industry is agriculture, and several industrial facilities are located just outside of the City limits. Merrill's proximity to rail, highway, and air transportation could be an asset in encouraging future industrial development.

Public and Quasi-Public

This category of land uses includes publicly-owned lands for schools, governmental services, and parks, as well as churches fraternal organizations and cemeteries, which are considered quasi-public. Public and quasi-public land is scattered throughout town, with the largest areas being the schools and parks.

Relatively little land in Merrill is publicly-owned. It occupies 18.87 acres, or 6.4% of the total City acreage and 11% of the developed area. Park land occupies only 5.09 acres, which is a comparatively small area for a town of Merrill's size.

Street and Highway Rights-of-Way

This category includes all land in dedicated rights-of-way for highways, streets and alleys, and occupies 61.53 acres, which is the second largest category of land use. This is 21% of the total City acreage, and 36.7% of the developed area. Merrill's grid-type street system occupies more land per acre than other street patterns, causing a high percentage of land inside the City to be devoted to streets.

Railroad Right-of-Way

Merrill is served by the Great Northern Railroad, which crosses the north part of town in an east-to-west direction.

Table 1
EXISTING LAND USE - 1978

Area in Acres, Percent of Developed Area, and Percent of Total Area
Cities of Chiloquin, Malin and Merrill

	Chiloquin			Malin			Merrill		
Type of Land Use	Acres	% of Developed Area	% of Total Area	Acres	% of Developed Area	% of Total Area	Acres	% of Developed Area	% of Total Area
Single-Family	26.39	13.3	7.6	19.11	11.2	9.6	47.60	28.4	16.2
Multi-Family	1.04	0.5	0.3	1.85	1.1	0.9	3.56	2.1	1.2
Trailers	5.07	2.6	1.5	3.85	2.2	1.7	7.08	4.2	2.4
Trailer Parks	1.04	0.5	0.3	4.22	2.5	1.8	1.59	0.9	0.5
TOTAL RESIDENTIAL	34.06	17.2%	9.8%	29.03	17.0%	14.5%	59.83	35.6%	20.4%
COMMERCIAL	4.0	2.0%	1.2%	3.66	2.1%	1.8%	8.19	4.8%	2.8%
INDUSTRIAL	8	4.0%	2.3%	0.75	0.4%	0.4%	8.43	5.0%	2.9%
Schools	32.43	16.4	9.4	7.39	4.3	3.3	10.80	6.4	3.7
Parks	16.00	8.1	4.6	60.60	35.5	30.4	5.09	3.0	1.7
Other	18.40	9.3	5.3	4.93	2.9	2.5	3.22	1.9	1.0
TOTAL PUBLIC & QUASI-PUBLIC	67.0	33.8%	19.4%	72.92	47.8%	36.6%	18.87	11.24%	6.4%
STREETS & HIGHWAYS	65.0	32.8%	18.8%	64.10	37.6%	32.2%	61.53	36.70%	20.9%
RAILROAD R/W	20.0	10.1%	5.8%				11.36	6.8%	3.9%
TOTAL DEVELOPED AREA	198.00	100.0%	57.2%	170.46	100.0%	85.5%	167.36	100.0%	57.0%
Timber/Woodlot	42.0	28.4%	12.1%						
Vacant Lots	93.0	62.8%	26.9%	20.02	23.2%	10.0%	16.15	13.2%	5.6%
Water Areas	13.0	8.9%	3.8%	5.58	6.5%	2.8%			
Agricult al				3	3.8%	1.6%	109.00	86.85	37.15
TOTAL UNDEVELOPED	148.0	100.0%	42.8%	28.86	100.0%	14.5%	125.15	100.0%	43%

The railroad right-of-way occupies 11.36 acres or 3.9% of the total City acreage and 6.8% of the developed area. Most of the industrial uses in Merrill are located on or near the railroad. While this right-of-way is an advantage for industrial development, it forms a barrier for through traffic and may cause conflicts with adjacent land uses.

EXISTING LAND USE IN THE SURROUNDING AREA

In the land surrounding Merrill, 94% of is undeveloped (3,196 acres), and 6% is developed (201 acres). The undeveloped area includes 3,051 acres of agricultural land (90%), and 145 acres of open space (4%). The agricultural category includes 2,981 acres of irrigated farmland (88%) and 70 acres of rangeland (2%). The open space category includes 12 acres of undeveloped lots, and 133 acres of water area.

Only 6% (201 acres) of the unincorporated area surrounding town is developed. Of this area, 60 acres are in residential use, 73 acres are occupied by the railroad right-of-way, and 53 acres are street and highway rights-of-way. The remaining developed area is commercial (8 acres), industrial (2 acres), and public (4 acres). The largest portion of the developed area is in railroad right-of-way (36%), followed by residential use (30%).

Residential development is located along Falvey Road west of town, along Hill Road both north and south of town, and scattered throughout the rest of the surrounding area, and generally close to the City limits. The only commercial use is located just north of the City along Highway 39.

The railroad right-of-way is an exceptionally large area due to the fact that two railroads cross through the surrounding area.

TRANSPORTATION

Introduction

The transportation system is one of the most important structural elements of a City, and is a major determinant of the physical shape of the community. Streets may occupy as much as one-third of the developed land within a City. The street system should be developed as a complete and continuous network throughout a community to assure safe and

Table 2
EXISTING LAND USE
Area Surrounding Merrill

Type of Land Use	Acres	% of Developed	% of Total
Single Family	47.11	23.38	1.38
Trailers	13.54	6.72	0.40
TOTAL RESIDENTIAL	60.65	30.11%	1.78%
TOTAL COMMERCIAL	8.05	4.00%	0.24%
TOTAL INDUSTRIAL	2.00	0.99%	0.06%
TOTAL PUBLIC & QUASI-PUBLIC	3.69	1.83%	0.11%
STREETS & HIGHWAY R/W	53.59	26.60%	1.57%
RAILROAD R/W	73.46	36.47%	2.16%
TOTAL DEVELOPED	201.44	100%	5.94%
Irrigated Farmland	2,981.0	93.24	87.73
Rangeland	70.54	2.21	2.07
TOTAL AGRICULTURAL	3,051.54	95.45%	89.80%
Unimproved lots	12.24	0.38	0.36
Water Areas	133.15	4.16	3.92
TOTAL OPEN SPACE	145.39	4.55%	4.28%
TOTAL UNDEVELOPED	3,196.93	100.0%	94.06%
TOTAL	3,398.0		

convenient movements of goods and people within the City. Street rights-of-way also provide a corridor for water, sewerage, gas, phone, TV and similar services, in addition to storm water runoff and natural drainage. Thus, it is essential to consider the street system in the comprehensive planning process so that future street systems will be coordinated with the growth and development of the community.

The existing road network has evolved from the need for access to and movement within urban and rural areas. Development activities generally locate next to, or within close proximity of access routes.

Jurisdictional Classifications

The existing roads were developed and are maintained by several different government agencies (see Table 3). In Merrill, the State maintains Highway 39, or Front Street, while the County is responsible for Hill Road (Main Street) and Falvey Road. The remaining roads are maintained by the City.

Table 3
STATE AND COUNTY ROADS

Name	Maint..	Number
Highway 39 (Front Street)	State	FAP 41
Hill Road (Main Street)	County	FASB 307
Falvey Road	County	--

Functional Classifications

State. The State is required to establish a functional classificaton system whereby highways are grouped into classes according to the character of service they are intended to provide. For example, low useage roads which provide access to higher useage roads may be designated as minor collectors, while the latter may be categorized as a minor arterial.

The functional classification system groups roads into five categories. They are as follows:

A. Principal Arterial. Roadways of national, interstate, and statewide significance.

B. Minor Arterial. Roadways of statewide and inter-regional significance.

C. Major Collector. Roadways of intra-regional and intra-county significance.

D. Minor Collector. Roadways of local and intra-county significance serving areas not already served by a higher order roadway.

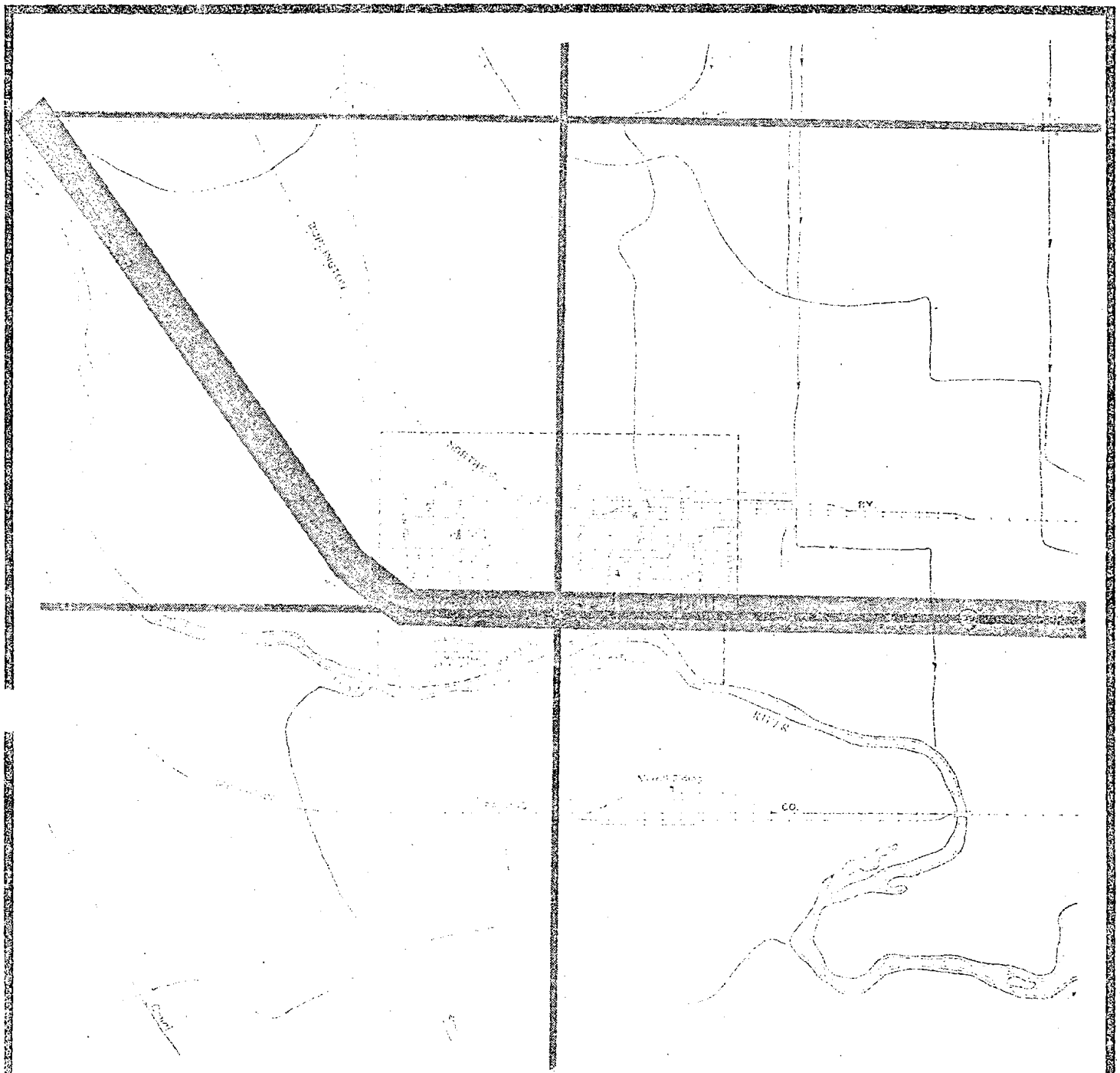
E. Local Road. Roadways of local significance that provide access to adjacent properties.

The Functional Highway Classification map (Plate 3) identifies these roads in the Merrill area which are included in this system. Highway 39 is a minor arterial, while Falvey Road, Hill Road and Anderson Road are local roads.

Local. Similarly, local streets may be classified according to function (see Table 4). These local functional classifications correspond roughly to the State functional classification. For example, a State minor arterial would be an arterial at the local level. The four functional classes of local streets defined here are: arterials, collectors, secondary and local.

A. Arterial Streets. Arterial streets are the main arteries that accommodate both through and local traffic such as Highway 39 (Front Street). Arterials generally have high traffic counts and speeds, are through routes, and sometimes require limiting access in order to accommodate high volumes of traffic rapidly, safely and efficiently. Although access is generally limited along arterials, existing development will preclude limiting access in the main part of Merrill.

B. Collector Streets. Collector streets are generally the primary streets that tie into or between arterials. They are the funnels that feed most of the traffic from local and secondary streets into the arterial system. Although speeds are generally not as high on collectors as on arterials, high traffic counts may necessitate signing such routes as through streets. Collector streets will generally have a high priority for maintenance and snow removal. Main Street serves as a collector in Merrill.



MINOR ARTERIAL

LOCAL ROAD

FUNCTIONAL CLASSIFICATION

MERRILL OREGON

north

0 800

scale in feet

Prepared by LYNN D. STEIGER & ASSOCIATES, Inc.

C. Secondary Streets. Secondary Streets are primarily the north-south and east-west stop streets, designed for slower speeds and to provide safe access to residential development. Since secondary streets often carry pedestrian traffic from local street networks to collectors and arterials, it is desirable to provide sidewalks on at least one side of the street.

D. Local Streets. Local Streets should be designed to accommodate only local traffic and therefore may utilize loop, cul-de-sac or curvilinear designs. Sidewalks are not as essential on local streets as on other levels of road improvement; however, they are desirable on at least one side of streets when relatively high traffic counts can be expected.

Table 4
FUNCTIONAL CLASSIFICATIONS

State Functional Classifications	Local Functional Classifications
Principal Arterial	--
Minor Arterial	Arterial
Major Collector	Collector
Minor Collector	Secondary
Local Roads	Local
--	Private

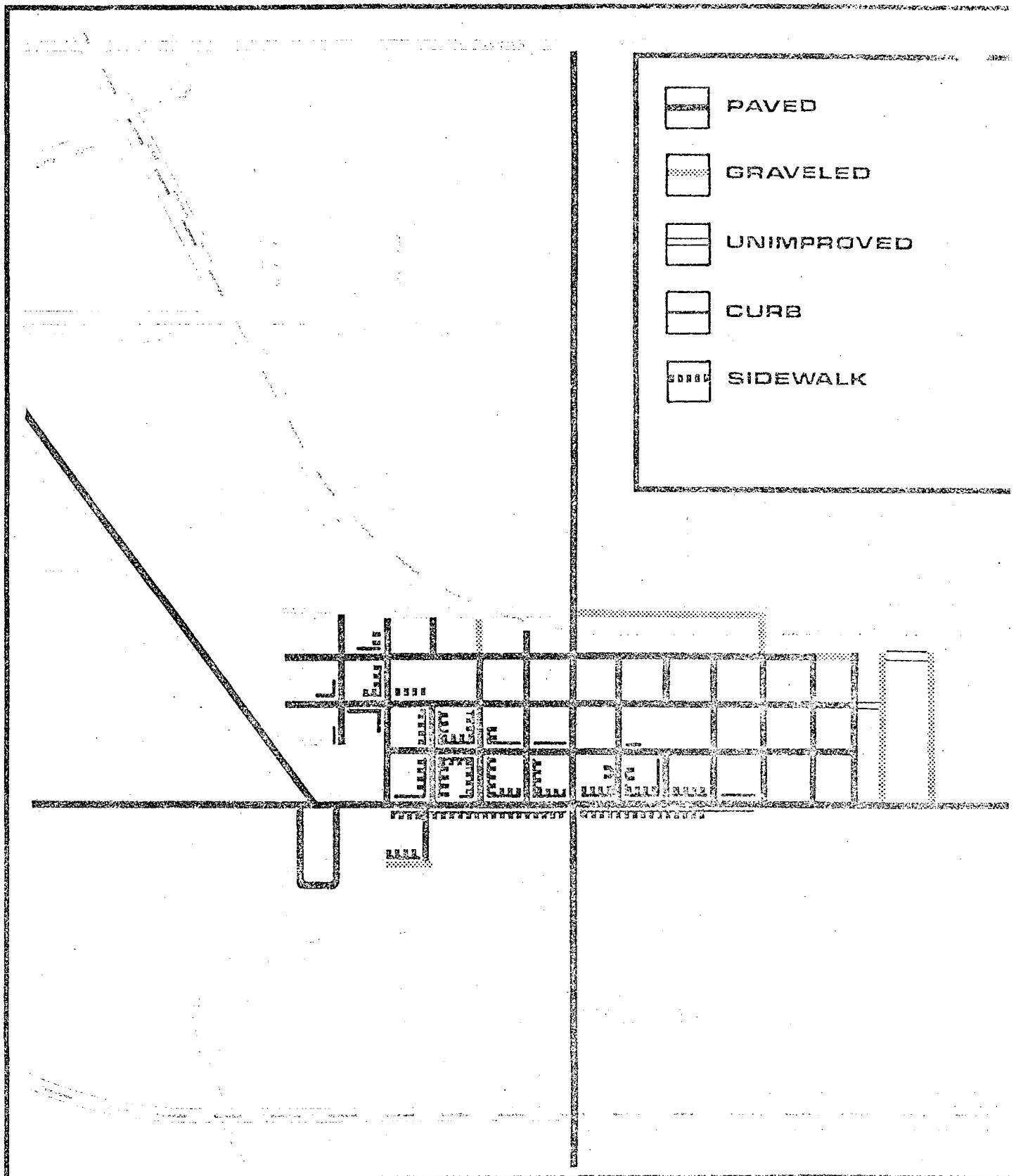
Street Improvement Inventory

Introduction. Table 5 is a compilation of the street, curb, and sidewalk improvements for each of the four small cities in Klamath County. Streets are categorized as paved, graveled, or unimproved, and sidewalks and curbs as improved or unimproved. Streets are considered unimproved when dedicated rights-of-way are not presently open for travel. Gravel streets include all unpaved streets which are open for travel.

The data included in this table was gathered through field observation in November, 1978. Data is provided for all four cities so that relevant comparisons may be drawn.

Table 5
STREET IMPROVEMENT INVENTORY

Cities	STREETS							SIDEWALKS				CURBS			
	Paved		Gravel		Unimproved		Total	Improved		Unimproved		Improved		Unimproved	
	Mi.	%	Mi.	%	Mi.	%	Total	Mi.	%	Mi.	%	Mi.	%	Mi.	%
Bonanza	4.4	51.0	0.4	5.0	3.7	44.0	8.6	--	--	14.0	100.0				
Chiloquin	7.4	80.0	0.6	6.9	1.2	12.9	9.2	0.3	1.7	14.6	98.0	0.3	1.7	14.6	98.0
Malin	4.1	67.6	1.1	17.8	0.9	14.6	6.1	0.1	1.4	9.3	98.6	0.1	1.4	9.3	98.6
Merrill	5.4	81.0	0.9	13.0	0.4	6.0	6.7	1.5	15.0	8.3	85.0	1.7	18.0	8.1	82.0



STREET/CURB/SIDEWALK IMPROVEMENT INVENTORY

CITY OF MERRILL

north

scale in feet

Streets. Merrill has 6.7 miles of streets. Of this, 5.4 miles are paved (81%), 0.9 miles are gravel (13%), and 0.4 miles are unimproved (6%). Merrill has a higher percentage of paved streets than the other cities.

Sidewalks. There are 9.8 miles of possible sidewalks in Merrill. Of this, 1.5 miles are improved (15%) and 8.3 miles (85%) are unimproved. Merrill has the largest percentage of improved sidewalks of the four small cities.

Curbs. There are 9.8 miles of possible curbs in Merrill. Of this, 1.7 miles are improved (18%) and 8.1 miles are unimproved (82%). Again, Merrill has a higher percentage of curbs than the other three small cities.

Public Transportation. There is not presently a large enough population in Merrill to support a public transportation system. There may eventually be enough demand to warrant some type of "commuter" service between Merrill and Klamath Falls. Until then, it might be feasible to provide transportation for senior citizens and the handicapped, utilizing State and Federal Funding.

POPULATION

Population analysis and projections are an important part of preparing a Comprehensive Plan, as increases or decreases in population may greatly affect planning decisions. Demographic data on population size, structure, distribution and change will likely have a direct affect on planning decisions about what type and level of public services will be required. For example, an increase in the number of senior citizens within the City would lead to the need for more low-cost housing for the elderly, more health care programs, and more recreational opportunities geared to that age group. On the other hand, an increase in the number of young families with school-age children would directly influence the need for housing, vacant land for new housing, the quantity of water consumed, and the quantity of effluent to be disposed of. Thus, population change and population characteristics will influence many planning decisions.

Historical Trends

Although Merrill incorporated in 1894, there are no population statistics available before the 1920 census. Overall, the population increased from 237 persons in 1920 to 722 persons in 1970. The population increased slightly between

1920 and 1930, then more than doubled between 1930 and 1940. By 1950, the peak population of 835 was reached and was followed by a slow decline until the last few years. The most recent estimate puts the population at 900, or an increase of almost 25% since the 1970 census.

This pattern is consistent with the national trends over the last several decades. Small towns lost population in the 1950's and 1960's as farming became less labor intensive, and jobs became scarce in small towns. The direction of migration flowed from the small towns and rural areas towards the urban centers. Since then however, there are indications that this trend has reversed, as urbanites are moving to small towns and rural areas because of lower taxes and "quality of life" desires. Most small towns have been growing since 1970, however, it is impossible to determine whether or not this trend will continue.

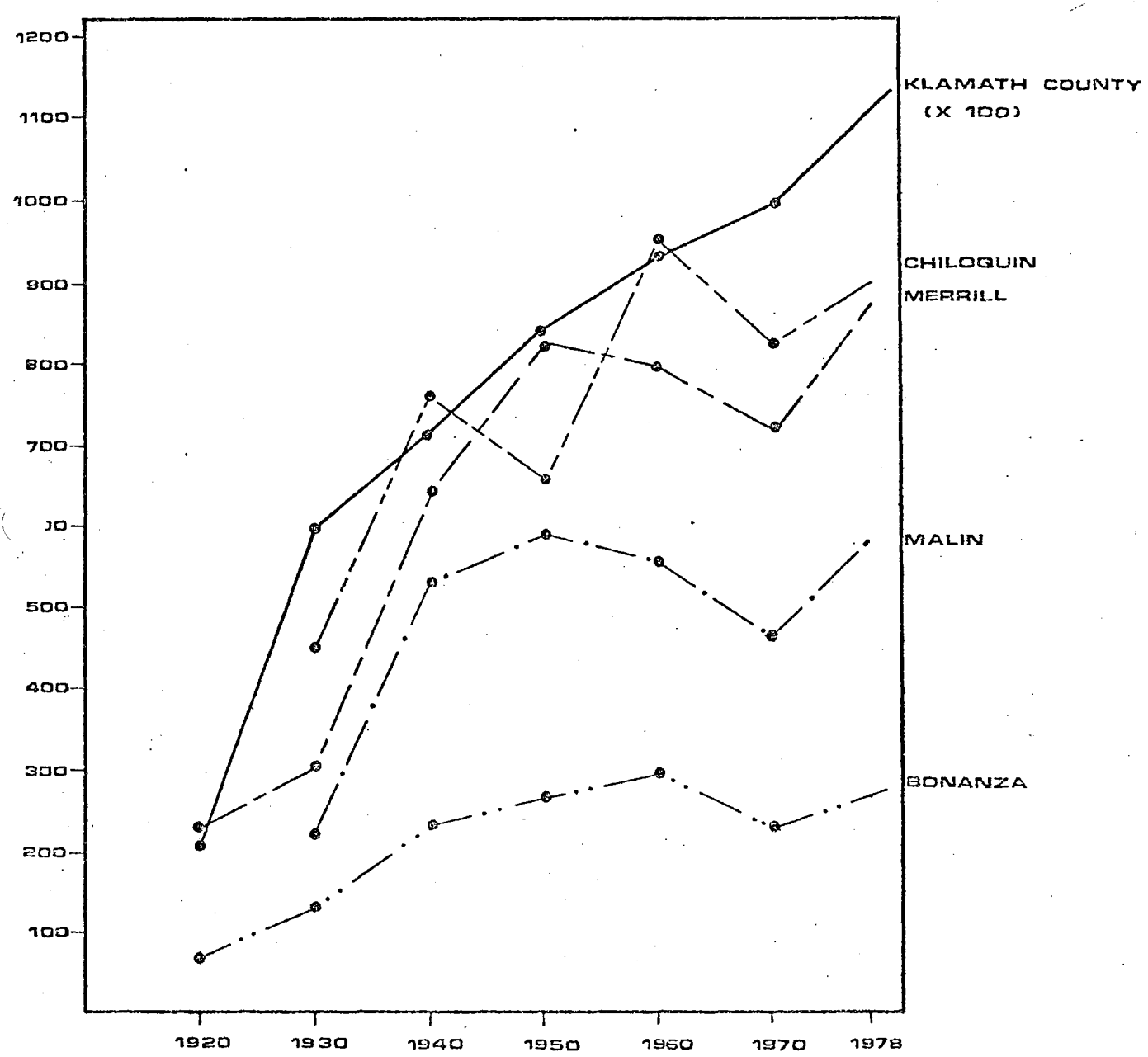
The Table 6 and Plate 5 compare the historical population trends of Merrrill with those of Bonanza, Chiloquin, Malin, Klamath Falls, and the entire Klamath County. The largest

Table 6
HISTORICAL POPULATION TRENDS
MERRILL AND KLAMATH COUNTY
1900-1978

Year	Merrill	Percent Change	Klamath County	Percent Change
1900	NA	NA	5,106	-
1910	NA	NA	8,553	67.5%
1920	237	-	11,413	33.4%
1930	306	29.1%	32,407	184.0%
1940	648	111.1%	40,497	25.0%
1950	835	28.9%	42,150	4.1%
1960	804	-3.7%	47,475	12.6%
1970	722	-10.2%	50,021	5.4%
1978*	900	24.6%	58,700	17.4%

*Estimate, Center for Population Research & Census PSU.

PLATE 5
HISTORICAL POPULATION GROWTH FOR
BONANZA, CHILOQUIN, MALIN, AND MERRILL
AND KLAMATH COUNTY



increase in Klamath County's population occurred between 1920 and 1930, while Merrill's largest increase came a decade later. Since 1950, the County has realized modest population gains while Merrill was declining. It seems that the small towns were hardest hit by the out-migration of the 1950's and 1960's, while the County continued to increase slightly. The 1978 estimate shows that the Merrill population has increased recently at a faster rate than the County, indicating that the City is receiving more than its share of the County-wide growth. Based on 1978 population estimates, Merrill should continue to increase in population at a slightly faster rate than the overall County population.

Plate 6 presents a graphic comparison of Merrill and other town populations as a percentage of the total County population for 1920, 1950, and 1978. Overall, the percent of City population has declined from 46% in 1920 to 36% in 1978. Thus, if present trends continue, urban population, including Merrill, will decrease as a percent of the total County.

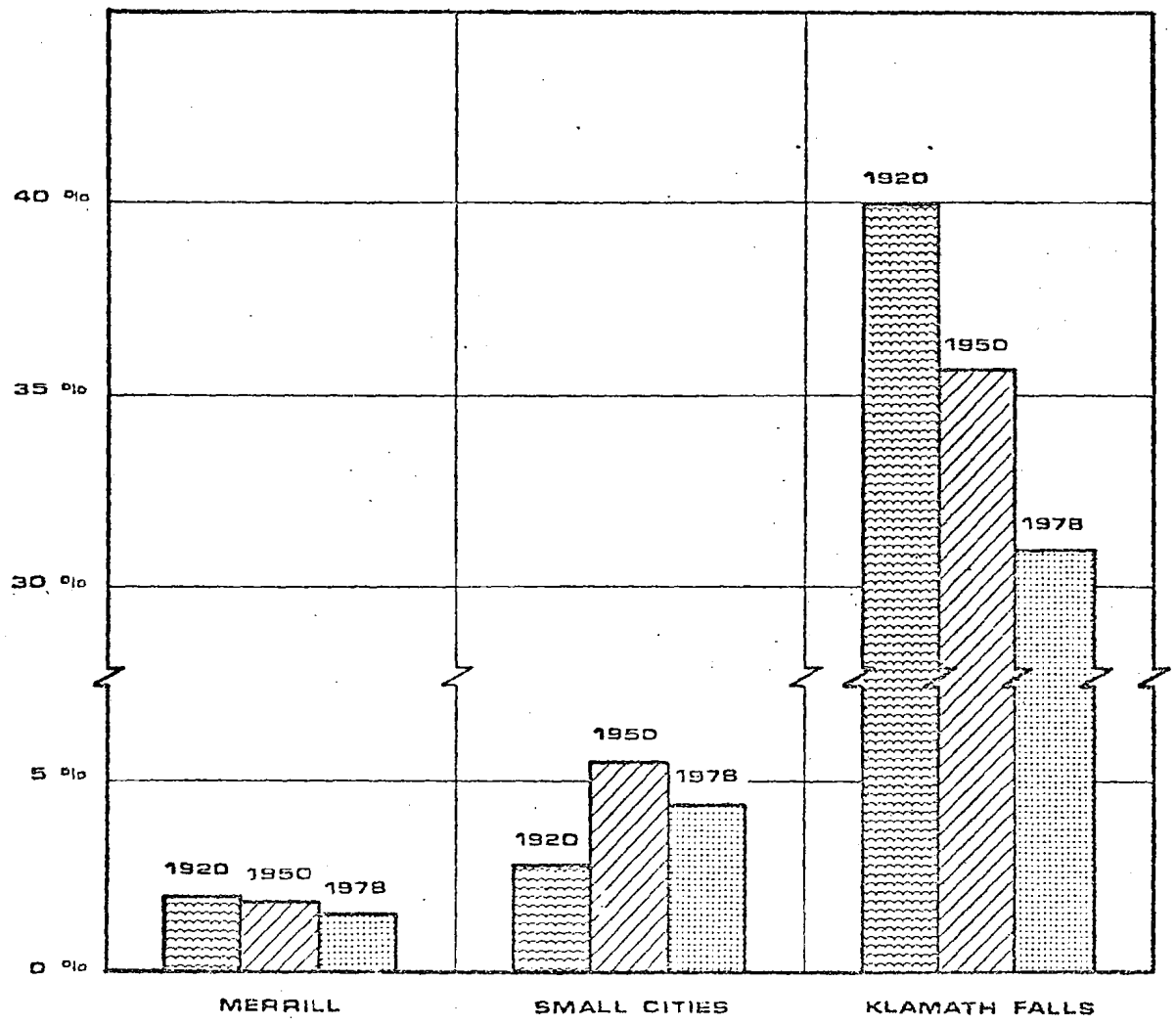
Table 7 compares Merrill's growth rate with that of the other cities and Klamath County between 1970 and 1978. Between 1960 and 1970, all of the cities in Klamath County decreased in population. Of the four small cities, Merrill's population decreased the least (10%). Only the

Table 8
COMPARISON OF POPULATION CHANGE
SMALL CITIES AND KLAMATH COUNTY
1960-1970, 1970-1978

Governmental Unit	Percent Change 1960-1970	Percent Change 1970-1978
Klamath County	5.4%	17.4%
Klamath Falls	-6.9%	16.0%
Bonanza	-22.5%	15.2%
Chiloquin	-12.5%	2.9%
Malin	-14.4%	22.4%
Merrill	-10.2%	24.6%

Source: U. S. Census of Population 1920-1970.

Plate 6
PERCENTAGE OF OVERALL COUNTY POPULATION



City of Klamath Falls showed a smaller decline. From 1970-1978 however, Merrill has increased more, (25%), than any other city. This growth rate is also considerably ahead of the County (17%), and ahead of the State average (14%). Thus, Merrill's population growth over the last 8 years shows that the area is one of the fastest growing communities in the County.

Population Density

Table 8 compares the population density of Merrill with that of the other small cities and the City of Klamath Falls. According to 1978 population estimates, there were 3.69 persons per acre in Merrill before the recent annexation, and 2.86 persons per acre after the annexation. The latter figure is a decrease from the 3.22 persons per acre in 1970. Even with the decrease, Merrill has the highest population density of any City in Klamath County, including the City of Klamath Falls, which is generally considered more urban than Merrill. This is likely related to the fact that the City is relatively small, and nearly all of the residential land is developed. The recent annexation has resulted in the density decreasing to about the same level as Chiloquin and Malin.

Table 8
COMPARISON OF POPULATION DENSITY
1970

Governmental Unit	Population	(Acres)	Area Density
Klamath Falls	15,775	7,590	2.08
Bonanza	230	609	0.37
Chiloquin	826	346	2.39
Malin	486	199	2.44
Merrill	722	244	3.22

Components of Population Change

Population change is the results of births, deaths, and migration. Birthrates are generally fairly stable over time, although they have been declining recently. Birthrates may vary from community to community according to the age and sex structure of the population. A community with a low median age would have more women in the child-bearing years, and consequently a higher birthrate than an older community. Death rates have been a stable ratio of the population for many years, so this variable is fairly predictable. From these two figures, we obtain the rate of natural increase, or the difference between the number of births and the number of deaths. This rate has been declining in recent years as a result of the declining birthrates. The most variable and unpredictable part of this equation is migration. Migration is generally in response to economic opportunities, and various amenities which make life more enjoyable. Net migration, or the difference between the number of people moving into a community and those moving away, has been estimated in Table 9. Since exact information on migration is impossible to obtain, an estimate was made by comparing natural increase with the actual population change over a decade. This table shows that Merrill gained 140 people from natural increase (births less deaths), between 1950-1960, yet the population declined by 31 people. This leads us to estimate that 171 persons migrated out of Merrill over this time. The same trends occurred between 1960-1970. However, the City gained 49 persons through in-migration since 1970. This is also evidence that the migration trends have been reversed, and people are moving back to the small towns.

Table 9
ESTIMATE OF POPULATION CHANGE IN MERRILL DUE TO MIGRATION

	1950-1960	1960-1970	1970-1977
Population, beginning of decade	835	804	722
Population, end of decade	804	722	825
Total change in population over decade	-31	-82	+103
Population changes due to natural increase only	140	98	54
Population change caused by net migration	-171	-180	+49

Current Population Characteristics

A Comprehensive Plan should consider not only the number of persons living in an area, but also the characteristics of that population. By examining these characteristics, the social and economic impacts of population can be more nearly ascertained.

Age-Sex Composition. The age and sex structure of Merrill is an important indicator of some of the most basic population characteristics. These age-sex structure characteristics are most easily depicted through the use of a population pyramid. A population pyramid is designed to give a detailed picture of the age-sex structure of a population. The basic pyramid form consists of bars representing age groups in ascending order from the lowest to the highest. The bars on the left of the central axis represent male numbers and the bars for females are on the right of the axis. The length of the bar from the central axis indicates the percentage of males and females in each age group. A pyramid in a "normal" situation would show the youngest age group as the largest and each succeedingly older age group would be smaller because of attrition due to death from disease or accident. The number of females and males would be fairly evenly divided in each age group.

When Merrill's pyramid is compared with this "normal" population pyramid, any deviation will reflect a difference in the City's population dynamics. Similarly, Merrill's pyramid may be compared with that of Klamath County. Determination of the causes for these differences will provide a more accurate description of the population. The age-sex characteristics of Merrill's population are shown in Plate 7. This pyramid differs from the normal pyramid in three ways. First, the age groups of less than 10 years old are not the largest as would be necessary to form a regular pyramid. This is especially pronounced in the age 0-4 group. This irregularity is caused largely by the declining birthrates over the last several years, beginning in the 1960's. The second major difference is that from age 20-24 to age 40-44, the bars are smaller than might be expected, and they do not taper off, but remain nearly the same size. This seems to indicate that there is a high out-migration of young adults in the 20-24 age group. This trend extends up the pyramid to the age 40-44 group, indicating that this tendency has been in effect for about 20 years, or since the 1950's. The third major difference is that for age groups 45-49 through 60-64, the bars are larger than would be necessary to form a regular pyramid. In fact they form a "bulge" at this point on the pyramid. This may indicate that these age groups have not migrated in their 20's as in later generations but

Plate 7

POPULATION PYRAMID/AGE - SEX

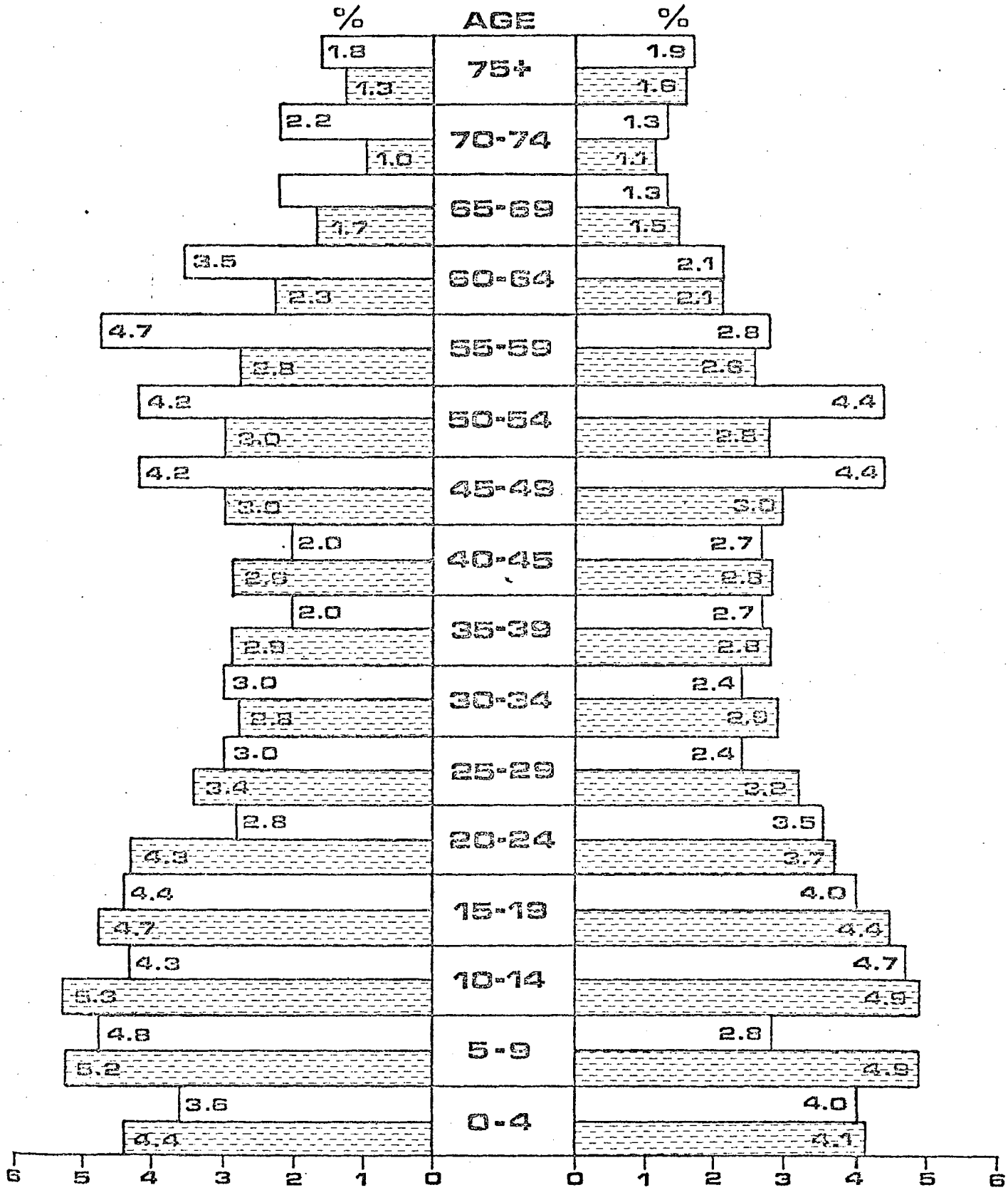


Table 10
MERRILL AGE-SEX STRUCTURE
1970

	Female		Male	
Age Group	Number	Percent	Number	Percent
0 - 4	29	4.0%	26	3.6%
5 - 9	20	2.8%	35	4.8%
10 - 14	34	4.7%	31	4.3%
15 - 19	29	4.0%	32	4.4%
20 - 24	25	3.5%	20	2.8%
25 - 29	17	2.4%	21.5	3.0%
30 - 34	17	2.4%	21.5	3.0%
35 - 39	19.5	2.7%	14.5	2.0%
40 - 44	19.5	2.7%	14.5	2.0%
45 - 49	31.5	4.4%	30.5	4.2%
50 - 54	31.5	4.4%	30.5	4.2%
55 - 59	20	2.8%	34	4.7%
60 - 64	15	2.1%	25	3.5%
65 - 69	9.5	1.3%	16	2.2%
70 - 74	9.5	1.3%	16	2.2%
75+	14	1.9%	13	1.8%
TOTAL		47.0%		53.0%

*These age groups were originally shown in 10-year cohorts. For this analysis they were split into two equal sized 5-year cohorts.

remained in Merrill. It may also indicate that persons in these age groups are migrating to Merrill.

When Merrill's pyramid is compared with that for Klamath County, some further trends emerge. First, the bars for ages 45-49 through age 75+ are larger for Merrill than for Klamath County, indicating that a larger percentage of Merrill's population falls in these age groups. Conversely, the bars for age groups below 45 are smaller than those in the County's pyramid. This indicates both high out-migration of young adults, as well as a lower birthrate than the rest of the County.

Median Age. The median age is that age which divides the population into two equal sized groups. Populations with medians under 20 are described as "young," those with medians 20 to 29 as "intermediate," and those with medians over 30 as "old." The median ages for Oregon, Klamath County and the small cities are shown in Table 11. Merrill's median age in 1970 was 29, which is the same as the State median age. It is one year higher than the median age for Klamath County, again indicating an older population in Merrill than in the County. Only Malin had a higher median age than Merrill's.

Dependency Ratio. The age-dependency ratio represents the ratio of dependent population to the working-age population. The dependent population is defined as children under age 18

Table 11
MEDIAN AGE: AGE-DEPENDENCY RATIO: AND SEX RATIO
FOR OREGON, KLAMATH COUNTY, AND CITIES
1970

Governmental Unit	Median Age	Age-Dependency Ratio	Sex Ratio
Oregon	29.0	70	95.9
Klamath	28.0	76	105.1
Bonanza	28.0	84	105.0
Chiloquin	24.5	91	104.0
Malin	32.5	64	108.0
Merrill	29.0	68	112.7

and senior citizens age 65 and over. The working population is the group age 18-64. The lower the dependency ratio, the fewer aged and children there are in relation to those aged 18-64. Table 11 also shows the age-dependency ratios for Oregon, Klamath County, and the small cities. Merrill's dependency ratio is 68, which is lower than the State ratio of 70, and considerably lower than the County ratio of 76. This is the result of two factors. First, Merrill has fewer children under age 15 than the County. Second, there is a relatively large proportion of the population in the age 40-64 group. Together, these two factors lower the age-dependency ratio.

Sex Ratio. The sex ratio is the principal measure of sex composition, and is defined as the number of males per 100 females. A sex ratio above 100 means an excess of males, while a sex ratio below 100 means an excess of females.

Table 10 shows that Merrill has more males than females. This is also true of Klamath County and all of the small cities. This imbalance is typical of rural communities, and should become more balanced as Klamath County becomes more developed.

Household Size. A household is defined by the U.S. Census as all the persons who occupy one housing unit. Table 12 gives the average household size, the population in households, and the number of households for Klamath County and the small cities for 1960 and 1970. Merrill's average household size decreased from 3.11 persons per household in 1960 to 2.31 persons per household in 1970. This decrease in household size also occurred in Klamath County. This trend is the result of several factors including, the divorce rate, later age at marriage, and longer life expectancies. All of these factors result in more single-person households being formed, leading to an increase in the number of households, even though the population in households is declining. This creates an increased demand for housing, and consequently, an increased need for building lots. It also tends to increase the demand for multi-family housing.

Population Projections

Projection of future population is one of the most important phases of the comprehensive planning process, as future needs of the City are dependent upon population demands. Although these projections provide a target population upon which the Comprehensive Plan is based, it is not critical to the planning process that popuplation be achieved in a given year. It is important only that population projections be

Table 12
AVERAGE HOUSEHOLD SIZE
KLAMATH COUNTY AND SMALL CITIES

Governmental Unit	Number of Households	Population in Households	Average Size
Klamath County			
1960	5,492	18,707	3.41
1970	6,612	17,879	3.19
Bonanza			
1960	85	297	3.49
1970	67	178	2.66
Chiloquin			
1960	258	930	3.60
1970	258	799	3.10
Malin			
1960	186	553	2.96
1970	188	633	3.36
Merrill			
1960	254	790	3.11
1970	308	713	2.31

attainable and reasonably in line with identified growth trends and adopted goals or proposed action plans.

Population projections are a mathematical estimate of the number of persons who will live in Merrill in the future. Projections are made by analyzing past population changes for trends. These trends are assumed to continue into the future and projected for the desired number of years. Since trends are unlikely to remain constant, the projections become less accurate the further into the future they are made.

The best information available for determining what population trends exist in an area is provided by the U.S. Census. This data is currently collected every ten years. Since the latest census was taken in 1970, the most recent period of time for which trends can be found is from 1960 to 1970. It is probable the trends in Merrill have changed since 1970, and projections based on the 1960 to 1970 period may not be reliable. It would be prudent to update these projections when the 1980 census figures are available.

Projection Methods. Two methods were used for projecting population for Merrill. The population was projected in five-year increments for the time period from 1970 to 2000. The two methods used are (1) the ratio method, and (2) the

parabolic regression method. A brief explanation of these methods and the resulting projections follows.

Ratio Method. This method assumes that the change in Merrill's population is a function of the change in Klamath County's population. When the relationship between the two populations has been found a Klamath County projection can be used to arrive at a projection for Merrill. This assumes that the County's population projections are reliable, and that Merrill's population will change consistently in relation to the change in Klamath County's population. The ratio was determined on the population relationship between Klamath County and Merrill during the last 8 years, so it is assumed that the 1979 population estimates are accurate as well. This is called a trend analysis, and assumes that the trends of the last 8 years will continue over the next several years.

The ratio method results show a 2.9% annual projected growth rate (Table 13), from 1980 through 2000 for the City of Merrill. This is higher than the County's projected growth rate of 1.9% per year. The estimated increase in total population for the City from 1970 to 2000 will be 673 persons, or a total increase of 93%.

Table 13
POPULATION TRENDS: RATIO METHOD - TREND ANALYSIS

Year	Population (Projected)	Increase (Number)	Percent Increase
1970	722		
1980	859	+137	
1985	964	+105	18.9%
1990	1,088	+124	12.2%
1995	1,229	+141	12.9%
2000	1,395	+166	13.5%
		673	

Parabolic Regression Method. In this method, historic population data for Merrill are plotted on a graph. Using the mathematical regression method, the equation for the line which most nearly fits these points is found. By mathematically extending this line, future population estimates can be determined. The population figures for the census years from 1920 to 1970 were used to calculate the equation of the line. This method relies on trends established during the whole of recorded history of population change in Merrill rather than the 1970-1978 period. The projection results are listed in Table 14.

Table 14

POPULATION PROJECTION: PARABOLIC PROJECTION METHOD

Year	Population (Projected)	Increase (Number)	Percent Increase
1970	722		
1980	702	-20	-2.8%
1985	865	163	23.2%
1990	1,054	189	21.8%
1995	1,253	199	18.9%
2000	1,467	214	17.1%

Projections of the parabolic regression method are higher than those of the ratio method. The projected annual growth rate for the City is about 4% per year for the period from 1980 to 2000. This projection shows a total increase of 745 persons, (104%), by the year 2000.

ECONOMIC ELEMENT

Introduction

Economic planning involves careful examination of present economic conditions and future trends, along with natural and human resources. It is important to recognize that economic planning extends beyond the boundaries of the City. Economic areas often encompass an entire County or region. For this reason, Klamath County's Overall Economic Development Plan will be referenced whenever appropriate, so that County-wide problems and concerns may be recognized at the local level.

Natural Resources

Merrill's economy is somewhat dependent upon natural resources, as is much of the State. The important resources in Klamath County are: agriculture, timber, recreational amenities (tourism), and geothermal energy. Merrill's economy is based upon agriculture and timber. The geothermal resource may play an important role in the future.

The availability of these resources needs to be determined. Agricultural land in the immediate vicinity of Merrill is of good quality. However, some of the agricultural land near Merrill has been divided into small parcels due to urba-

nizing influences. A second possible limiting factor is the 160-acre limitation for Federal water on private agricultural lands. Merrill's tourist economy is primarily based upon traffic on Highway 39 to Reno, Nevada. As such, it is not directly tied to natural resources. The availability of geothermal resources is difficult to assess. Although there are known geothermal areas in the Merrill vicinity, their extent and quality are largely unexplored.

Opportunities for more effective utilization of natural resources should be considered. The Klamath County Overall Economic Development Plan (OEDP) includes a goal to:

> "Construct facilities to increase local processing of Klamath area agricultural products. This includes alcohol production; alfalfa rebaling, cubing or pelleting; potato processing to provide frozen consumer products."

Any of these opportunities may be a possibility in Merrill. A high priority was given to gasohol production, as this would provide a market for cull potatoes and excess grain. Possibilities for potato processing may be linked to the suitability of the geothermal resource and increased potato production. As with the rest of the County, Merrill's geothermal resource needs to be further explored before its use can be determined. Alfalfa processing might also be a possibility. Merrill has good locational advantages for this type of industry, as it is nearly centered in the County's agricultural region.

A significant problem throughout the State is the dependence upon the natural resource base, particularly timber and agriculture. The agriculture economy tends to be somewhat unstable depending upon the weather and other factors. Thus, Merrill's economy may fluctuate somewhat, depending upon seasonal and yearly trends. Merrill's tourist economy also tends to be cyclical in nature, and may also be threatened by gasoline availability.

Human Resources

A more complete discussion of human resources is included in the chapter on population.* However, certain characteristics of the labor force are important to economic planning. Population growth and characteristics are determined, to a large extent, by the type of employment opportunities that are offered in a community. Merrill's population is projected to be 1,467 by the year 2000. However, the local economic trends can change this dramatically (Table 15).

*Most of the data in this Section were obtained from the 1970 Census of population.

Table 15
POPULATION PROJECTIONS
1970-2000

	1978*	1980	1985	1990	1995	2000	% 1970-2000
Bonanza	265						
Chiloquin	850	973	1,074	1,191	1,322	1,469	78%
Malin	595	565	629	695	783	879	81%
Merrill	900	702	865	1,054	1,253	1,467	103%

*Estimate, PSU Center for Population Research and Census.

Occupation. The occupation of the labor force gives a picture of the existing economic structure, and may indicate skills which are available in the community for new industry. A large percentage of Merrill residents (24.8%) are farm laborers. The next largest categories are operatives (18.7%), service workers (10.8%), managers and proprietors (10.8%), and craftsmen and foremen (10.4%) (Table 16). About 1/3 of Merrill's work force is blue collar, another 1/3 are farmers or farm labor and the remaining 1/3 are white collar and service works.

Unemployment. The County-wide unemployment rate has been increasing since 1950, when the annual average was 6.2% (Table 17).* By 1960 the annual average was 7.2%. In the 1970's unemployment ranged from a low of 6.1% in 1973 to a high of 10.1% in 1975. Unemployment rates for the County are somewhat higher than State and national averages, which may indicate that some chronic unemployment problems exist in the County.

Although there are not any unemployment figures for Merrill, they likely resemble those of the County. However, different from those County-wide. This is caused by the potato sheds, which employ potato sorters from October to May. Thus, unemployment is low in winter and somewhat higher in summer, which is the opposite of the usual seasonal unemployment trends.**

*Oregon State Employment Division.
**Klamath County Small Community Nonagricultural Employment/ 1968: Oregon Employment Division.

Table 16
OCCUPATION OF LABOR FORCE - 1970

Occupation	Chiloquin		Malin		Merrill		Bonanza	
	#	%	#	%	#	%	#	%
Professional, Technical	30	10.7	35	18.2	9	3.2	31	41.3
Farmers & Farm Mgr.	0	-	0	-	12	4.3	0	-
Managers & Proprietors	11	3.9	5	2.6	30	10.8	4	5.3
Clerical Workers	31	11.1	11	5.7	23	8.3	0	-
Sales Workers	12	4.3	4	2.1	5	1.8	6	8.0
Operatives	35	12.5	32	16.7	52	18.7	6	8.0
Service Workers	27	9.6	33	17.2	30	10.8	5	5.3
Farm Laborers	0	-	16	8.4	69	24.8	17	22.6
Other Laborers	75	26.8	13	6.8	19	6.8	0	1.0
Total Employed	280		192		278		75	

SOURCE: U.S. Census of Population - 1970.

Table 17
UNEMPLOYMENT
1950-1979, KLAMATH COUNTY

Year	Annual Average	Range
1950	6.2	-
1960	7.2	-
1970	7.0	9.6-5.7
1971	7.3	10.1-5.6
1972	6.9	9.8-5.1
1973	6.1	8.0-4.5
1974	7.4	8.4-5.5
1975	10.1	12.8-7.5
1976	9.5	12.4-7.5
1977	7.7	10.0-6.0
1978	7.2	-
1979	9.5*	-

*March 1979 (Generally higher than annual average).

Some problems may be identified from the foregoing description. An important human resource problem identified by the Klamath County OEDP is

> "a lack of jobs for minorities, youth, women and the inexperienced/uneducated."

This County-wide problem likely applies to Merrill as well. Other problems include:

- Out-migration and loss of population (until recently).
- Some out-migration of youth and young adults - (as indicated by the age distribution).
- Low participation of women in the labor force.
- Lack of education of large percentage of the work force.
- High unemployment/seasonal unemployment.

At first glance, the labor force in Merrill seems to offer few opportunities. However, some opportunities do exist. For example, an industry needing seasonal labor from June to September might find a reservoir of labor in the potato sorters who are unemployed at that time. Another example might be some type of industry employing retired persons on a part-time basis, thus taking advantage of their skills and experience. Similarly, an industry employing women might likely find a large pool of available labor. Finally, an industry which employs farm laborers in the winter might also find many willing employees.

The Local Economy

This section examines the existing economic structure of Merrill. Through an analysis of income distributions, the business structure, the local work force, and basic-nonbasic employment, a picture of the local economy may be drawn.

Income Distribution. The income distribution is a general measure of the relative economic well-being of a community's population. The income distributions for Chiloquin, Merrill and Malin are shown in Table 18.* A large percentage of Merrill's population (22%) earn less than $2,000 per year. Another 43.6% earn less than $6,000 per year, so 63% of the City's families and individuals earn a relatively low income.

Median and per capita incomes for Merrill and the other small cities are compared with State and County figures in

---

* This data is from the 1970 Census, so may be somewhat out of date.

Table 18
INCOME DISTRIBUTION
1970

Income	Chiloquin		Malin		Merrill		Bonanza	
	#	%	#	%	#	%	#	%
1,000	32	11.7	9	4.8	20	6.3	12	16.1
$1,000-1,999	11	4.0	33	17.6	50	15.7	13	17.8
$2,000-2,999	10	3.7	15	8.0	29	9.1	6	8.2
$3,000-3,999	17	6.3	15	8.0	24	7.5	0	-
$4,000-4,999	30	11.0	4	2.1	55	17.3	0	-
$5,000-5,999	17	6.3	19	10.1	31	9.7	9	12.3
$6,000-6,999	20	7.4	5	2.6	28	8.8	11	15.0
$7,000-7,999	14	5.0	26	13.8	13	4.1	6	8.2
$8,000-8,999	29	10.6	6	3.2	22	6.9	0	-
$9,000-9,999	21	7.7	8	4.3	16	5.3	6	8.2
$10,000-11,999	23	8.4	23	12.2	10	3.1	4	5.4
$12,000-14,999	22	8.1	5	2.6	9	2.8	6	8.2
$15,000-24,999	26	9.6	20	10.6	6	1.8	0	-
$25,000-49,999	0		0		5	1.5	0	-
50,000+	0		0		0		0	

Table 19. Merrill's median income was $4,654 in 1970, as compared with a County median of $8,810 and a State median of $9,489. Merrill's median income was nearly $5,000 lower than the State median income, indicating that Merrill is a low-income community. Merrill's median income is considerably lower than the median income for Malin, and somewhat higher than Chiloquin's.

Table 19
MEDIAN AND PER CAPITA INCOME
1970

	Median Income	Per Capita Income
STATE	$9,489	$3,677*
KLAMATH COUNTY	8,810	3,499
Bonanza	4,609	-
Chiloquin	4,533	2,557
Malin	5,946	2,769
Merrill	4,654	2,537
*1970 Census		

Industrial/Commercial Structure. The following sections will analyze Merrill's businesses and labor force. The data in this Section were obtained by contacting each business establishment and gathering information on the number of employees. The study areas were enlarged beyond the City limits to include businesses in the Merrill vicinity. Each business was classified into one of ten standard industrial divisions for this analysis.* The employees of these businesses are also classified into the same categories, and are referred to as the work force. This term should not be confused with the City's labor force which was discussed in the previous section.

Comparative Profiles. Comparative profile of Bonanza, Chiloquin, Malin and Merrill are presented in Tables 20 and 21. These tables provide a means of evaluating economic similarities and differences among the small cities, and may highlight each City's strengths and weaknesses.

About 2/3 (67%) of Merrill's business establishments are in retail trade and services. This compares to 50% in

*Potato sorters were classified as agricultural rather than wholesale trade as is usually the case.

Table 20
COMPARATIVE PROFILE: PERCENTAGE OF TOTAL BUSINESS ESTABLISHMENTS WITHIN VARIOUS INDUSTRIAL CATEGORIES

	Bonanza	Chiloquin	Malin	Merrill
Agriculture, Forestry	-	7	16	4
Mining	-	-	-	-
Construction	13	7	8	6
Manufacturing	8	3	5	-
Transportation & Public Utilities	-	-	5	4
Wholesale Trade	-	7	-	2
Retail Trade	13	30	11	28
Finance, Insurance & Real Estate	-	7	3	11
Services	42	20	37	39
Public Admin.	25	20	16	7
TOTAL	*	*	*	*

*Columns may not add up to 100% due to rounding of decimal figures

Table 21
COMPARATIVE PROFILE: PERCENTAGE OF TOTAL WORK FORCE WITHIN VARIOUS INDUSTRIAL CATEGORIES

	Bonanza	Chiloquin	Malin	Merrill
Agriculture, Forestry	-	10	40	16
Mining	-	-	-	-
Construction	10	0.6	3	23
Manufacturing	8	30	22	-
Transportation & Public Utilities	-	-	4	7
Wholesale Trade	-	7	-	0.4
Retail Trade	16	8	6	19
Finance, Insurance & Real Estate	-	5	0.3	10
Services	36	5	16	30
Public Admin.	30	41	12	16
TOTAL	100	*	*	*

*Columns may not add up to 100% due to rounding of decimal figures.

Chiloquin and 68% in Malin. Another 4% of the businesses are in agriculture and forestry, as compared with 7% in Chiloquin and 16% in Merrill. None of Merrill's business establishments are involved in manufacturing, as compared to 3% in Chiloquin and 5% in Malin. About 11% of Merrill's business establishments are involved in finance, insurance and real estate as compared to 7% in Chiloquin and 3% in Malin.

Most of Merrill's work force is employed in services (30%) and retail trade (19%). Another 16% are employed in public administration, and 16% in agriculture-forestry. In Chiloquin, the majority of the work force is employed in public administration (41%), while in Malin the majority of the work force is employed in agriculture and forestry (40%).

Thus, Merrill has about the same percentage of service and retail trade establishments as Malin and Chiloquin, yet a larger percentage of the work force is employed in these businesses.

Local Economic Base. In order to analyze a community's economy, the businesses are divided into two sectors: basic and non-basic. The basic sector consists of those businesses which export goods and services out of the area. These export industries provide the community's economic base. The non-basic sector provides goods and services to the basic sector, and to the workers in the City as well. For example, the potato sheds export the majority of their spuds to areas outside of Merrill. The workers employed here then purchase groceries, hardware and services from the local merchants in Merrill, or the non-basic sector. Each business surveyed was classified as either basic or non-basic, depending upon the type of activities performed by the various businesses.

Only 13% of Merrill's work force is employed in the basic sector of the economy. However, even this includes a large number of seasonal jobs. The basic industries are primarily the potato sheds or agricultural employment.

It is unusual to have such a small percentage of the work force employed in the basic sector. Generally, for each basic worker, there are two or more non-basic workers. It seems likely that services and retail trade may be a type of economic base in Merrill. Especially when the City of Malin is considered - as Malin has 60% basic employment. It seems likely that many residents of Merrill work in Malin and depend on Merrill for the non-basic goods and services. The service and retail trade sector also reflects the tourism-dependence in Merrill.

Local Economic Structure. In Plate 8, the figures in Table 20 and 21 are shown in graphic form. This chart again emphasizes Merrill's service and retail trade economy. There is a larger percentage of firms in these areas than the percentage of employees.

First, Merrill's median income is very low when compared with the State as a whole. This may be related to the fact that a large percentage of Merrill's labor force are farm laborers. Also, the hourly wage of service workers is generally at or below minimum wage. There is very little industry in the basic sector within the City. The City apparently functions as a service center for the surrounding farming areas. Merrill's service and retail trade sector may be overly dependent on tourist trade. In any case, the commercial sector seems out of proportion with the industrial sector.

As the City is primarily a service and trade center, this should be improved. The downtown area is badly in need of renovation. This might expand the existing tourist trade somewhat, or at least encourage residents to do more shopping locally. There seems to be a need for more employment in the basic sector. Because of Merrill's location, it seems an ideal area for agricultural processing facilities. Merrill is located about equal distance from both the Malin and Tulelake potato growing areas.

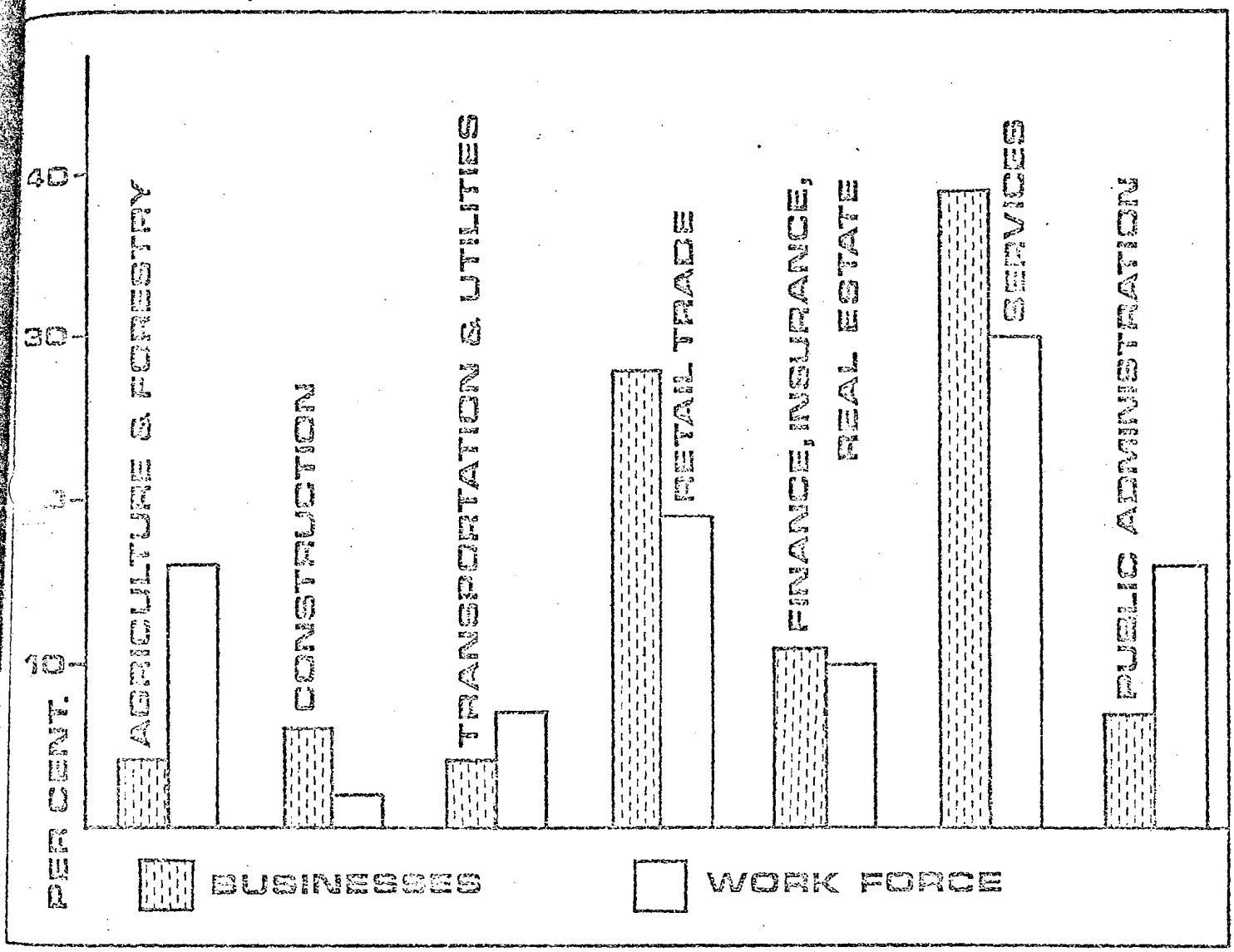
HOUSING ELEMENT

Introduction

Housing development occupies major City land areas and consequently, has important social, economic, and land use impacts on a community. Land use patterns are affected by both existing housing conditions and new residential development. Substandard housing affects not only the inhabitants, but also the value of adjacent property. The economic well-being of residents is affected by the cost of housing, which is partially determined by the supply of housing. Therefore, anaylsis of current housing conditions and projection of future housing needs are important parts of the comprehensive planning process.

This anaylsis includes sections on (1) general housing characteristics, (2) housing conditions, (3) housing costs, (4) housing construction trends and (5) projected housing needs. The data of Housing for 1950, 1960 and 1970 were obtained from U.S. Census of Housing for those years.

Plate 8
ECONOMIC STRUCTURE



Current conditions in 1978 were obtained through a windshield survey conducted by the County Planning Office, and through a housing condition survey conducted by the City in conjunction with the HUD Grant Applications. Building permit data was obtained through the State Housing Division.

Housing Characteristics

The analysis of existing housing characteristics presented in this section includes analyses of housing supply, occupancy, tenure, type, and houshold size, based primarily on data from the 1970 census. It should be updated when data from the 1980 Census of Housing is available.

Approximately 36% of the developed land in Merrill, or 60 acres, is devoted to housing. Single family housing accounts for 80% of this acreage, while multi-family housing accounts for 4% (4 acres). The remaining 8.67 acres (16%) are occupied by mobile homes and a mobile home park.

Housing Supply. According to the 1970 Census of Housing, Merrill had a total of 321 housing units in 1970. This figure represents an increase of 14 housing units in the 10 year period from 1960, or a total increase of about 4.5%. Housing stock for the entire county increased nearly 20% (see Table 22).

Housing Occupancy. In 1970, of the total 321 housing units in Merrill, 302 units (94%) were occupied and 19 units (6%) were vacant, dilapidated or abandoned. This compares with 83% occupied and 2% vacant in 1960, with the remaining 15% being seasonal or abandoned housing. In 1970, available units (for rent or sale) in Merrill accounted for only 10 of the 19 vacant units, or 4.76% of the total housing inventory. This percentage of vacant units is not large enough to permit individual or families an adequate selection of housing. The rental vacancy rate was 3%, well within the 1.5 to 2.5% range desirable for this type of housing. Thus, there may be a need to increase the number of rental units available so that vacancy rates rise somewhat (Table 23).

Housing Tenure. Of the total 302 occupied housing units in Merrill, 160 (53) were owner-occupied and 142 (47%) were renter-occupied in 1970. This is nearly the same as the owner/renter split in 1960. Owner occupancy has decreased very slightly (0.5%) in Merrill since 1960. The percentage of owner occupancy in Merrill was somewhat lower than County-wide (63%) and only slightly higher than the City of Klamath Falls (50%). Owner occupancy in Merrill was also a lower percentage than the other three small cities in Klamath County (Table 24).

Table 22
CHANGE IN HOUSING SUPPLY
KLAMATH COUNTY AND INCORPORATED CITIES
1960-1970

Place	1960	1970	% Change
Bonanza	93	88	-5.37
Chiloquin	285	292	2.49
Malin	202	210	3.96
Merrill	307	321	4.56
Klamath Falls	6,803	6,307	-7.29
Klamath County	16,942	18,317	8.11

SOURCE: U.S. Census of Housing, 1960, 1970.

Table 23
HOUSING SUPPLY AND OCCUPANCY
KLAMATH COUNTY AND INCORPORATED CITIES
1960-1970

Place		All Housing Units	Year-Round Occupied		Year-Round Vacant		Other Vacant/ Seasonal	
			#	%	#	%	#	%
Bonanza	1960	93	85	91.4%	1	1.1%	7	7.5%
	1970	88	66	75.0%	22	25.0%	0	
Chiloquin	1960	285	258	90.5%	15	5.3%	12	4.2%
	1970	292	256	87.6%	36	12.3%	0	
Malin	1960	202	187	92.6%	10	4.9%	5	2.5%
	1970	210	196	93.3%	14	6.6%	0	
Merrill	1960	307	254	82.7%	7	2.3%	46	15.0%
	1970	321	302	94.1%	19	5.9%	0	
Klamath Falls	1960	6,803	6092	89.5%	682	10.0%	29	0.4%
	1970	6,307	5850	92.7%	457	7.2%	3	-
Klamath County	1960	16,942	14,711	86.8%	1,372	8.1%	859	5.1%
	1970	18,317	16,307	89.0%	1,637	9.0%	373	2.0%

SOURCE: U.S. Census of Housing 1960, 1970

Table 24
RESIDENTIAL OCCUPANCY
KLAMATH COUNTY AND INCORPORATED CITIES
1960-1970

	Total Occupied	Owner Occupied		Renter Occupied	
		#	%	#	%
Bonanza					
1960	85	60	70.6	25	29.4
1970	66	61	92.4	5	7.6
Chiloquin					
1960	258	167	64.7	91	35.3
1970	256	179	69.9	77	30.1
Malin					
1960	187	109	58.3	78	41.7
1970	196	144	73.5	52	26.5
Merrill					
1960	254	136	53.5	118	46.5
1970	302	160	53.0	142	47.0
Klamath Falls					
1960	6,092	3,197	52.5	2,895	47.5
1970	5,850	2,957	50.5	2,893	49.5
Klamath County					
1960	14,711	9,187	62.4	5,524	37.6
1970	16,307	10,278	63.0	6,029	37.0

SOURCE: U.S. Census of Housing 1960, 1970.

Housing Type. In 1970, 68% (218) of the housing units in Merrill were one-unit structures, or single family homes. There were 16 units (5%) in two-unit structures or duplexes, 14 units (4%) in 3 and 4 unit structures, and 37 units (12%) in 5+ unit structures, or apartments. There were 36 mobile homes (11%). The percentage of one-unit structures in Merrill is lower than County-wide (78%), and about the same as the City of Klamath Falls (69%). The percentage of mobile homes in Merrill is somewhat higher than County-wide (Table 25).

Household Size. In 1970, there were 308 households in Merrill, an increase of 54 households in the ten year since 1960. At the same time, population declined by 77 persons, causing the household size to drop from 3.11 persons per household in 1960 to 2.31 persons per household in 1970. This trend of declining household size is consistent with the County-wide trend. Smaller household size is the result of several factors and if this trend continues, more housing units and smaller housing units will be required in the future (Table 26).

Housing Condition

In this section, several indicators of housing conditions are used, including age of housing, availability of public water and sewer service, homes lacking plumbing facilities, a survey of housing conditions, and the value of housing.

Age of Housing. The relative age of housing in a community is one index of both the immediate and long-range need for remodeling and rehabilitation. An older community with a large number of old homes is more likely to be in need of a rehabilitation program than is a community with new homes. About 64% of all housing units in Merrill were constructed before 1940. Thus, more than half of the homes in Merrill are over 40 years of age. Many of these older structures may require rehabilitation (see Table 27).

Availability of Public Service. The majority of housing units in Merrill are provided with public water supply (94%) and sewer service (97%). Although 3% of the housing units in Merrill have no public water or sewer service, improvements are currently underway which will correct this problem in most cases.

Plumbing. Although the 1970 Census of Housing indicates that 7.3% of the occupied housing units in Merrill are not equipped with plumbing facilities, the current housing rehabilitation program is attempting to correct some of these problems. County-wide data indicates that 5.4% of the housing units in the County lack some or all plumbing facilities.

Table 25
YEAR-ROUND HOUSING UNITS BY STRUCTURE TYPE
KLAMATH COUNTY AND INCORPORATED CITIES
1970

Structure	Bonanza		Chiloquin		Malin		Merrill		Klamath Falls		Klamath County	
	#	%	#	%	#	%	#	%	#	%	#	%
1	76	86.4	261	89.4	179	85.2	218	67.9	4,336	68.7	13,955	77.8
2	12	13.6	0	-	0	-	16	5.0	449	7.1	746	4.2
3 & 4	0	-	5	1.7	13	6.2	14	4.4	289	4.6	367	2.0
5 or more	0	-	5	1.7	18	8.6	37	11.5	1,223	19.4	1,546	8.6
Mobile Homes	0	-	21	7.2	0	-	36	11.2	10	0.2	1,330	7.4
TOTAL	88	100.0	292	100.0	210	100.0	321	100.0	6,307	100.0	17,944	100.0

SOURCE: U.S. Housing Census, 1970.

Table 26
OCCUPIED DWELLING UNITS
KLAMATH COUNTY AND INCORPORATED CITIES
1950-1970

Place	Households		Population in Household		Size of Household	
	#	%	#	%	#	%
Bonanza						
1950	88		259		2.94	
1960	85	-3.4	297	14.67	3.49	18.71
1970	67	-21.17	178	-40.06	2.66	-23.78
Chiloquin						
1950	199		668		3.36	
1960	258	29.65	936	40.12	3.63	8.03
1970	258	-	799	-14.63	3.10	-14.60
Malin						
1950	195		592		3.04	
1960	187	-4.1	553	-7.09	2.96	-2.63
1970	188	0.5	633	14.46	3.37	+13.8
Merrill						
1950	271		835		3.08	
1960	254	-6.27	790	-5.39	3.11	0.97
1970	308	21.26	713	-9.74	2.31	-25.72
Klamath Falls						
1950	5,333		15,240		2.86	
1960	6,092	14.23	16,787	10.15	2.76	-3.49
1970	5,850	-3.97	15,163	-9.67	2.59	-6.16
Klamath County						
1950	13,142		41,012		3.12	
1960	14,711	12.0	46,292	12.9	3.15	1.0
1970	16,307	10.8	48,627	5.0	2.98	-5.4

SOURCE: U.S. Housing Census 1950, 1960, 1970.

Tab 27
YEAR STRUCTURE WAS BUILT, ALL YEAR-ROUND UNITS
KLAMATH COUNTY AND INCORPORATED CITIES
1970

Place	1939 or before		1940 - 1949		1950 - 1959		1960 - 1964		1965 - 1970		TOTAL
	#	%	#	%	#	%	#	%	#	%	
Bonanza	43	48.8	25	28.4	12	13.6	8	9.1	0	-	88
Chiloquin	116	39.7	61	20.9	54	18.5	56	19.2	5	1.7	292
Malin	161	76.7	20	9.5	15	7.1	0	-	14	6.7	210
Merrill	206	64.1	24	7.5	31	9.6	24	7.5	36	11.2	321
Klamath Falls	1,968	68.0	519	17.9	211	7.3	99	3.4	96	3.3	2,893
Klamath County	7,852	43.7	3,279	18.3	2,846	15.9	1,770	9.9	2,197	12.2	17,944

General Housing Conditions. General conditions of housing in Merrill were surveyed during the spring of 1977. The classification of structures was administered by examination of all housing units, both inside and out. Where it was not possible to observe the interior condition, a "windshield" survey method, was used. The windshield survey involved recording from brief exterior observations of the general exterior conditions of residential structures. Residential conditions were classified as either standard or substandard based upon the following criteria:

Plumbing: housing lacking hot water, bathtub or basin, or the exclusive use of these facilities were substandard.

Heating: housing lacking a heating system, or heated only with individual room heaters were classifed substandard.

Roof: housing with worn roofing material were classified substandard.

Foundation: housing lacking a foundation or foundation in very poor condition were classified substandard.

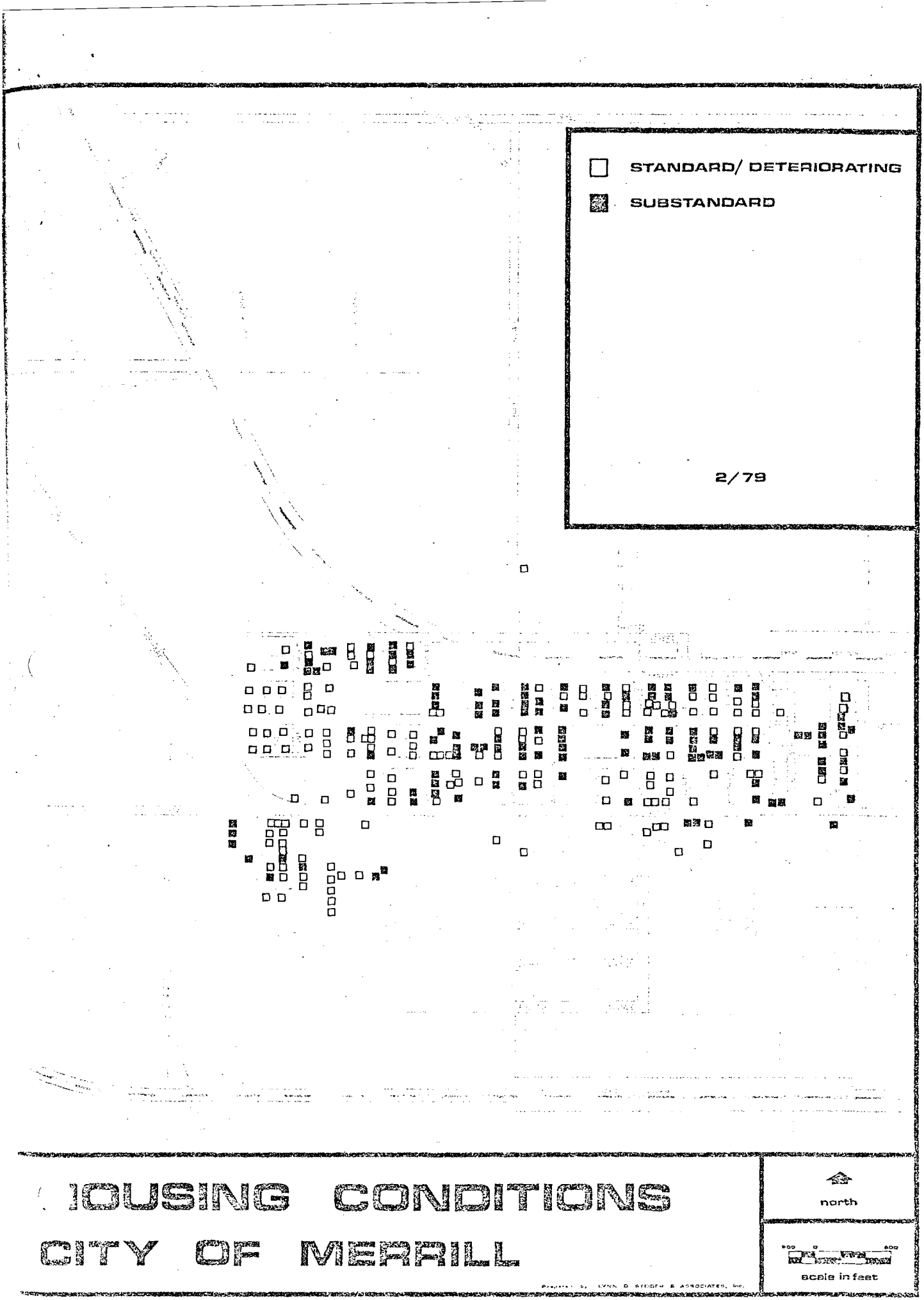
Siding: inadequate, cracked, or lacking were classified substandard.

Sewer: inadequate or lacking were classified substandard.

A map of housing conditions is presented in Plate 9. In Table 28, a tabulation of the findings of the 1977 survey indicates that there are a total of 259 units, not including trailers, of which 110 units (42%) are standard and 149 units (58%) are substandard. Of the 172 owner-occupied housing units, 52% are standard and 48% are substandard. Of the 87 renter-occupied housing units, only 23% are standard and 77% are substandard. Thus, a much larger proportion of renter-occupied homes were substandard. Overall, over half of the housing units in Merrill were substandard. These units are not concentrated in any single area of the community, but are scattered throughout town (see Table 29).

Of the 259 housing units in Merrill, all of the owner occupied houses units can be rehabilitated, while 27 of the renter-occupied units are not suitable for rehabilitation.

Value of Housing. The median value of owner-occupied housing units in Merrill was $11,060 in 1970. This is somewhat lower than the County-wide media value of $12,400. Merrill's



HOUSING CONDITIONS

CITY OF MERRILL

north

scale in feet

Prepared by LYNN D. WRIGHT & ASSOCIATES, Inc.

Table 28
HOUSING CONDITIONS
1978

Housing Conditions	Chiloquin		Malin		Merrill**	
	#	%	#	%	#	%
Standard	123	43.4	159	67.1	110	34.6
Deteriorating	69	24.3	52	21.9	-	-
Substandard	45	15.8	3	1.3	149	46.8
Mobile Homes	47	16.5	23	9.7	59	18.6
TOTAL	284	100.0	237	100.0	318	100.0

**From Merrill Housing Assistance Plan, City of Merrill, 1978.

SOURCE: Klamath County Planning Department.

Table 29
MERRILL HOUSING CONDITIONS

Available Housing	Total Units		Owner Occupied		Renter Occupied	
	#	%	#	%	#	%
Standard	110	42%	90	52%	20	23%
Substandard	149	58%	82	48%	67	77%
Total	259	100%	172	100%	87	100%
Suitable for Rehabilitation	156	60%	96	62%	60	69%

median value indicates that the majority of homes are relatively low in value. Over 60% of the homes in Merrill fall withing the $5,000 - $15,000 range. However, the median value is higher in Merrill than in the other three small cities in Klamath County (Table 30).

The median contract rent for all occupied rental units in 1970 was $72 (see Table 31). This figure is somewhat lower than the County-wide median of $93.00, and also lower than Klamath Falls' median of $87.00. This may be due to several factors, including the age, size and condition of rental housing, and Merrill's distance from the primary employment center in Klamath County.

Housing Cost

Value of housing is an indicator of housing conditions, while housing costs in relation to income provides a measure of the number of households paying excessive portions of their income for housing. Households below the median income who pay more than 25% of their income for housing may need assistance in meeting their housing costs.

Owner-occupied Housing. The value of owner-occupied housing should not exceed 2.5 times the family yearly income. Using this rule of thumb, household income distributions were converted into house value distributions, and compared with the actual distribution of owner-occupied housing units by value. Table 32 shows that 166 households are below the median income, and there are only 71 owner-occupied housing units in Merrill that fall within their price range. Thus, approximately 90 households (30%) must pay more than a reasonable portion of their income for housing, and may be eligible for assistance in purchasing a home.

Renter-occupied Housing. A second rule of thumb is that monthly rent should not exceed 25% of the household income. Using this figure, Merrill's income distributions were converted into monthly rent distributions, and compared with the distribution of rental units by cost (Table 33). Again, this table shows a large number of households whose income indicates rental limits of $60 per month or less, and there are only 35 rental units in this price range. Thus, 64 households (20%) must pay more than 25% of their income for rent.

A classification of households which need housing assistance is presented in Table 37. This table shows more than 2/3 of all households in Merrill are in need of housing assistance. This includes 65% of the 172 owner-occupied housing units and 69% of the 87 renter-occupied units.

Table 30
VALUE OF OWNER-OCCUPIED HOUSING UNITS
INCORPORATED CITIES AND KLAMATH COUNTY
1970

Value	Bonanza		Chiloquin		Malin		Merrill		Klamath Falls		Klamath County	
	#	%	#	%	#	%	#	%	#	%	#	%
$5,000	6	12.2	48	30.9	7	5.0	33	26.6	121	4.4	510	6.5
5,000- 9,999	23	46.9	63	40.6	67	48.2	22	17.7	837	30.5	2,223	28.2
10,000-14,999	4	8.1	29	18.7	49	35.2	33	26.6	844	30.8	2,220	28.2
15,000-19,999	16	32.6	0	-	6	4.3	31	25.0	469	17.1	1,482	18.8
20,000-24,999	0	-	0	-	10	7.2	0	-	217	7.9	716	9.1
25,000-34,999	0	-	15	9.7	0	-	5	4.0	145	5.3	471	6.0
35,000+	0	-	0	-	0	-	0	-	109	4.0	256	3.2
TOTAL NUMBER	49	100%	155	100%	139	100%	124	100%	2,742	100%	7,878	100%
Median Value	9,020.9		7,340		9,663		11,060		12,446		12,400	

Table 31
MONTHLY RENT, ALL OCCUPIED RENTAL UNITS
INCORPORATED CITIES AND KLAMATH COUNTY
1970

	Bonanza		Chiloquin		Malin		Merrill		Klamath Falls		Klamath County	
	#	%	#	%	#	%	#	%	#	%	#	%
$40	-	-	0	-	0	-	30	21.7	126	4.5	164	3.2
$40-$59	0	0	5	11.9	5	9.6	5	3.6	372	13.3	552	10.7
$60-$79	0	0	10	23.8	22	42.3	52	37.7	587	21.0	1,065	20.6
$80-$99	0	0	10	23.8	15	28.8	29	21.0	742	26.5	1,205	23.3
$100-$149	0	0	17	40.5	10	19.2	12	8.7	820	29.3	1,727	33.3
$150-$199	0	0	0	0	0	0	10	7.2	125	4.4	403	7.8
$200+	0	0	0	0	0	0	0	0	26	0.9	59	1.1
TOTAL			42	100.0	52	100.0	138	100.0	2,797	100.0	5,175	100.0
Median			$91.40		$78.14		$72.40		$87.00		$93.00	

Table 32
HOUSING COST, OWNER-OCCUPIED HOUSING

Yearly Income Range ($)	House Value($) (2.5 x Income)	Value of Units ($)	# of Units	# Households
1,000 1,000-1,999	2,500 2,500-4,999	5,000	33	70
2,000-2,999	5,000-7,499	5,000-7,499	5	29
3,000-3,999	7,500-9,999	7,500-9,999	17	24
4,000-4,999 5,000-5,999	10,000-12,499 12,500-14,999	10,999-14,999	33	86
6,000-6,999 7,000-7,999	15,000-17,499 17,500-19,999	15,000-19,999	31	41
8,000-8,999 9,000-9,999	20,000-22,499 22,500-24,999	20,000-24,999	0	38
10,000-11,999 12,000-14,999	25,000-29,999 30,000-37,499	25,000-34,999	5	19
15,000-24,999 25,000+	37,500-62,499 62,500+	35,000+	0	11

Table 33
HOUSING COST, RENTER-OCCUPIED HOUSING

Yearly Income Range ($)	Monthly Income Range($)	Monthly Rent Range ($)		Monthly Rent ($)	# of Households	# of Units
		High	Low			
$1,000	84		21			
1,000-1,999	84-166	21	42	40	70	30
2,000-2,999	167-249	42	62	40-59	29	5
3,000-3,999	250-333	63	83	60-79	24	52
4,000-4,999	334-415	84	103	80-99	55	29
5,000-5,999	416-499	104	124	100-149	59	12
6,000-6,999	500-583	125	145			
7,000-7,999	584-666	146	167	100-199	51	10
8,000-8,999	667-749	167	187			
9,000-9,999	750-833	188	207			
10,000-11,999	834-999	209	249	200-249	10	0
12,000-14,999	1,000-1,249	250	311	+250	20	0
15,000-24,999	1,250-2,083	313	520			
$25,000+	2,084	521				

Housing Supply Trends

Updated data on housing supply trends were obtained through the 1978 windshield survey by the County Planning Department, and from the State Housing Division.

The 1978 windshield survey of Merrill indicates that there were 360 housing units in Merrill as of fall, 1978 (Table 34). Of these, 64% (231) were single family, 19% (70) were multi-family and 17% (59) were mobile homes. This is an increase of 39 units (12%) in the 8 year period since 1970, or an increase of about 1.5% each year.

Housing Construction. Data on building permits for 1970-1978 from the State Housing Division indicates that 33 new housing units were constructed in Merrill over the eight year period.* Seventeen were single-family (51%) while 16 units (49%) were multi-family (Table 35).

Projected Housing Needs

Merrill's housing needs for the year 2000 were projected, based upon the population projections presented earlier. Several assumptions were necessary to make these projections:

(1) Population in households will remain a constant percentage of the total population (98.7%).

(2) Household size will remain constant (2.31 persons per household).

(3) The vacancy rate will remain constant (6%).

(4) 1% of the housing stock must be replaced each year to compensate for deterioration and demolition of substandard housing.

Table 36 presents the number of housing units needed, the number of "replacement" units needed, and the total housing units necessary to accommodate the expected population by five year increments through 2000.

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*Building permit data for the years 1970-74 is not reliable, as the County did not require building permits prior to 1975.

Table 34
HOUSING STOCK
1978 Survey

	Bonanza		Chiloquin		Malin		Merrill	
	#	%	#	%	#	%	#	%
Single Family	84	74.3	229	76.1	157	66.2	231	64.2
Multi-Family	4	3.5	25	8.3	57	28.3	70	19.4
Individual Tr.	25	22.1	39	13.0	22	7.3	39	10.8
Mobile Homes in Courts			8	2.6	1	0.4	20	5.5
TOTAL	113	100.0	301	100.0	237	100.0	360	100.0

SOURCE: Klamath County Planning Department

Table 35
NEW HOUSING UNIT STARTS 1970-1978*

	SF	MF	Total
Bonanza			
1970-74	5	-	5
1975	-	-	-
1976	-	-	-
1977	-	-	-
1978	-	-	-
TOTAL	5	0	5
Chiloquin			
1970-74	19	-	19
1975	2	4	6
1976	2	6	8
1977	-	-	-
1978	-	-	-
TOTAL	23	10	33
Malin			
1970-74	4	-	4
1975	-	2	2
1976	3	-	3
1977	5	-	5
1978	5	-	5
TOTAL	17	2	19
Merrill			
1970-74	6	16	22
1975	7	-	7
1976	3	-	3
1977	1	-	1
1978	0	0	0
TOTAL	17	16	33

*State of Oregon Housing Division/Building Permit Summary.

SOURCE: C-40 Series of U.S. Census, Oregon Building Permits 1970-1977.

Table 36
PROJECTED HOUSING NEEDS
1979-2000

Year	Population	New Housing Units	Total Housing Units	Replacements	Total New Housing Units Req'd.
1970	722		321		
1980	859	69	390	32	101
1985	964	47	437	19	66
1990	1,088	57	494	22	79
1995	1,229	64	558	24	88
2000	1,395	75	633	28	103
Total		312	97.0%	125	437
14 New Housing Units/Year					

= 2.0 per ac

= 218 ac @ 2.0

≈ 167 dwelling = 321
2000 218 new 437
385 758

= 100 ac beyond city limits

It is estimated that approximately 437 new housing units will be needed by 2000. This includes 125 new units which ll be needed to replace the housing that has become dilapıdated or substandard. The overall increase in the housing stock will be 312 units or 97%. This means that about 14 new units will be needed each year to accommodate the expected population increase. Although the total number of housing starts over the last eight years was only 33 units, or 4 units per year, current housing construction activity in the Merrill vicinity is increasing.

Although it is difficult to predict exactly what type of housing and how much housing will be required in the future, there are some indications that may be gleaned from past trends. First, the trend toward decreasing household size indicates that there are more single person households and smaller families. Single person households are predominantly young adults, divorced or separated adults, and senior citizens. These groups tend to desire relatively inexpensive multi-family housing. This need should continue in the next several years. Smaller families may lead to a need for smaller housing units, i.e., the 2-3 bedroom homes. The income range in Merrill is low compared with the County and the State. This indicates that many households may require assistance in acquiring or renovating their home.

Table 37
MERRILL HOUSING ASSISTANCE NEEDS

	Households	Need Housing Assistance		No Need For Housing Assistance	
		#	%	#	%
Owners	172	112	65%	60	35%
Renters	87	60	69%	27	31%
Total	259	179	69%	80	31%

SOURCE: Merrill Housing Assistance Plan, 1978.

PUBLIC FACILITIES AND SERVICES

Introduction

Public facilities and services play an important role in determining the future of a City. They have a direct impact on the City's finances, land use, and environmental quality; and a secondary impact on the City's economy, housing and social well-being. Public facilities and services also play an important part in determining how much growth a City can reasonably accommodate.

The City's fiscal status often depends upon the amount of money needed to operate and maintain City services. In order to minimize capital outlay and operating expenditures, cities need to plan for growth so that development is encouraged where services are adequate. Environmental quality is effected by the quality and type of sewage disposal. Quality and quantity of housing may be affected by the capacity and level of public services available. Social well-being may be affected by the availability of medical facilities, the quality of schools, and the presence of amenities such as libraries, museums, and community halls. A City's ability to accommodate growth depends largely on whether or not they can provide services, consequently, public facilities are a key element in the overall planning for City development.

The anlaysis of public facilities and services includes government administrative facilities, protective services, educational, postal, medical, library, museum, and airport facilities, and utilities.

Administrative Facilities

Merrill's administrative facilities are located in Carter Hall, and include a City Recorder's office and the Police Department. A meeting room is also available there for the City's use. The community hall is also available when more space is needed for meetings. The City moved into this facility in 1977, and space is adequate at present, although the police office is somewhat crowded. There may be a need for one more office in the future, depending upon the City's needs.

Protective Facilities

Police Department. The Police Department is located in the City Hall and is part of the Klamath County central dispatch system. The department is staffed by three full-time positions; a chief and two patrolmen. One of the patrol

positions is CETA funded. There are two city-owned patrol cars. The 3 full-time patrolmen provide more hours of protection than is found in the other small towns in Klamath County.

Fire Department. The firehouse has space for 5 trucks, and the department is staffed by 30 volunteers - 20 from Merrill and 10 from the rural areas of the district. The present equipment includes four pumpers and one tanker/pumper. The tanker/pumper has a 2,800 gallon storage capacity and pumps 750 gallons per minute. Two trucks have a 1,000 gallon storage capacity and pump 750 gallons per minute. The fourth has a 500 gallon storage capacity and a 500 gallon per minute pumping capacity, and the remaining truck has a 250 gallon storage and pumping capacity. This department provides service to a large area which extends from Adams Point Road - 4.5 miles to the east, to 5 Corners - 6.5 miles west, to Stateline Road - 2 miles south, and to Hill Road - 3 miles north.

This department provides Merrill with relatively good fire protection. Merrill's fire rating is Class 8. To achieve a lower rating, the City must improve the water system, and perhaps go to paid full-time personnel. It appears that the present equipment, staff and facilities are adequate. In the future it may be necessary to have some paid personnel. Although it would also be desirable to have more fire hydrants spaced closer together, the existing equipment is anticipated to be adequate in the future.

Educational Facilities

Merrill is served by Klamath County School District, which operates 20 schools County-wide. This includes 6 high schools, 2 junior high schools and 15 elementary schools (some are combined), for a total enrollment of 7,662 students. The district's assessed valuation was $1.3 billion with a total mill levy of $9.01/$1,000 in the 1978-79 school year. The district's adopted budget was $7.3 million and the proposed budget for 1979-80 is $7.69 million, with a bond issue for $9.8 million (primarily for structural improvements).

Merrill is served by Merrill Elementary and Upper Elementary, and Lost River High School. The total enrollment for these two schools is 430 students.

Elementary and Upper Elementary Schools. Merrill Elementary School and Upper Elementary School district boundaries basically extend south to Stateline Road, east to include Malone and Dodds Hollow Roads, north to Hill Road, and west

to include Wong Road to Highway 39, and Buessing Road to Lower Klamath Lake Road. The grade school was built in 1952 and has 8 general classrooms, a music room, a library and a learning center. The junior high was built in about 1920, and includes 3 general classrooms, a gymnasium, shop room, home economics room and band room.

The elementary school provides educational training from first through the fifth grade, while the junior high provides training from the sixth through the eighth grade. The present enrollment in these two schools is 225 students. The enrollment capacity is about 325. Enrollment has been fairly stable over the last few years, and may increase somewhat over the next few years. A staff of 16 teachers serves the school.

The present space is adequate for the immediate or future needs. However, if the school district expands the district boundaries in order to relieve crowding problems in the Henley District, Merrill schools could be at capacity in a very short time. However, the proposed bond issue includes funds for expanding the Henley schools, so this shouldn't be necessary. Future needs may include a new media and learning center, and a new music room. The existing learning center and music room could be remodeled for additional classroom space, should new facilities be made available.

High School. Lost River High School serves both the Malin and Merrill areas. The school was built in 1970, and the gymnasium and shop were completed in 1971. There are 17 general classrooms, a cafeteria/multi-purpose room, a gymnasium, shop, and other facilities.

This school includes grades 9 through 12. The present enrollment is 200 students (capacity is 350). This year's enrollment decreased by 40 students from the previous year, with most of this loss occurring in the Merrill area. Future enrollment is expected to decline for the next 3 to 5 years, then increase again slowly. This expectation is based on static growth trends. A staff of 13 full-time instructors, one librarian, and one counselor serves the school.

The school facility is more than adequate to meet present needs, and was designed to accommodate students anticipated over the next 10-20 years, but may need additional classrooms if non-agricultural residential development continues to move south into the Merrill area. It is possible that the district boundaries may be redrawn in order to relieve the crowding in the Henley schools. If this occurs, enrollment at Lost River could increase suddenly.

Health and Medical Services

There are presently no health care facilities in Merrill. The nearest comprehensive health care facility is in Klamath Falls, nearly 25 miles away. The closest doctors are in Tulelake, 10 miles away. If and when a doctor buys the Malin Clinic, emergency clinic services would be 10 miles away. Consequently, there may be a need for a medical clinic Merrill.

Ambulance service is provided by the Tulelake volunteer department. Merrill contributes to the ambulance fund each year. The service provided has been excellent, with response times of 10 to 20 minutes.

Post Office

The Merrill post office was constructed in 1961, and currently has 638 boxes. There is no home mail delivery in Merrill, although a 68 box rural route originates there. The number of boxes is adequate at present, and will be expanded soon to provide space for 100 more boxes.

Library

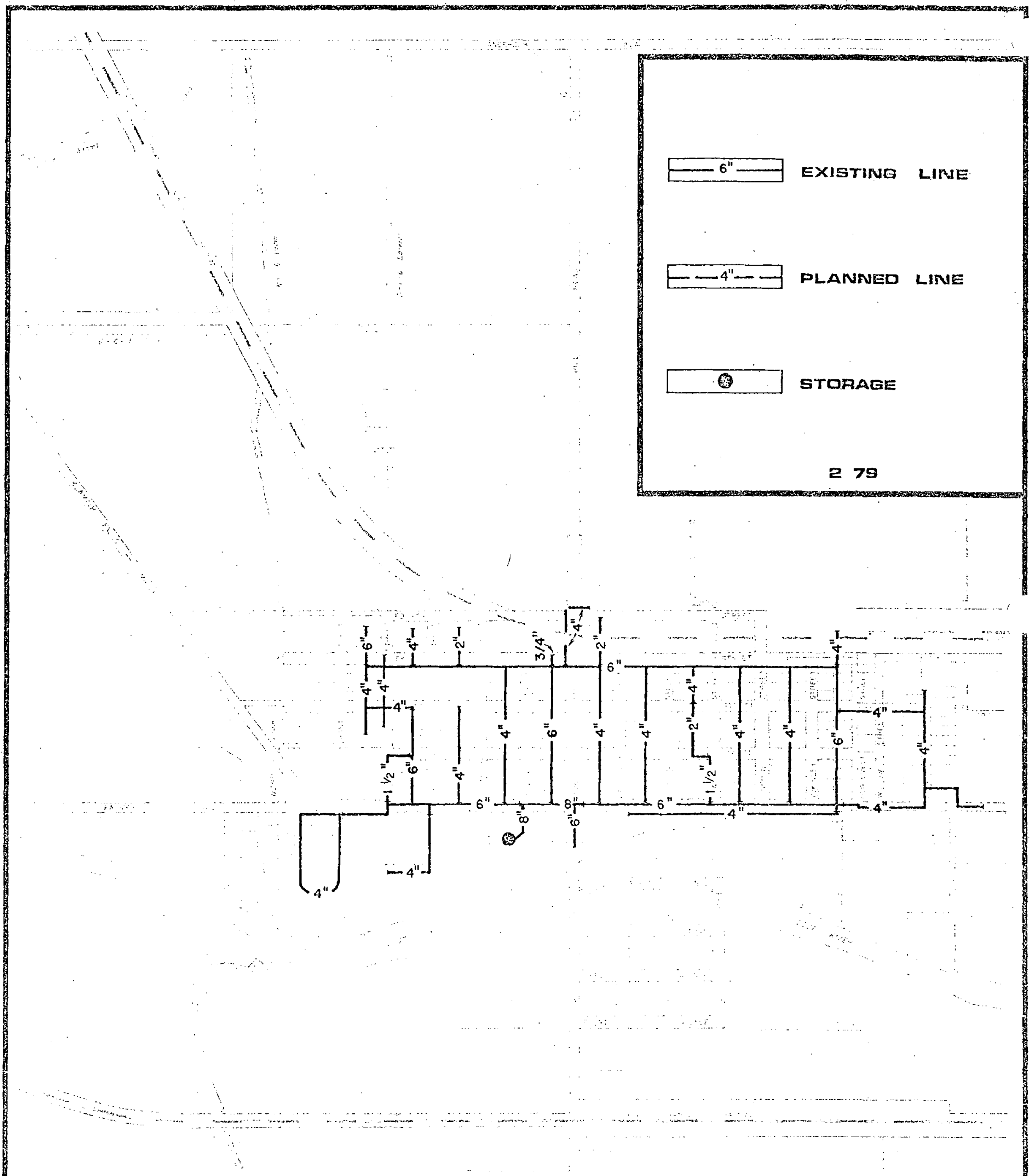
Merrill is served by a branch of the Klamath County Library, which is located in the Recreation Hall, and is jointly supported by the County and the Park District. There are about 3,000 books at the library, with a circulation of 7,000 in 1977-78.

Airport

Although Merrill does not have an airport, the Klamath Falls airport is located only a few miles to the north, and the Malin airport is located about 15 miles to the east. A third airport is located in Tulelake, about 10 miles to the south.

The Oregon Aviation System Plan, prepared by the Oregon Aeronautics Division in 1974, outlines planned aviation facilities and services through 1990. No new airport facilities were anticipated in Klamath County. Although this may likely preclude the City from obtaining State assistance in developing an airport, there may be enough area interest to pursue development of a private airstrip.

Utilities Water Service. Water is supplied primarily by one well, which is located near the water tank. This well pump has a capacity of about 400 gallons per minute. An



EXISTING & PLANNED WATER FACILITIES
CITY OF MERRILL

north

scale in feet

older well, which is rarely used, is located near the fire all, and has a pump capacity of about 150 gallons per minute. The water supply is barely adequate, consequently, the City will need a new well in the next few years. A well has been proposed to be drilled on the newly-purchased City property west of town. However, a recent grant request to fund this project was turned down. Water from the existing wells is of high quality and does not need to be treated.

Water is stored in one 80,000 gallon tank (which is inadequate). The City has acquired a site in the hills west of town for future water storage. About 500,000 gallons of storage are needed, however, since a grant request to make such improvements was recently turned down, it may be some time before improvements can be made.

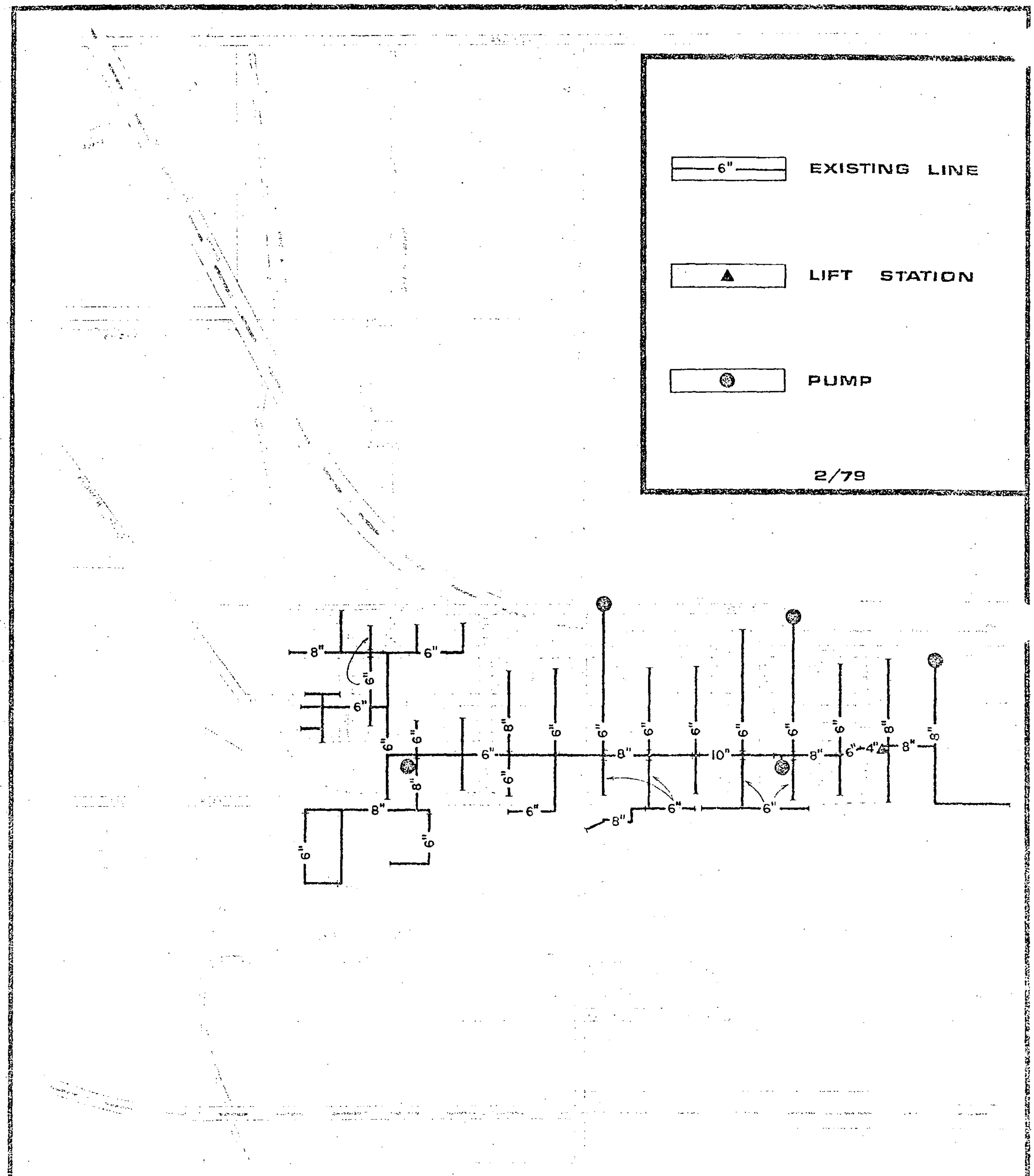
A map of the water distribution system is shown in Plate 10. Distribution is adequate at the present time. However, more fire hydrants may likely be needed in the future.

Sewer System. The City's sewerage collection system is shown on Plate 11, and is presently in the final phase of a three-phase improvement project. In Phase 1, new lines were installed in east Merrill (recently annexed to the City because of health hazards). In Phase 2, all of the lines in town were televised, tested and sealed. During this process, areas were located where new lines are needed, and where existing lines need repair. The testing and sealing process has cut down substantially on the infiltration of storm water into sewer lines, thereby reducing the volume of wastewater to be treated. In Phase 3, several 6-inch and smaller lines will be replaced with 8-inch lines. The lines currently being replaced are:

1 - Court Drive
2 - Front Street from Court Drive to Garfield Street
3 - Garfield Street south of Front
4 - The alley south of Front Street, from Main to Washington Streets, then north to Front Street
5 - First Street from the alley between Main and Garfield Streets to the alley between Madison and Clay Streets
6 - The alley between Washington and Madison Streets, from Front to First Streets
7 - Grant Street from Third to Fourth Streets.

When these improvements are made, the sewage collection system will be adequate for several years.

Merrill has a contact stabilization aerobic system sewage treatment plant. This plant was constructed in 1969 with a designed



EXISTING SEWER FACILITIES
CITY OF MERRILL

north

scale in feet

capacity of 120,000 gallons per day. The plant is currently pumping 80-100,000 gallons per day. While this is adequate at the present time, some improvements will likely be needed in the future. One alternative discussed involves constructing a second plant on the west side of town to serve that part of town plus the newly annexed area.

Electric Service. Electric service is provided by Pacific Power and Light Company. According to them, the number of residential customers in Merrill increased 7% in the seven year period from 1971 through 1978. The company predicts a continued slow growth situation for the area. Present facilities are expected to be adequate to handle demand for some time.

Telephone Service. Telephone service is provided by United Telephone Company. Efforts have been made to improve service in the last few years. According to the telephone company, the number of hookups increased about 5.5% in 1978. The company's lines are adequate at present, although more long distance lines may be needed in the future.

Natural Gas. There is presently no natural gas service in Merrill. Substitutes such as propane are provided to individual customers by several companies.

PARKS, RECREATION, OPEN SPACE AND CULTURAL RESOURCES

Introduction

Parks, recreation, and open space enhance the quality of life in a community by providing areas in which people may enjoy their leisure time. Open space is a somewhat broader category which includes not only parks, but also lands used for agriculture and other non-development purposes, and may be important both aesthetically and environmentally. Cultural resources include historical and archeological sites. Historic and cultural sites may be preserved in parks, or protected through various other means in order to maintain the heritage of the community.

Parks and Recreation

The demand for parks and recreational facilities has been increasing in recent years due to rising incomes, increasing mobility, and additional leisure time. It is frequently difficult for cities to increase the supply of parks due to cost factors, availability of suitable land, the expense of

day-to-day maintenance, concerns about vandalism, and the all-too-frequent misuse and abuse. Nevertheless, parks are increasingly becoming necessities rather than luxuries. This is especially true for cities, as the demand for nearby recreational activities is likely to increase as the cost of travel increases.

Supply. The City of Merrill currently has a little more than 5 acres of land which is used for parks. This compares with over 60 acres in Malin, 16 acres in Chiloquin, and 4 acres in Bonanza. A neighborhood park is located in west Merrill, at Third and Main Streets and contains a baseball diamond. The community hall is located on the north side of First Street between Washington and Clay Streets.

In addition to the park, there is a field at the elementary school, which serves as an all-purpose playground after school hours. It has an all-weather surface and includes playground equipment and playing fields.

The recreation hall contains large meeting rooms, kitchen facilities, and the City library. The recreation hall tends to be under-used due to management problems, and is provided financial support by a local park district.

Demand. It is difficult to estimate the need or demand for recreational facilities. Using the State Standards* in the Statewide Comprehensive Outdoor Recreation Plan, Merrill's gross need is 13.5 acres (see the following table). According to this standard, Merrill currently needs 1/2 acre for a neighborhood park, and 9 acres in a community park. By the year 2000, this need will be 2 acres of neighborhood park and 14 acres of community park.

Table 38
MERRILL PARK NEEDS*

	Gross		Net Need			
Park Type	Supply	Need	1978	1980	1990	2000
Neighborhood	4.5	5	(0.5)	(0.7)	(0.4)	1.9
Community	9	0	9	8.5	10.8	13.9
*Source: State Comprehensive Outdoor Recreation Plan						

*State Standards:
Neighborhood Park - 5 acres per 1,000 population
Community Park - 10 acres per 1,000 population

Based on the above table, it does not appear the minimum standards for recreation are being met in Merrill. The City, in conjunction with the park district may need to consider developing a community park.

Open Space

Open space includes not only parks, but also any land not presently built upon. This includes forest and agricultural land, waterways, and land needed to promote orderly urban development.

Open space is inventoried in the Existing Land Use section of this report. There are 125 acres of undeveloped land within the City limits, which includes 109 acres of agricultural land and 16 acres of vacant lots.

Cultural Resources

Klamath County's history spans several thousand years. The area was first inhabited by the Klamath and Modoc Indians as long as 6,500 years ago. The first record of western man's presence in the area is only 150 years ago.

Records, sites and objects of the past are an important reminder of our heritage. They reflect the people who were a part of events past and lend an understanding of how this area was settled and developed. It is often said that "the window to the past is also the window to the future."

Historical Sites. The "historical" period of the Merrill area is that period for which there is a written record of events. In many cases, the physical structures or objects still stand. While the written history of the Merrill area does not span many years as compared with the Eastern United States, it is rich in lore and record, and reflects a part of the total history of the west.

The following list of historical sites is a compilation from the Statewide Inventory of Historic Sites and Buildings, by the State Historic Preservation office. It should be noted that this is not a comprehensive inventory. Rather, it reflects a cross-section of known sites.

(1) Daniel Colwell House is located on East Front Street. The house was constructed in 1900-05 by Daniel Colwell who settled in Merrill in 1881. He came to Klamath County in 1872 as a partner in a cattle ranch with W. S. Bybee of Jackson County. His son, John, occupied the house as well.

(2) Frank S. Brandon House is located at 203 Monroe Street. The house originally stood at the southwest corner of Main and Front Streets. This house is believed to be one of the oldest in Merrill. It was constructed in the 1890's by F. S. Brandon who worked as a miller, then later owned his own gristmill. Brandon was Postmaster of Merrill in 1901.

(3) Merrill Bank Building is located at 105 East Front Street. The structure was built in 1906-07 to house the Merrill Bank. This building is one of the few which survived a fire in 1920 in the business district of Merrill.

Historic Trails. The Southern Oregon Applegate Trail followed the old shoreline of Tulelake and lower Klamath Lake just south of Merrill. This trail was the main route into Southern Oregon for the early settlers.

Archeological Sites. Although there are no known archeological sites in the immediate Merrill vicinity, it is known that the Modoc Indians inhabited the area around Lower Klamath Lake and Tulelake, which is just south of Merrill. The shoreline of the old Lower Klamath Lake might be a likely location for archeological sites. In addition, many of the early skirmishes of the Modoc War of 1872 occurred just south of Merrill.

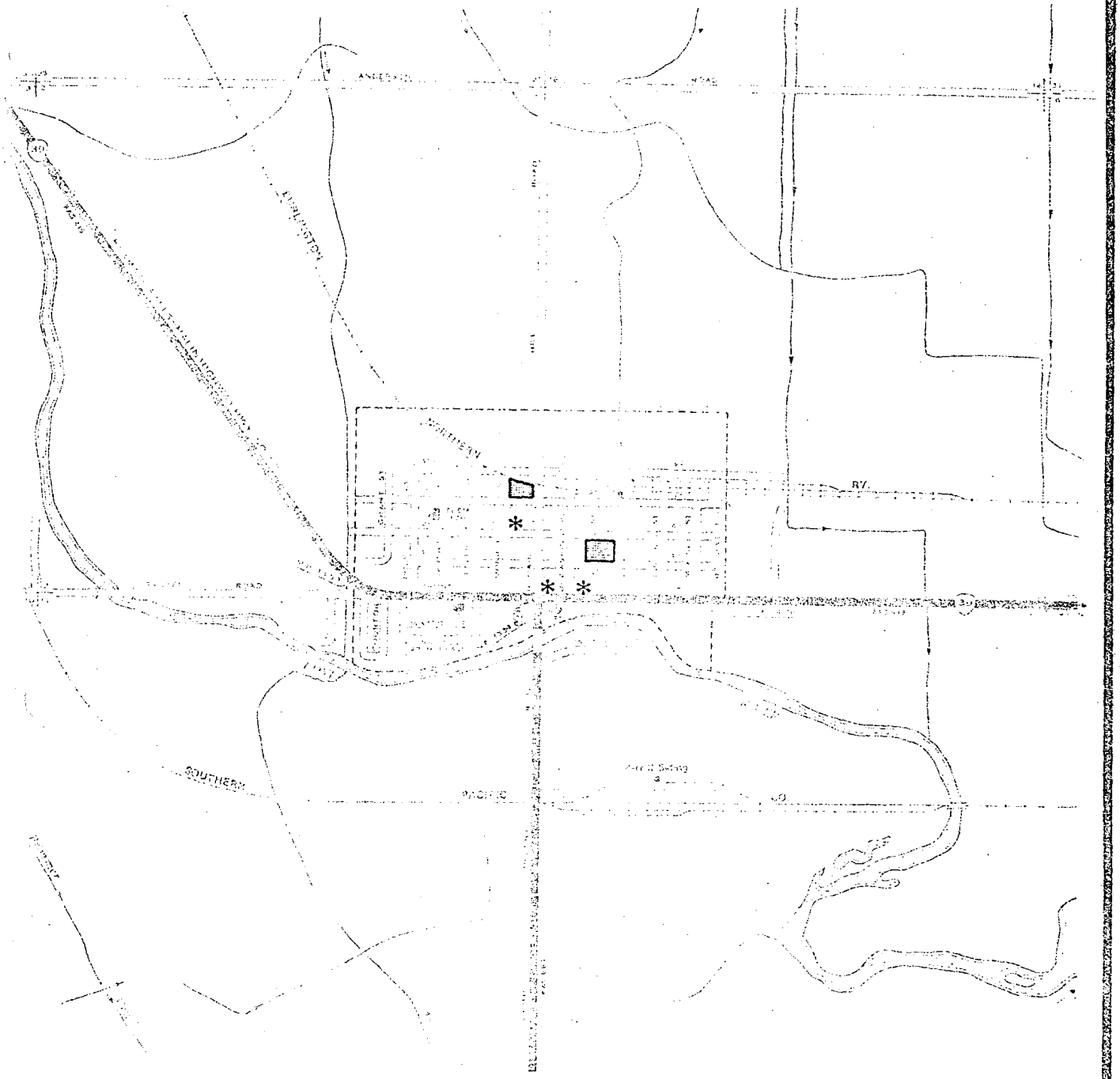
AIR, WATER, AND LAND RESOURCE QUALITY

Introduction

Merrill's air, water and land resource quality is relatively high. Maintaining this quality is an important consideration in the comprehensive planning process. As a community grows, increasing demands will likely be placed on these resources. Community development decisions should be carefully considered in light of their impact on resource quality. The following sections will summarize air quality, land and water resource quality, and noise control.

Air Quality

Merrill, and generally all of Klamath County, has excellent air quality due to the steady movement of air. Air inversions, which allow pollutants to accumulate in the air do not generally occur here. Air quality is classified as clean, and generally above the National secondary ambient air quality standards.



* HISTORIC SITE

PARK

HISTORIC/RECREATION INVENTORY

MERRILL OREGON

north

0 500

scale in feet

SOURCE: STATE HISTORIC PRESERVATION OFFICE

6/79

Prepared by LYNN D. STEIGER & ASSOCIATES, Inc.

Development of the type and size that would exceed these requirements is not anticipated in the Merrill area in the forseeable future.

In addition to stationary sources of pollutants, motor vehicle traffic causes 80 to 90 percent of the carbon monoxide emissions in urban areas. However, the present and future volume of traffic in the Merrill area is not great enough to exceed the 8-hour carbon monoxide standard.

Other sources of air pollution in the Merrill vicinity result from agricultural dust, slash burning, forest fires, off-highway vehicle use, and space heating. Agricultural dust is the largest source of total suspended particulate in the Merrill area (see Table 39).

Table 39
AREA POLLUTANT SOURCES - KLAMATH COUNTY

Source and Location	Emissions (tons/year)	
	Total Suspended Particulates	Sulfur Oxides
Slash Burning	30.9	0
Forest Fires	122.0	0
Agriculture Field Burning	57.3	0
Motor Vehicles: Light Duty	295.4	76.6
Heavy Duty	121.6	130.7
Off-Highway Fuel Use	17.6	12.4
Residential Space Heating	7.2	79.2
Commercial Space Heating	35.5	289.0
Industrial Fuel Combustion	2.6	19.8
Railroads	115.9	264.4
Agriculture Tilling Dust	1,600.0	0

Noise Control

As Merrill is a small community, there is little or no noise problem. Some noise may result from trains crossing through town, the potato handling activities in the north part of town, and the traffic moving through town on Highway 39. Minimal noise may also result from nearby agricultural activities. Sensitive areas such as schools, libraries, churches and residential areas should be located so that noise from the above sources does not intrude.

Land Resource Quality

Solid waste is a form of pollution which affects the quality of land resources. Dumps and sanitary landfills may consume large quantities of land and often have severe impacts on the soils, groundwater, and the immediate area land uses.

The National Resource Conservation and Recovery Act provided for the protection of health and the environment, the conservation of material and energy resources, and prohibited open dumping. Under this Act, agencies were established for planning and management of solid waste disposal. Klamath County is the local agency responsible for solid waste planning. The Klamath County Solid Waste Management Comprehensive Study and Preliminary Plan was completed in 1975.

Merrill's solid waste disposal site is located 2 miles southwest of town on a 35-acre parcel owned by the County. According to the "County Solid Waste Management Study," this site has a high water table and is severely limited as a landfill facility. People from the Klamath Falls suburban area also use the Merrill dump. The site has been recently converted to a solid waste transfer site, where waste is placed in large disposal drop boxes that are removed periodically and taken to a central disposal site.

Water Quality

Water is one of the most important resources in the Merrill area. Water may be subjected to increasing and often conflicting demands as population increases. More water is needed for industrial and domestic uses, while at the same time more waste water is discharged, increasing the potential for contamination and other hazards.

The chemical, biological and physical characteristics of water determine its usefullness for agricultural, industrial and domestic purposes. Both natural factors and human activities can have an influence on these characteristics. Natural sources of water pollution include such things as streambank erosion, sedimentation, excessive debris, elevated water temperature, and algae. Human-caused water pollution includes waste water dicharges from industrial uses, runoff from poor agricultural practices, and sewage treatment effluent.

Water Quality Standards. The standards adopted pursuant to ORS 468.735 set maximum levels for chemical, biological, and physical characteristics based on the condition of the water and desired beneficial uses. Beneficial uses recognized for Klamath Basin are identified in Table 40.

Table 40
WATER USES, KLAMATH BASIN

Beneficial Uses	Klamath River From Klamath Lake to Keno Dam (RM 255 to 232.5)	Lost River (RM 5 to 65) and Lost River Diversion Channel	All Other Basin Waters
Public Domestic Water Supply[1]	X	X	X
Private Domestic Water Supply[1]	X	X	X
Industrial Water Supply	X	X	X
Irrigation	X	X	X
Livestock Watering	X	X	X
Salmonid Fish Rearing[2]			X
Salmonid Fish Spawning[2]			X
Resident Fish and Aquatic Life	X	X	X
Wildlife and Hunting	X	X	X
Fishing	X	X	X
Boating	X	X	X
Water Contact Recreation	X	X	X
Aesthetic Quality	X	X	X
Hydro Power	X		
Commercial Navigation & Transportation	X		

[1]With adequate pretreatment and natural quality to meet drinking water standards.
[2]Where natural conditions are suitable for salmonid fish use.

As indicated in this table, the Lost River Diversion Channel which flows through Merrill is to be protected for all uses except trout raising and spawning, hydroelectric power, and commercial navigation and transportation.

Oregon has recently completed the first phase of a Statewide inventory of the type, location, and severity of the most prominent and pervasive nonpoint source problem areas in the State. Nonpoint source water quality problems which have been recognized in the Merrill area include streambank erosion, sedimentation, and nuisance algae.

Table 41
NONPOINT SOURCE POLLUTION,
KLAMATH BASIN SMALL CITIES

Stream	Problem	Level
Lost River north of Merrill (and at Merrill)	Streambank erosion	Severe
	Sedimentation	Severe
	Nuisance Algae	Severe
Lost River at Bonanza	Streambank erosion	Severe
	Sedimentation	Moderate
	Nuisance Algae	Severe
Williamson River at Chiloquin	Excessive Debris	Moderate
Spague River at Chiloquin	Excessive Debris	Moderate
	Elevated Water Temperatures	Moderate

SOURCE: DEQ, August 1978, Oregon Statewide Assessment of Nonpoint Source Problems, Water Quality Program. Source Problems, 1978.

Streambank erosion is a natural process which can be accelerated through poor land management activities. A loss of productive land and a negative impact on several beneficial uses of water is the end product of excessive streambank erosion. Sedimentation is the result of a number of factors such as streambank erosion, landslides, and other activities which increase the suspended or settled solids in the water. Nuisance algae is excessive growth of algae. It is usually

associated with low flows, high water temperatures, and high nutrient concentrations. Both sedimentation and excessive algae interfere with water supply, irrigation, aquatic habitat, recreation and aesthetic quality.

In addition to these proplems, the following table summarizes the inorganic chemical characteristics of the Lost River.

TABLE 42
WATER QUALITY IN THE LOST RIVER

INORGANIC CHEMICAL CHARACTERISTICS Oregon Portion (Lost River Area)	
CONSTITUENTS	QUALITY
1. Dissolved oxygen	1. Below concentration desirable for aquatic life in lower Lost River.
2. Iron	2. Exceeds level desirable for domestic, municipal, and industrial uses.
3. pH	3. Alkalinity often exceeds levels desirable for aquatic life.
4. Specific conductance	4. Higher than desirable in some groundwaters for sensitive crops.
5. Total dissolved solids, including boron, chloride, sodium, sulfates.	5. Generally suitable for all uses.
6. Water types: varies from calcium-sodium bicarbonate to sodium-calcium sulfate bicarbonate.	6. Calcium-sodium bicarbonate type is suitable for most uses. Sodium-calcium sulfate bicarbonate type may be of poor quality for domestic, municipal, and irrigation uses.

ENERGY ELEMENT

troduction

Energy is basic to our economy, our life-styles, employment, and nearly every interaction in our complex society. Energy may be broken down into two aspects: energy supply and energy demand.

Energy Supply

Energy is supplied by utilizing either renewable or non-renewable resources. Non-renewable resources include oil, coal and natural gas. These fossil fuels have been a relatively cheap and convenient energy source. However, their supply is diminishing, and the cost of exploration, development and production has increased dramatically in the last decade.

Renewable energy resources include hydro, solar, geothermal, wind, and biomass, among others. Development of these existing renewable energy resources at a regional and local level is an important alternative to the accelerating costs of non-renewable energy resources.

Hydroelectric. Until recently, renewable hydroelectric power has supplied the majority of electrical power needs in the Pacific Northwest. The future demands are projected to exceed capacity. This gap is being filled by construction of coal and nuclear thermal power plants. Development of other renewable resources at the local level may help to further fill this gap.

Geothermal Resources. A more detailed discussion of the geothermal resource and its application is included in the Groundwater and Geothermal Resources section.

Wind. There may be some potential for wind-generated electricity in Klamath County. A discussion of winds is included in the Climate section.

Solar. There is good potential for utilization of solar energy in Klamath County (see Climate section). The technology exists to directly utilize solar energy for space heating, water heating, and electrical generation. However, to date the initial cost of such solar energy has limited its use. Passive use of solar energy is feasible for new homes, and will be discussed later.

Biomass. Utilization of waste material or biomass for its energy content can play a significant role in the local

energy picture. Waste wood products already play a large part in space heating and other activities. Utilization of waste materials to produce usable energy includes such possibilities as burning firewood and timber (slash), agricultural wastes, and collection of methane (natural gas) from organic materials. Distillation of waste grains and other biomass into alcohol could reduce pressures on petroleum demand.

Programs

Because the utilization of these renewable resources often requires a large investment to start with, the State has passed legislation to encourage utilization of alternate resources. One program provides tax credit to homeowners at the rate of 25 percent of the investment cost up to $1,000.... another provides veteran's DVA loans up to $3,000 for alternate energy devices.

Until feasible alternatives become a reality, there is an urgent need to utilize the energy we have more efficiently. In 1975 Americans wasted more fuel than was used by two thirds of the world's population.

Energy Demand

Energy is demanded by commerce, industry, transportation and households. Statistics for Oregon show that private households consume almost half of all energy used in Oregon. Of this energy, 56% is used by the family auto(s), 31% is used for space heating, and the remaining 14% covers water heating, cooking, refrigerating, lighting and other uses. Local planning policies and programs could have a significant impact on reducing the nation's energy demand.

Household Energy Consumption. Space heating is the single greatest user of energy in the home, often using as much as 80% of the household energy budget.

Older homes present a problem, as most were constructed with no insulation whatsoever. Many of these homes can be improved through installation of insulation, double pane glass, storm windows, caulking and weather stripping, and other improvements. Several incentives are available to assist homeowners in this effort.

New homes are required by the State Building Code to be insulated. However, the continuing rise in energy costs may force homeowners to insulate even beyond current requirements. Many new housing designs are available which incorporate the idea of conserving fuel by preventing heat loss.

These homes cost approximately $200 to $800 more to build and cut fuel costs as much as 80% over typical houses of similar size and style.

Passive solar heating may also achieve significant savings. Allowing the sun in during the winter adds heat, while blocking the sun in summer keeps the house cooler. The largest wall and window areas should face south, rather than east or west. Major living areas should be where the large south-facing windows are. A large thermal mass, such as a chimney, located where the sun will shine on it provides heat storage within the house. Finally, windows on other than the south side should be kept to a minimum particularly on the west side.

Often, lot layout and lot shape prevent proper solar orientation. It may be desirable, in new residential areas, to allow more flexibility in the way houses are situated on lots in order to encourage utilization of solar energy for heating.

In most cities, the provisions made for automobiles dominate transportation systems. The automobile-oriented system not only encourages people to use their cars, but generally discourages pedestrian and bicycle use. Minimum standards required for streets are often excessive. In properly planned neighbohoods, streets might be considerably reduced both in width and number without impeding the flow of traffic or diminishing safety. Potential energy savings in street designs may occur in several ways. First, if the paved area is less this means that the energy involved in installation is less and the total volume of materials produced and used is less. Reducing street widths can conserve valuable land space, and cut down on the amount of paving and utility costs.

Programs. Several programs have been initiated in recent years to encourage energy conservation. Both the State and Federal Government have adopted tax credits for home insulation. The State has recently adopted improved standards for home insulation.

In addition to these government programs, Pacific Power and Light Company will do home energy analyses and provide customers a summary of their home's electric energy savings potential. The customer is also provided with energy conservation recommendations. The company may provide weatherization financing for electrically heated homes where insulation is found to be cost effective. Loans may be at no interest if the home qualifies, otherwise 6½% financing is available.

Transportation. There is really very little that a City can do to encourage less auto use. However, the City may be able to make walking and bicycling more appealing. Pedestrian or bicycle transportation is frequently discouraged by lack of safety or access. Such things as sidewalks and sufficient room on the shoulder of the road may help.

Many residents of the City are forced to do the majority of their shopping in Klamath Falls. The City may encourage further development of the local economic sector, and encourage people to shop locally in order to cut down on energy expenses.

PHYSICAL FEATURES AND NATURAL RESOURSES

Introduction

The physical features and resources located in the Merrill area are two important considerations of the comprehensive planning process. The climate, soils, vegetation and topography have contributed to the type and location of land uses in the Merrill area. Similarly, these physical factors will influence the opportunities as well as the limitations for future development.

The resources in the Merrill area may be divided into two categories; those which are essentially unchanged by human actions, and those which may be significantly altered through human actions. Climate, geology and topography are essentially unchangeable, while vegetation, soil, wildlife and water resources may be conserved or altered depending upon man's actions.

The following description of the resources in the Merrill area may assist residents in planning and managing these resources effectively, so that these resources will continue to be of benefit to the Merrill area.

Climatic Conditions

Temperature. The extreme temperature differences of Merrill's continental climate are modified by the marine air masses which cross the Klamath Basin from the Pacific Ocean. Temperatures in Merrill are about the same as in Klamath Falls. The average monthly temperatures range from a high of 84° in July to an avèrage monthly low of 21° in January. Extremes of 105° and -24 have been recorded in July and January.

Table 43
TEMPERATURE RECORD FROM KLAMATH FALLS WEATHER STATION

	Means		Extremes		
	Daily	Daily	Record		Record
Month	Max.	Min.	Monthly	High	Low
Jan	38.4	21.2	29.8	59	-24
Feb	44.3	25.3	34.8	68	-10
Mar	50.1	28.1	39.1	77	- 5
Apr	58.9	32.8	45.9	85	10
May	66.6	39.3	55.0	94	19
June	74.0	45.2	59.6	100	24
July	84.2	51.7	68.0	105	28
Aug	82.5	49.7	66.1	102	28
Sep	76.0	44.0	60.0	103	23
Oct	63.5	35.9	49.7	92	14
Nov	48.3	29.0	38.7	74	2
Dec	40.2	24.6	32.4	63	-16
Year	60.6	35.6	48.1	105	-24

SOURCE: Climatological Summary, Klamath Falls Station, U. S. Department of Commerce.

Solar Radiation. Klamath County receives the highest amount of incoming solar radiation in Oregon. This is because of the number of cloudless days, coupled with good ventilation, low humidity, and the high elevation. Table 44 shows the monthly average daily cloudiness. The sunniest days occur in May through October, while the most cloudy days occur in December through January.

The quantity of solar radiation received in the Merrill area indicates that there is a good potential for use of solar energy. With the rising cost of energy and scarcity of heating fuels, it might be advantageous to encourage new home builders to consider utilization of the sun's energy. Even proper site orientation, without solar heating system, per se, could help cut down on the use of other energy sources for heating.

Table 44
MONTHLY AVERAGE FOR DAILY CLOUDINESS

Month	Tenths of Sky Covered in Daylight	Month	Tenths of Sky Covered in Daylight
Jan	8.4	July	1.3
Feb	6.6	Aug	2.9
March	6.4	Sep	2.5
April	5.9	Oct	4.3
May	4.7	Nov	6.5
June	4.3	Dec	7.5

SOURCE: Climatological Summary, Klamath Falls Station, U.S. Department of Commerce

Precipitation. The Klamath area depends on precipitation brought by air masses moving in from the Pacific Ocean. These air masses lose much of their moisture as they cross the Coast Range and the Cascade Mountains, to bring relatively light precipitation to this area. Consequently, the humidity is low, so even the most extreme temperatures seem less uncomfortable.

Precipitation is usually heaviest in the winter, with December and January having the highest monthly average rainfall (2.05 and 2.53 inches, respectively. The highest

monthly average is 14.31 inches, with the greatest daily rainfall being 2.58 inches. Snowfall averages 42.6 inches per year.

Table 45
PRECIPITATION TOTALS (Inches)

			Snow, Sleet, Hail		
		Greatest		Max.	Greatest
	Mean	Daily	Mean	Monthly	Daily
	30	82	30	76	76
Jan	2.05	2.49	14.9	56.5	24.0
Feb	1.41	1.70	6.2	39.0	9.0
Mar	1.15	1.60	4.4	20.2	10.5
Apr	0.73	0.92	1.6	15.0	9.0
May	1.13	1.05	0.2	5.0	5.0
June	0.92	1.05	-	-	-
July	0.26	1.37	0.0	0.0	0.0
Aug	0.58	2.01	0.0	0.0	0.0
Sep	0.57	2.34	-	0.2	0.2
Oct	1.21	1.75	0.3	4.0	4.0
Nov	1.77	1.68	5.9	26.0	16.0
Dec	2.53	2.58	9.1	37.6	18.0
Year	14.33	2.58	42.6	55.5	24.0

SOURCE: Climatological Summary: Klamath Falls Station, U. S. Department of Commerce, 1969.

Winds. The Merrill area receives excellent ventilation throughout the year. The amount of wind in the Klamath Basin is not extreme, with an average monthly high velocity range of 7.3 MPH in March to an average low of 4.4 MPH in September. Wind velocities in the basin have reached a maximum of 60 MPH, and during the dry season, severe dust storms in agricultural areas are not uncommon. The prevailing winds are from the west in early spring and summer, from the northwest in the fall, and from the southeast in winter. This steady movement of air through the County results in little or no air pollution problem. The westerly wind direction suggests that industrial activity should be located east of any populated area.

Table 46
WIND DIRECTIONS AND VELOCITIES

Month	Average Velocity (Miles per Hour)	Prevailing Wind Direction
10	10	
Jan	6.6	SSE
Feb	5.9	SSE
Mar	7.3	W
Apr	6.7	W
May	6.2	W
June	5.8	W
July	5.0	W
Aug	4.5	NNW
Sep	4.4	NNW
Oct	4.8	NNW
Nov	5.5	SSE
Dec	5.1	SSE
Year	5.7	W

SOURCE: Climatological Summary: Klamath Falls Station, U. S. Department of Commerce.

Geology

knowledge of the geology of the Merrill Area is useful, as geology influences many physical features. Land forms and drainage are influenced by the shape of the bedrock surface and nature of the geologic material on the surface. The permeability and mineral composition of rock strata has a direct bearing on the quality and quantity of groundwater. The composition of surface material is an important determinant of soil characteristics. Geologic characteristics can also be indicators of possible hazards to development. Although a discussion of geology is not included here a thorough inventory may be found in the Klamath County Plan.

Mineral Resources

A majority of the mineral resources is non-metalic in nature, and volcanic in origin. Mineral resources in the Merrill area include diatomite, peat and aggregate.

Diatomite is found in old lake beds, where the shells from aquatic animals became calcified and formed this white chalky mineral. Deposits of diatomite may be found in the Merrill area, although the exact location and quality are unknown.

There are some peat beds in the vicinity of Merrill. None of these have been developed for commercial purposes.

There are numerous aggregate deposits in the Merrill area, primarily west of town. These have been developed by the State Highway Department for gravel extraction. This is the only developed mineral resource in the Merrill area at this time.

There are also pumice and cinder deposits scattered throughout the County, though none are presently being mined in the Merrill area.

None of these mineral resources will be significantly affected by expansion of the City of Merrill.

Topography

The City of Merrill is located on part of an old lake bed, which is flat. The major landforms around Merrill are Stukel Mountain to the north of Merrill and the Klamath Hills west of Merrill.

The immediate townsite of Merrill is extremely flat, with slopes of 0 to 2% throughout the City. The slope is from

the northeast down to the Lost River, which forms the southern boundary. The Lost River runs down a very gentle slope which results in a meandering course through the valley in which Merrill is situated.

Groundwater and Geothermal Resources

Groundwater is one of the most important resources in Klamath County. Merrill's domestic and industrial water supply is obtained from wells sunk into aquifers. Aquifers are zones or layers of rock which yield water. Two important characteristics of groundwater are; the flow or recharge rate and yield to wells.

Aquifer Systems. The flow of groundwater through aquifers roughly parallels that of surface water. Moisture falls at higher elevations in recharge area, infiltrates into the aquifer material and flows downslope to lower elevations where it naturally discharges into streams, rivers, and lakes. This process takes place in local, regional and intermediate systems. Table 47 shows the estimated yearly recharge to the groundwater system in the Lost River sub-basin.

Table 47
ESTIMATED YEARLY GROUNDWATER RECHARGE

Sub-Basin	Acre-Feet/Year
Lost River	900,000

SOURCE: Klamath Basin, State Water Resources Board, June, 1971.

There are different types of materials which serve as aquifers in the Merrill groundwater reservoir. These materials are found in layers beneath the City and each layer has a different set of characteristics. The sedimentary aquifer, which lies directly under the surface may yield as little as 5 gallons per minute with 163 feet of drawdown to as much as 40 gallons per minute with 9 feet of drawdown. These sedimentary materials can range in depth from 35 to 1,000 feet. Underlying volcanic centers aquifer and lower basaltic aquifer yield up to 2,450 gallons per minute with 19 feet of drawdown. Well data for the Merrill area is presented in Table 48.

Table 48
REPRESENTATIVE WELLS FOR MERRILL

Township 40 South, Range 10 East, W.M.
Township 41 South, Range 10 East, W.M.

Water Level		Well Performance		
Depth of Well (Feet)	Feet Below Land Surface	Yield (GPM)	Drawdown (Feet)	Temperature (°F)
260	6 @ 31 flow @ 220 2 psi @ 260	110	40	52
250	55	12	100	64
263	90	515	7	78
152	112	750	34	61
552	17	5	163	61
125	15	40	20	56
335	43	100	10	68
330	5	33	17	50
1088	47.5	325	5	74
732	9	35	61	54
1128	+4 psi	flow 420 pump 1300	27	76
50	3	40	9	56
1012	33	2450	19	74

Groundwater Quality. The quality of groundwater in the Merrill area is very good. The water is low in dissolved minerals, soft to moderately hard and most excellent quality for drinking, irrigation, and most industrial uses.

Groundwater Impacts. The depth to table is given in the soils section. The entire town has a high water table during the spring and summer months each year. Special techniques may be needed to prevent any detrimental effects on developments in Merrill.

Geothermal Resources. Geothermal resources are closely allied to the groundwater resource. In the Klamath Basin, geothermal energy is brought close enough to the surface to be used through groundwater movement. There are three areas with geothermal potential in the hills surrounding Merrill. The area with the greatest potential is located along Hill Road on the western slope of Stukel Mountain. Well logs report temperatures of 72°F to 86°F at depths of 170 to 250 feet. Projected gradients for this area range from 271° to 522°F/KM in several wells.

The area of second greatest potential is one on the south side of Stukel Mountain which extends eastward and southward to Adams Point halfway between Merrill and Malin. Projected heat gradients in this area range from 214 to 424°F/KM. There are also three small areas northwest and south of Merrill in the easternmost part of Klamath Hills. Large water volumes are produced here and the potential for a geothermal resource in the range of 122° to 158°F above average.

The key unanswered question is whether temperatures sufficiently high for electric power generation are to be found in the area. Even though the town of Merrill itself is not located directly over any areas of high geothermal potential, methods may be available that would enable the City to utilize energy produced in nearby sites. The further development of Merrill will not impinge on any of these areas since they are all 2 to 5 miles distant.

Surface Water Resources

The water resources which are affected by Merrill are the groundwater reservoir and the Lost River. This branch of the Lost River is diverted from the main river for irrigation purposes, so it is not a "river" in the usual sense of the word. The supply of groundwater and its quality and occurence were detailed in the section on soil and groundwater. There was a source of contamination in this reservoir from septic tanks located in East Merrill. However, this area has been annexed by the City and soon all homes will be served by a central sewer system. There may also be some contamination from leaching into the ground from the sewer system. However, this is currently being corrected. The quality of water in the Lost River may also be affected

by an area across the Lost River where some dwellings are serviced by individual wells and septic tanks. In some specific cases homes adjacent to the Lost River are passing septic tank effluent directly into the river.

The quality of water in the Lost River is so poor that it is undesirable for domestic, municipal or industrial uses and cannot maintain healthy, aquatic life because of the low amount of dissolved oxygen. Warm water and high turbidity have resulted in algae blooms in the summer. The pollution is non-point in origin, resulting primarily from runoff of irrigated fields. The water heat is due mainly to warm springs which empty into the river.

The major threat to groundwater quality within the City limits is effluent leaking from antiquated pipes in part of the municipal sewer system. However, this problem is now being corrected, as new pipe is being installed. Outside the City limits the source of contamination is from septic tanks which cannot operate properly because of seasonal high water tables.

Soils

Soil is a mixture of organic and inorganic materials of the earth's surface. Its characteristics are determined by climate, geology, biological activity and time. Each area will have unique soil characteristics based upon these factors. A map of the soils in the Merrill area is shown as Plate 13.

Soils Considerations. Soils conditions are one of the most important features related to land use planning. Soils concerns are basically twofold: (1) Capability or productivity potential, and (2) limitations related to development. Often these limitations can be overcome, although in many instances, substantial expenditures will be required. Soil capabilities for agricultural production are defined by the U.S.D.A. Soil Conservation Service as indicated below:

> Class I soils have few limitations that restrict their use. These are the most productive soils.
>
> Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
>
> Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, require very special management, or both.

Class V soils are not likely to erode but have other limitations which are impractical to overcome, and which limit their use largely to pasture, range, woodland or wildlife.

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland or wildlife.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland or wildlife. Although these soils are the poorest for crop producers, they have significant importance for grazing, timber production and/or wildlife habitat purposes.

Letter designations are often added to the capability numerals, and indicate the following:

(e) shows that the main limitation is risk of erosion unless close-growing plant cover is maintained;

(s) shows that the soil is limited mainly because it is shallow, droughty, or stony; and

(w) shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage).

Merrill Soils. Soils in the Klamath Basin are volcanic in nature. The valley in which Merrill is situated has been filled in by sediments laid down by streams and former lakes. These sediments are eroded from exposed rocks in the basin, which are either volcanic in origin or an unconsolidated sediments derived from volcanic rock. Mixed with these sediments may be some diatomaceous sediments which were formed in recent lake bottoms. It is in these materials that the Merrill soils were formed.

Soil Characteristics

Below is a brief description of the various soil types in the Merrill area. Tables 49 and 50 provide additional information about the characteristics of each soil.

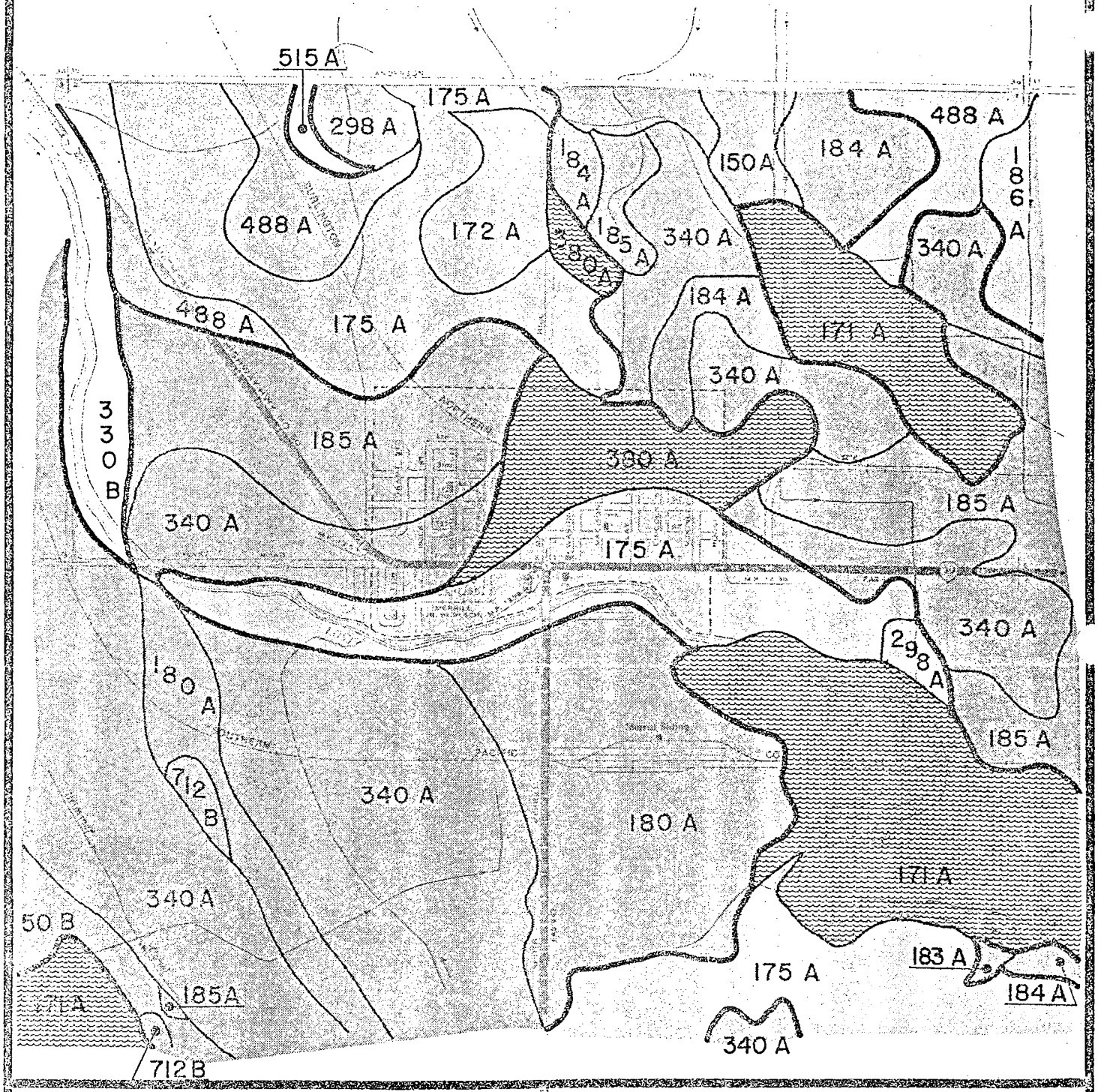
171A, 172A LAKI, 175A Laki-Henley. These soils are located on both sides of the Lost River, underlying much of east

Merrill and the areas south of Front Street. Such soils consist of loam and fine sandy loam with hardpan or bedrock at 40 to 60 inches. They generally occur on low terraces and terrace fronts, at elevations of 4,050 to 4,800 feet, and are flat to nearly level (0 to 2% slopes). The shrink-swell potential is low and frost action is moderate. Drainage and permeability are moderate, and a seasonal water table is usually found at depths of 2 to 5 feet (which is somewhat high). These soils are also moderate to very strongly alkaline. Their primary restrictive features are wetness and low strength.

180A, 180B Henley, 183A, 184, 185 Henley-Laki, 186 Henley. These soils are located in the northwest section of Merrill, as well as south of town and in scattered areas to the north. They consist of loams and sandy loams, except Henley-Laki, which consists of loamy fine sand. Such soils are underlaid by hardpan at 20 to 40 inches; generally occur on low basin terraces at elevations of 4,050 to 4,800 feet, and are flat to gently sloping (0 to 5%). The shrink-swell potential is low, and frost action is high. The soils are somewhat poorly drained, permeability is moderate, runoff is slow or very slow, and water erosion hazard is slight. Areas with a sandy surface layer may have a moderate wind erosion hazard. Wetness results from a water table which occurs at depths of 1 to 1½ feet from March to September. The soils are strongly or very strongly alkaline in the upper layers. The restrictive features include hardpan, wetness and frost action.

298A Dodes. There are small areas of this soil southeast, and north of Merrill. The soil consists of loam over clay loam, underlaid by bedrock at 20 to 40 inches, and generally occurs on terraces and low hills at elevations of 4,100 to 4,500 feet. Such soils are flat to nearly level (0 to 2% slope); shrink-swell potential is low to moderate, and frost action is moderate. The soil is well-drained and permeability is moderately slow. Run-off is slow to medium, erosion hazards are slight to moderate, and there is no high water table. The restrictive features are depth to rock, slow permeability, frost action and low strength.

330 Deter. There is a small area of this soil east of Merrill, along the Lost River. The soil consists of clay loam over heavy clay loam and clay, underlaid by bedrock at 40 to 60 or more inches, and generally occurs on terraces and terrace fronts at elevations of 4,100 to 5,000 feet. The soil is flat to nearly level (0 to 2% slopes); shrink-swell potential is high, and the frost action is moderate. The soils are well drained, permeability and runoff are slow, and erosion hazard is slight. There is a seasonal water



II

III

IV

SEASONAL PONDING

SOURCE: USDA/SCS

5/79

SOIL CAPABILITIES

MERRILL OREGON

north

0 800

scale in feet

Prepared by LYNN D. STEIGER & ASSOCIATES, Inc.

table at 2½ to 4 feet from May through September. Restrictive features include slow percolation, shrink-swell potential, and clay.

340A Hosley. This soil is located in portions of West Merrill, extending west, and just south and east of town. It consists of loam over clay loam, underlaid by hardpan at 20 to 40 inches, and is found on low terraces on elevations of 4,050 to 4,200 feet. The shrink-swell potential is low to moderate, and frost action is moderate. The soil is flat, somewhat poorly drained, and has moderately slow permeability. Runoff is slow and erosion hazard is slight. A water table occurs at a depth of 1 to 3½ feet from March through September, causing wetness. It is moderate to strongly alkaline. Restrictive features are wetness, cemented pan and low strength.

380A Modoc. This soil is located in the north sections of Merrill, and extend south to Front Street between Jefferson and Monroe Streets. It consists of loam over clay loam, underlaid by hardpan at 20 to 40 inches, and is generally found on terraces at elevations of 4,100 to 4,300 feet. The soil is flat to nearly level (0 to 2% slope) with low to moderate shrink-swell potential and low frost action. Permeability is moderately slow, and the soil is well-drained. Runnoff is slow and erosion hazard is slight. A water table occurs at depths of 2 to 4 feet from May through October. The restrictive features are cemented pan, wetness, and shrink-swell potential.

Vegetation

The vegetation types found growing in an area occur as a result of the climate, soils and elevation of a particular site. These patterns are tied very closely to the availability of water, either precipitation or irrigation. The natural vegetation in the Merrill area are types that are associated with a semi-arid climate. These plant types range from short bunchgrasses to juniper, with the dominant type being sages. There are 6 major vegetative types in the Merrill area.

Irrigated Agriculture. Merrill lies in the midst of an extensive area of irrigated cropland. The crops raised in the Merrill area are primarily grain and potatoes.

Non-irrigated Agriculture. There are small areas of non-irrigated agricultural land near Merrill, which are used primarily for grazing.

Juniper-Sagebrush-Bitterbrush. This is the primary vegetation type in the Merrill area, and is located on the nearby

Table 49
SOIL CHARACTERISTICS

Type	Name	Development Limitations: Septic	Shallow Excavation	Dwellings w/o Basements	Dwellings w basements	Small Commercial	Roads & Streets	Erosion Hazards	Agri Capability Classes	Highwat Table
171A	Laki Loam 0-2% Slopes	Severe	Severe	Severe	Severe	Severe	Moderate	Water-Slight Wind-Moderate	III	2-5'
172A	Laki Fine Sandy Loam 0-2% Slopes	Severe	Severe	Severe	Severe	Severe	Moderate	Water-Slight Wind-Moderate	III	2-5'
175A	Laki-Henley Loams 0-2% Slopes	Severe	Severe	Severe	Severe	Severe	Moderate	Water-Slight Wind-Moderate	III	2-5'
180A	Henley Loam 0-2% Slopes	Severe	Severe	Severe	Severe	Severe	Moderate	Water-Slight Wind-Slight	IV	1-3.5
183A	Henley Loam 0-2% Slopes	Severe	Severe	Severe	Severe	Severe	Moderate	Water-Slight Wind-Slight	IV	1-3.5
185A	Henley-Laki Loam 0-2% Slopes	Severe	Severe	Severe	Severe	Severe	Moderate	Water-Slight Wind-Slight	IV	1-3.5
298A	Dodes Loam 0-2% slopes	Severe	Moderate	Moderate	Moderate	Moderate	Moderate	Water-Slight Wind-Moderate	III	76'
340A	Hosley Loam	Severe	Severe	Severe	Severe	Severe	Severe	Water-Slight Wind-Slight	IV	1-3.5
380A	Modoc Loam 0-2% Slopes	Severe	Severe	Moderate	Severe	Moderate	Moderate	Water Slight Wind Moderate	III	2-4'

Taken from County Preliminary Plans

Table 50
SOIL CHARACTERISTICS

Soil	Name	High Water Table	Hydro-logic Group	Flood	Permea-bility in/hr	Drainage Limitations	Shrink Swell Potential	Frost Action	Depth to Bedrock	Other
171A	Laki Loam	2-5" Mar-Sep	B	Rare	0.6-2.0 0.06 at 52"	Slight	Low	Moderate	40-60"	Hardpan 40-60" (wet)
172A	Laki Fine	2-5' Mar-Sep	B	Rare	0.6-2.0	Slight	Low	Moderate	40-60"	Hardpan 40-60 (wet)
175A	Laki-Henley Loams	2-5' Mar-Sep	B	Rare	0.6-2.0	Slight	Low	Moderate	40-60"	wet
180A and 183A	Henley Loam	1-3½' Mar-Sep	C	Rare	0.6-2.0 0.06 at 36"	Moderate	Low	High	60"+	Cemented Pan
185A 186	Henley-Laki Loams	1-3½' Mar-Sep	C	Rare	0.6-2.0	Moderate	Low	High	60"+	
298A	Dodes Loam	6'+	B	None	0.6-2.0	-	Low-Mod.	Moderate	20-40"	
340A	Hosley Loam	1-3½' Mar-Sep	D	Rare	0.6-2.0 0.06 at 26"	Severe	Low-Mod.	Moderate	60"+	Hardpan 20-40"
280A	Modoc Loam	2-4" May-Oct	B	None	0.6-2.0 0.06 at 38"	Moderate	Low-Mod.	Low	60"+	Hardpan 20-40"

SOURCE: USDA/SCS

hills. Juniper trees are found in dense clumps or scattered in abundance with an understory of sagebrush, bitterbrush or grass. Mountain mahogany may be found interspersed with other vegetation.

Sage-Grass. These types do not cover as much of the nearby area as the Juniper type. Sagebrush is the major component of this type with smaller communities of rabbitbrush, bitterbrush and grasses interspersed.

Soda Dry Lakes. These dry lakes cover a very small amount of the land to the southwest of Merrill along the Oregon-California border. These dry alkali lake beds contain shallow water during wet years.

Riparian Vegetation. This type of vegetation occurs in narrow bands along rivers, streams and lakes. This occurs in a few areas along the Lost River.

The naturally-occuring plant species in the Merrill area include:

Western Juniper	Balsamroot
Bitterbrush	Western Yarrow
Idaho Fescue	Big Sagebrush
Bluebunch Wheatgrass	Sandberg Bluegrass
Thurber Needle Grass	Taileup Lupine
Northern Buckwheat	Junegrass
Wyeth Buckwheat	Phacelia

Wildlife

The variety of vegetation in the Merrill area provides good habitats for wildlife. Each wildlife species is closely associated with the vegetative habitat that supplies its feed and cover requirements. Wildlife types found in the Merrill area are those which are associated with the types of vegetation discussed earlier. When these communities are altered by human actions, there is significant impact on the wildlife.

Irrigated Agriculture. This vegetative type is important to upland game birds and waterfowl. Irrigation ditches provide cover and waterfowl brooding areas.

Non-Irrigated Agriculture. This vegetative type is also important to upland game birds and waterfowl, as well as to deer.

Juniper-Sagebrush-Bitterbrush. This vegetative type provides extremely important wintering ranges for deer. It

provides both cover and feeding areas. Many small mammals and birds also make their homes in this area.

Sagebrush-Grass. This vegetation provides important winter range for deer and antelope, as well as summer range for antelope. Other common species include coyote, bobcat, jackrabbit, badger, cottontail, doves, sage grouse, song birds, and many species of rodents.

Soda Dry Lakes. These are of minor value to waterfowl and shorebirds as resting areas when water is present.

Riparian Vegetation. This habitat is extremely important as it provides food and cover for a wide variety of wildlife species.

The following species are those that could commonly be found in the habitats which occur around Merrill.

Mammals: Mule Deer, Antelope, Muskrat, Coyote, Porcupine, Pigmy Rabbit, Blacktail Jackrabbit, Kangaroo Rat, Striped Skunk, Badger, Marmot, Townsend Ground Squirrel, Belding Ground Squirrel, Bush Tail Woodrat

Birds: California Quail, Mourning Dove, Redtail, Hawk, Canada Goose, Brewers Blackbird, Redwing Blackbird, Breuners Sparrow, House Sparrow, Least Sandpiper, Song Sparrow, House Finch, Western Kingbird, Loggerhead Shrike, Northern Shrike, Meadowlark, Swift, Killdeer

Migratory Routes. Merrill is located near the Klamath Lake and Tulelake Wildlife Refuges and a part of the Pacific Flyway corrior passes overhead. At one time these lakes provided vast areas of marshland habitat and the resulting waterfowl concentrations contributed to the area's importance as one of Oregon's principal Indian population centers. Reclamation projects have reduced the wild habitat. Klamath Basin is not a major wintering ground, but it is extremely significant as a stopover and resting area for all but the coastal branches of the Pacific Flyaway. Though use fluctuates from year to year a high percentage of waterfowl in the flyway use this route. In some years over six million ducks and geese have been counted in Klamath Basin.

Natural Areas

Areas that fall under this category include signicifant ecological, geological, wildlife and vegetation areas. Significant ecological areas are those which provide an outstanding setting for the interaction of all the natural

elements. Significant wild-life areas provide important habitats for rare or important animal species. Significant vegetation areas are those which substantially retained their natural character.

Table 51
WATERFOWL MIGRATIONS

	J	F	M	A	M	J	J	A	S	O	N	D
Whistling Swan		—	—							—	—	
Canada Goose			—	—						—	—	
White-fronted Goose				—	—				—	—		
Snow Goose		—	—							—	—	
Mallard			—	—					—	—	—	—
Pintail			—	—	—			—	—	—	—	
Widgeon				—	—	—			—	—	—	
Green-winged Teal			—	—	—				—	—	—	