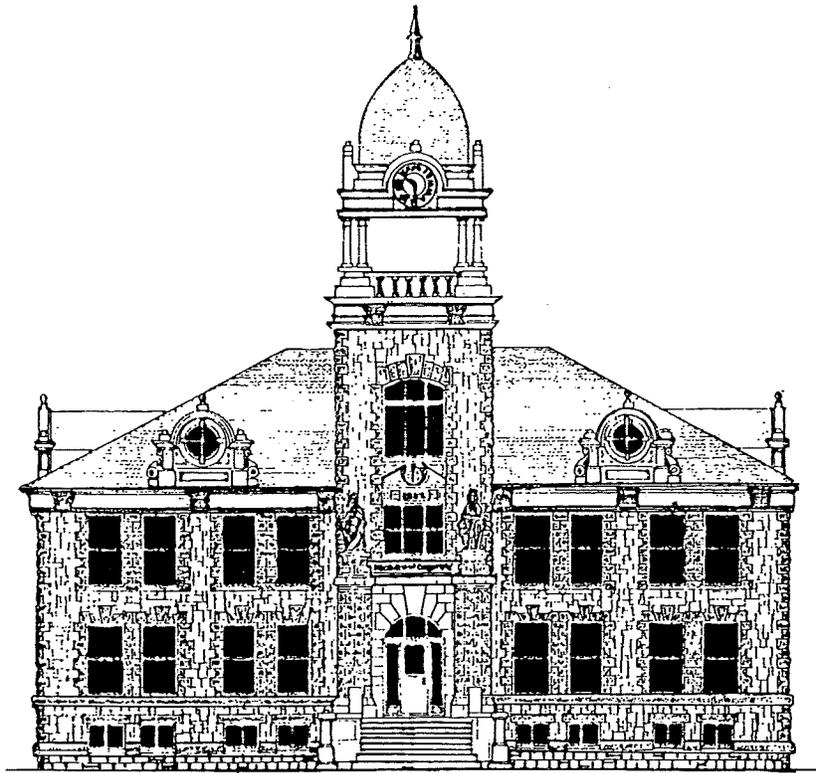


MORROW COUNTY, OREGON



COMPREHENSIVE PLAN

Acknowledged by the LCDC

January 30, 1986

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INTRODUCTION

In view of inevitable population growth and a fixed land area, planning must be considered critical. Fellowship of man is fine, in moderate amounts. After a point, however, the presence of others may annoy -- and even destroy. The purpose of planning, therefore, must be to reshape the institutional arrangements that organize our life so our expanding population can live together more efficiently and harmoniously on a given area of the earth's surface. The "Plan" must be designed to promote "most of the goals of most of the people" -- aesthetic goals as well as economic and development ones.

The ethic of growth is increasingly being challenged; many people no longer accept it unquestionably as a premise of progress. The effects of growth on the quality of life are widely debated. More and more, the costs and benefits of continued and uncontrolled growth have emerged as a major issue. There is, however, substantial opposition to this trend of growth restriction and/or regulations, and in some cases justified. More often than not, however, opposition is based on individual claims to private property rights above that of the commongood. Management and quality control of growth are seen as essential elements by many within a given community.

It must be realized that we all have a stake in a community; one which is considerably greater than the property to which we may legally claim title. That is to say, although the law sometimes has been slow to recognize it, that legal title cannot morally convey the right to destroy non-renewable resources formed by nature, for as we engage in such destruction, we go beyond use and into the realm of reducing the quality of life - for present and future generations.

Many common resources, such as water and air, are by their very nature subject to exploitation. Differing from land; such resources are very difficult, if not impossible, to reduce to individual ownership; thus they are subject to overuse, congestion and contamination.

Although it is vitally important to address these important issues, all too often land use policies therefor take a totally negative view toward growth. In actuality, such plans and regulations should only take a

negative view toward unplanned or poorly planned growth; the results, thereof ultimately costing the general public and the taxpayer uncalled for and unnecessary damages to their physical, social, economical and environmental well being. It is with this basic concept that this Comprehensive Plan for Morrow County has been formulated.

There certainly is no question that compliance with the applicable statewide Planning Goals mandated by O.R.S. Chapter 197 has been a key object, however, the preliminary goal has been to provide a "Plan" for the people of "Morrow County (present and future)." The Plan is based on the best available information desires for a livable environment, and economical-social-environmental balances. An attempt has been made to develop a set of goals, policies and regulations that are reasonable and realistic. Therefore, growth is not to be discouraged, but in essence encouraged, while at the same time managed in such a manner that detrimental physical, social, economical and environmental factors are minimized.

In December of 1971, Morrow County adopted its first Comprehensive Land Use Plan. The purpose of that plan was to:

"promote public health, safety and general welfare and shall be based on the following considerations, among others: The various characteristics of the various areas in the county, the suitability of the area for particular land uses and improvements, the land uses and improvements in the areas, property values, the needs of economic enterprises in the future development of the areas, needed access to particular sites in the areas, natural resources of the county and prospective needs for development thereof, and the public need for healthful, safe, aesthetic surroundings and conditions."

The original plan expressed the best judgement concerning the future that could be made at the time. However, in recent years rapid change has taken place within the County and the concept of comprehensive planning has grown to include new meaning. The comprehensive plan is now defined as:

"a generalized, coordinated land use map and policy statement of the governing body of a state agency, city, county or special district that interrelates all

functional and natural systems and activities related to the use of lands, including but not limited to sewer and water systems, transportation systems, educational systems, recreational facilities, and natural resources and air and water quality management programs."

Morrow County's Comprehensive Plan is based upon inventories and data collected to illustrate: The resources of the area including natural resources, energy sources, and human resources; current development and population trends, existing land uses; natural hazards; environmental quality; public facilities and services and many other factors. Together with the citizens of the County, the elected and appointed officials have drawn certain conclusions regarding the desired development and management of the county which they have expressed as goals. To achieve these goals the plan also sets forth various objectives which in turn must be defined and implemented through the appropriate ordinances of the county.

This plan is a coordinated effort which incorporates the plans of the five cities within the county, as well as the plans of all affected agencies and special districts. The plan has also been reviewed and acknowledged by surrounding jurisdictions, in an effort to achieve uniformity and harmony in comprehensive plan development throughout the region and the state.

This plan does not replace the work done by the County in 1971, but in fact is a revision of that plan. Many of the goals and policies established at that time remain intact while others have become out-dated by changes in the environmental and economic structure of the area. The revision has been carried out with much attention directed toward providing a factual data base from which to form goals and objectives. Unlike the 1971 plan, which did not include a high degree of support data, the plan revision consists largely of statistical and illustrative materials which combine to form a detailed economic, sociological, and environmental information; therefore, the appointed and elected officials of the County place renewed reliance on the Comprehensive Plan as the controlling document in the development of the County.

The "Plan" is not in any way the "END", but is in reality the basic foundation for an ongoing expression

of the need for every resident of the County to continually share in the responsibility for achieving and maintaining a high level of livability, both environmentally and economically. The "Plan" is intended as a clear reflection of an awareness that the County will continue to be faced with choices and compromises. The "Plan recognizes areas of concern that warrant additional and continual consideration.

BASIS FOR THE PLAN

The basis, in fact mandatory requirements, for planning are set forth by O.R.S. Chapters 215 and 197; the latter setting forth the authorization for the Statewide Planning Goals and mandatory compliance therewith.

The Comprehensive Plan has also been recognized as having a controlling effect on land use in a community, and has been described as a general plan to control and direct the use and development of property in a municipality by State court decisions. In general, any zoning ordinance, zone change or land use regulatory action must be in conformance with the "Plan." Therefore, zoning and subdivision ordinances are merely a means of "implementing the "Plan."

As enabling land use legislation in the State has evolved, the general concept of public health, safety and general welfare has correspondingly evolved to include not only traffic circulation and economic development, but concern for suitability of land uses to particular area and aesthetics. Concept expansion has also included "intermediate and long-term growth and objectives" and "coordination."

Although numerous planning criteria are set forth both in related statutes and court cases, the primary and most comprehensive are set forth in O.R.S. 197 and the Statewide Planning Goals adopted by the State Land Conservation and Development Commission (LCDC) with which local comprehensive plans must comply. Said statute sets forth that the "Comprehensive Plan" is a "generalized, coordinated land use map and policy statement...that interrelates all functional and natural systems and activities relating to the use of lands, including but not limited to sewer and water systems, transportation systems, education systems, recreational facilities, natural resources, and air and water quality

management programs. "Comprehensive" means all-inclusive, both in terms of the geographic area covered, and functional and natural activities and systems occurring in the area covered by the Plan. "General nature" means a summary of policies and proposals in broad categories and does not necessarily indicate specific locations of any area, activity, or use."

The Statewide Planning Goals are the primary basis upon which any Comprehensive Plan must be formulated, and certainly the basis from which this "Plan" is derived.

The basic goals and policies set forth by the applicable "Goals" are considered the primary basis for this "Plan" as though set forth in their entirety herein.

On a local level, the basis for the plan has been developed as an expression of needs, concerns and desires for the future correlated with observations and experiences of past and present programs and trends. Such factors were balanced with the most current and reliable statistical information, and analysis and projection thereof.

THE PLAN IN CONTEXT

In the broadest sense, the "Plan" is a guide to the future development of the County within a framework of goals and objectives consistent with the physical characteristics, attitudes, and resources of the County. The term "Guide" in the foregoing context, however, must not be misconstrued; i.e. as set forth by State Statute (OR Laws 1973, ch. 80 - O.R.S. ch. 197) and applicable State Supreme Court cases, the "Comprehensive Plan" is clearly established as the controlling land use document for a local area.

Beyond the status set forth by statute and court decisions, the basic aim of the "Plan" is to coordinate the interrelationships between people, land, resources and facilities in such a manner as to protect the future health, safety, welfare and convenience of the citizens of the County. Coordinated action by all affected interests in the undertaking of specific projects within a consistent set of goals and objectives is essential.

The Comprehensive Plan is the public's conclusions about the development and conservation of the area, adopted by the appropriate City Council or County Commissioners, and agreed to by all affected governmental units. It is the only all-inclusive plan for a given geographic area.

Comprehensive means all-inclusive in terms of the functional and natural activities in the area, such as:

1. The natural resources of land, air, and water that are to be preserved, conserved, managed, or utilized;

2. The constraints related to development such as physical limitations of the public and private sectors to provide necessary services; or resource limitations such as inadequate stream flows or grounds water resources to provide the water needed to support development, ~~etc.~~ wetlands, etc.

3. The locations for various types of land and water uses and activities in an area, such as residential, agricultural, commercial, forestry, industrial, etc.;

4. The utilities, services, and facilities needed to support the present and contemplated uses and activities; where they will be provided, and upon what conditions;

5. Considerations and the special values of the area, such as housing, energy supplies and consumption, improvements of the local economy, recreation needs, scenic areas, and the direction and nature of growth and development, if such is desired.

The term "plan" means the group of decisions made before changes are made in the area. A public plan, like a remodeling plan for a building, shows the present condition as well as any future changes. It shows the direction and nature of changes in land and water uses and what utilities, streets or other public facilities will be provided, etc. When a public improvement will be built or when a change in use is expected it is expressed by an estimated date, or the reaching of a population level or density or, the occurrence of

another event such as the installation of a water line or the construction of a school.

The purpose of public planning is to make the public decision in advance of construction of a facility, or the use of resources, so any differences are resolved prior to starting a project. Unnecessary project delays are avoided when the public affected agencies have resolved any conflicts well before construction work begins.

The public's plan is a document upon which public agencies, private firms, and individuals must be able to rely so their decisions and investments can be made with confidence. People buying homes can do so, assured that the neighborhood they have selected won't change adversely. Farmers can make capital investments, certain that the adjacent areas will not be developed and preclude them from continuing their farming practices, causing them to be unable to pay for and use needed improvements.

Businesses can invest in new sites, confident that they can be used for their intended purpose, and that the needed services will be provided.

Public investments in water, sewer systems, schools, etc. can be made in an orderly manner, in keeping with the ability to pay for them.

The plan is the basis for other public implementation actions, such as zoning and subdivision decisions. These must be made in the total context of the overall need reflected in the plan.

When adopted, the plan expresses the coordination decision of the public (individuals, groups, and organizations), incorporated with those of public agencies. In addition to setting forth the public's choices about how conservation and development will occur in their geographic area, the plan also incorporates the plans of all other governmental jurisdictions in that area. Fitting them together harmoniously, it interrelates needs, constraints, and services with natural resources. When contemplated, the Comprehensive Plan relates all decisions directly to the air, water, and land resources of the local area in a coordinated manner.

The plan is a statement of the choices made by the public, enacted by their City Council or County Commissioners. These are choices that are made consciously, and are not merely self-fulfilling prophecies of trends and projections. These choices can be made contrary to trends if the changes necessary to affect the trends are made too. These trends must be considered, but only as factors to be taken into account. The choices also reflect a consideration of the area's problems and needs, as well as social, economic, and environmental values. Practical and possible alternative solutions, providing the range of options available, must be considered in making the choices. This assures that the best possible solution will be developed for the area.

More than policies and objectives, the "Plan" is in essence a "process" of continuing effort to coordinate short and long range goals. The "process" is in itself a means of constantly evaluating the "Plan." It is, therefore, essential that the "Plan" be adaptable over time, but this must not be construed to permit piecemeal amendments that disregard the basic relationships established by the overall plan.

Proposed changes to the "Plan" must be carefully considered in terms of possible overall effects on the entire community. Accommodation of a proposed development by plan amendment, which appears very desirable on the surface, may, under thorough investigation with reference to the plan, prove costly to both the future public interests, to committed investments, and to the ultimate purchaser-resident.

The general "Plan" is not a zoning ordinance, however, zoning is one of the important tools available to help implement the plan. Any changes in zoning which occur are subject to a public hearing and a specific decision by the governing body. The greatest single problem between the plan and zoning activity is timing. Some areas suggested in the plan for different kinds of land uses can only be justified at some time in the future when sufficient population growth has occurred to warrant the development, or when public facilities are available to support that development. All zone changes should be considered in relation to the general plan and this serves as one of the continuing means of evaluating the plan. If zone changes are contemplated which are contrary to the plan, the County should first amend the

policies and concepts in the plan before a change of zone is made. This process insures that each petition for rezoning is considered in light of the best interests of the entire County.

The plan must be implemented and adhered to if it is to be of value to the County. The difference between the plan as an empty gesture of public concern, and the plan as a vital instrument of civic betterment hinges upon the involvement of both public and private sectors of the County in its realization. It involves continual contact with public groups and individual citizens, the administration of appropriate codes and ordinances which influence development, capital improvements programming for the expenditure of local governmental funds, and the continuing refinement of the plan in special circumstances such as the urbanizing areas of the various cities in the County. The efforts applied in the continuing planning process extend the "Plan" from the present to the future and are the basis for accomplishment of its goals and objectives. Quoting the late President John F. Kennedy; "When the youngest child today has grown to the cares of manhood, our position in the world will be determined first of all by what provisions we make today -- for his education, his health, and his opportunities for a good home and good job and a good life."

HISTORICAL BACKGROUND

The first phase of white settlement by-passed Morrow County, as had the early nineteenth century trappers and traders. It was not until shortly before the discovery of gold in the John Day country in 1862 that white stockmen were attracted to the grass of southern Morrow County. Permanent settlements were established in the canyons of Willow and Butter Creek before 1870. After their last uprising in 1878, the local Indians were confined to reservations outside what would (in 1885) become the boundaries of Morrow County.

In August of 1872, Henry Heppner and Jackson Lee Morrow opened a store on Stansbury Flat near the forks of Willow Creek to service the needs of the 25 or so stockmen settled on Willow Creek, Balm Fork, and Rhea Creek. These stockmen were tired of hauling goods themselves from the Columbia at Umatilla Landing or Castle Rock above the mouth of Sixmile Canyon, and

wanted the two entrepreneurs to take over their supply and distribution problems. The town of Willow Forks had been surveyed in 1867, but its founding is more properly tied to the establishment of Heppner and Morrow's store.

There was no commercial farming in the Heppner area in 1870, and still not much in 1900, since it was a long haul down Willow Creek to the Columbia, where produce could be trans-shipped to Portland. Even when the railroad running east out of Portland was completed in 1883, it did not come close enough to Heppner to alleviate this problem. Although the boundaries of the city were obscure, the census-taker counted 318 citizens of the city in 1880.

Commercial and financial establishments have proliferated during the decade of the 70's. There was a flour mill, smithy, a couple of variety stores, druggist, harness maker, constable, hardware merchant, millinery saleswoman, livery stable, jewelry store, small lumber mill, boot and shoe maker, brewery, butcher, gambler, hotels, Chinese laundries, three physicians and four saloons in town around 1881. When Morrow County was carved out of western Umatilla County in 1885, the struggle for county seat was fierce between Heppner and Lexington, but when the votes were counted, Heppner won, 691-658. This ensured a certain amount of steady employment for the future.

The economic basis of the Heppner area continued to be livestock production throughout the 1880's, with sheep predominating. An important stimulus to sheep production was the development of that industry in Montana. For fifteen years, Oregon sheep were trailed across the mountains to that territory.

Cattle and horses had been the chief products of the Willow Creek and Butter Creek stockmen in the late 60's and 70's, to serve the needs of the John Day country mining settlements. After 1880, and well into the twentieth century, sheep were the chief product of Morrow County rangelands. After all other Columbia Plateau counties had switched from a livestock - to a grain-based economy, Morrow County continued to rely on the export of wool for the majority of its agricultural cash income. The establishment of National Forest lands, of grazing restrictions, the spread of sagebrush onto the grasslands and the end of itinerant grazers under the Taylor Act all led to a decline in wool

production before 1930's Depression era prices finally finished off all but the largest operators.

Even amid the gloom of the Depression, some economic expansion occurred in Heppner. The Bridal Veil Lumber Company came to town in these years looking for a site to saw pine lumber into box shooks for the Kraft Cheese Company. That didn't work out, but H.O. Wray bought some land from John Whiteman just below town and put up a mill of his own. With Orville Smith of Naches, Washington, Wray produced not only shooks, but eventually soft pine to crate war material for overseas shipment. The mill hauled timber from Grant County and prospered through the war years. It was eventually sold to Kinzua Lumber Company, which had been buying timberlands in the Blue Mountains since 1937.

The Monument-Heppner road had always been a lifeline for the city of Heppner, first to haul goods to the John Day mines, next as a wool route, and finally as a timber road. There had been a sawmill in Heppner in 1880, and a busy one at Parker's Mill on the Monument road south of Hardman, but these were intended to meet only local needs for construction materials. Commercial logging operations in Morrow County date only from the late thirties. Lumbering and sawing have been important sources of employment in the Heppner area since 1945.

Despite wartime rationing and price controls, Morrow County farmers made money again in the forties, land prices soared, and elderly or inefficient operators sold out, reducing the number able to enjoy the increased income. Continued government controls on production and subsidies during the fifties and sixties assured stable prices above production costs, so the Morrow County economy neither declined nor expanded during these years. No major development occurred in production technology, except the continual introduction of new seed varieties promising higher yields. Rainfall was adequate and the County prospered, though most of its young people were forced to look for work elsewhere if they did not become farmers.

The forties saw the last decade of sheep production, which had been 322,000 in 1900, but fell to 110,000 in 1940 and 50,000 in 1950. The slide continued until there were officially only 10,000 sheep grazing Morrow County hillsides and meadows in 1970, though this

discounts the Krebs brothers bands that travel to Montana in the spring.

Heppner built a new sewer system in 1952, a new grade school in 1953, and a new high school in 1961. These developments are evidence of the post-war baby boom. Orville Smith sold out his sawmill to Maurice Hitchcock and Dant and Russell in 1954, who in turn were bought out about 1960 by Seattle-based Kinzua Pine Mills, which owns timberlands in Morrow and Wheeler Counties. The company announced plans for expansion at Heppner in 1977, with the addition of a veneer plant. Some of the growth of 508 in Heppner's population between 1940 and 1950 is attributable to increased lumber production as well as to increased fertility.

The sixties were stagnant in Morrow County, even though income increased and population fell 400 in the County. Important developments such as the John Day Dam and I-80 constructions occurred without substantially altering the property or patterns of economic activity of the County.

By 1969, however, significant additions to the agricultural patterns of seventy or eighty years had begun. On the D.O. Nelson property north of Lexington, five center-pivot irrigation circles of 130 acres each were producing potatoes that year. Irrigation was not new in Morrow County. In the Irrigon area, return flows through canals within the Cold Springs Reservoir system had been used by West Extension District farmers to grow a variety of field crops since 1916. In 1944 Orville Cutsforth drilled the first farm well for irrigation to increase hay production on his land northeast of Lexington. The big breakthrough, however, came with the development of center-pivot systems, which were especially well adapted to the level, low elevation, sandy soils of the Columbia Basin in the north end of Morrow County. With this technology, the previously unproductive sagelands could produce specialty or high-value per acre crops such as potatoes and sugarbeets. This had potential spin-off value for processing. By 1975, the Port of Morrow at Boardman was profiting from the location there of potato plants and farm supply companies to take advantage of expanded irrigation.

By 1975, some problems to further expansion of irrigated agriculture had also presented themselves.

1975, work began on the first of these, a thermal plant using Montana coal to be shipped by rail to the site called Carty (after an 1890 Irish sheepman) nine miles south of Boardman and a few miles west of the Bombing Range. The reservoir of the plant could provide additional irrigation water.

Whether any of the additional projected Morrow County plants will be constructed, or the nuclear plants planned nearby in Gilliam County or the aluminum reduction facility at the Port of Umatilla, remains to be seen. Delays occasioned by environmental impact statement requirements, court cases and financial considerations make the future of energy development in Morrow County uncertain.

June of 1983 saw the dedication of the Willow Creek Dam at Heppner, Oregon, at a cost of \$37,000.00. Hailed as the world's first earth compacted dam, it acts not only as a flood control dam, but impounds 13,250 acre feet of water for down stream irrigation. Upon completion, the dam removed hundreds of acres of land from the original flood zone. The 88 acre lake provides excellent recreational facilities and has increased the economic well-being of the city of Heppner.

PLANNING BACKGROUND SUMMARY

Geographic Setting

Morrow County lies along the Columbia River with 35 miles of shoreline, almost midway between the eastern and western boundaries of Oregon 270 miles inland from the Pacific Ocean. The county is readily accessible from Portland, 160 miles to the west, and other population centers via Interstate 80N. The mainline of the Union Pacific Railroad borders on the Columbia River, with a branch line extending to Heppner. Water transportation is also available via barge service on the Columbia.

Climate

Morrow County has an elevation at its highest point of 6000 feet in the mountains south of Heppner to 260 feet above sea level at the Columbia River to the north. The average annual temperature varies from 50 degrees at Heppner to 52 degrees at Irrigon. The average July

One was the potential groundwater problem. Draw down from the proliferation of wells in the Columbia Basin area threatened irrigators water supply and the farming community began to look at the Columbia for replacement water.

Another obstacle was the presence in the middle of the North End irrigation zone of the U.S. Navy Bombing Range, land bought in 1940 by the government from Hynd Brothers at \$1.42 per acre. The western part of the tract had been purchased by the state with veteran's funds and leased to Boeing Company in hopes of Oregon's cashing in on aero-space industry expansion in the early sixties. Boeing recognized the true potential of the land and started growing irrigated crops on it. The eastern portion was retained by the Navy. As of 1978, the land was still being used for target practice by planes from Whidby Island in Puget Sound, despite strenuous efforts by the local leaders to get the Range moved to Washington State. The fate of these 48,000 acres will be settled in Washington D.C. and not in Morrow County. X

At the present time, several large companies are actively farming in northern Morrow County. The amount of capital required to finance center-pivot irrigation on a big scale makes it difficult for some smaller family farmers to practice this form of agriculture. The increased irrigation and truck cropping has also made it possible for food processing firms to locate in the County.

Two other major areas of expansion in northern Morrow County have been in transportation and energy. With the construction of the John Day Dam below Arlington on the Columbia in the sixties, Boardman was forced to relocate on higher land to avoid inundation of slackwater. Water from the higher river made a smaller impression on Irrigon. Interstate 80 passes through the city limits of the new Boardman, providing the opportunity for tourist commercial development, which the city has grasped. In the last ten years, a number of motels, restaurants and gas stations have added to the processing expansion of the Port of Morrow to keep Boardman busy.

In the seventies, a consortium of power companies led by PGE developed a plan to construct a complex of coal and nuclear power plants in the Boardman area. In

temperature is 70 degrees while the average January temperature is in the mid 30's. Summer highs are in the 90's to over 100 degrees.

The growing season varies throughout the county from 168 days to 200 days. Average annual precipitation is from 14 inches in the south to seven inches in the north. The mountain areas receive as high as 3 to 4 feet of snow.

The southern portion of the county is subject to cloudbursts that may drop several inches of water in a few hours.

Geology

Morrow County lies within the Columbia River Plateau, a vast geological region covering parts of Washington, Oregon and Idaho. It is noted for large amounts of Miocene and early Pliocene, flood basalts. The Columbia River Plateau was divided by Fenneman in 1931 into two sub-provinces - the topographically lower Walla Walla Plateau, which includes all of Morrow County and the elevated Blue Mountain subprovince. The Walla Walla Plateau is characterized by rolling upland surfaces with young incised valleys. More specific dissection of the Walla Walla Plateau is characterized by rolling upland surfaces with young incised valleys. More specific dissection of the Walla Walla Plateau southern portion of the county is related to the Willow Creek drainage system, a tributary of the Columbia River. In the northern area near Irrigon is the Dalles-Umatilla syncline. In the great east-west downwarp, whose trough extends 160 miles from the Cascade Range to the Blue Mountains, is a major transportation route to the interior of the Pacific Northwest. A principal sag in the Dalles-Umatilla syncline is centered at Umatilla, Oregon, about four miles from the Northeast boundary of Morrow County. The top of the basalt stands only 200 feet above sea level at this sag.

Underlying the Walla Walla Plateau are hundreds to several thousands of feet of basalt flows of the Columbia River Group. These flows are exposed in nearly all stream drainages and in many highway cuts. The basalt flows erupted from fissures apparently lying to the east in Wallowa and Union Counties, and blanketed almost the entire Pendleton quadrangle.

Pliocene and younger sedimentary deposits of fluvial, lacustrine, eolian, and glacial origin veneer intervening with upland surfaces. They are generally less than 100 feet thick and in some places are only a few feet thick. Deposits of these clastic sediments are found in structural and physiographic depressions in the southern portions of the county. These sediments, particularly the wind-deposited loessial soil, support extensive wheat farming, with the many rocky slopes where deposits are thin or discontinuous providing grazing for cattle and sheep. In the northern portion of the county, fluvioglacial deposits (gravel, sand and silt) left during glacial-meltwater transport by the Columbia River (Newcomb, 1969) are the primary type of sedimentary deposits present. They are generally less than 100 feet thick and in some places are only a few feet thick. Deposits of these sediments are found in structural and physiographical depressions, in the northern areas of the county.

Mineral Deposits

Minor coal deposits are present south of Heppner in the Eocene sedimentary sequence (Mendenhall, 1909, Collier, 1914). Although lenses and thin beds of pure, good-grade bituminous coal are present, they are apparently too thin, intermixed with carbonaceous shale, and structurally deformed to be of commercial interest. Small quantities of gem opal have been recovered from amygdaloidal flows of Eocene age in southern Morrow County. The flows are considered to be part of the Clarno Formation (Oregon Department Geology and Mineral Industries, 1941) pg 154. There are a few rock and gravel quarries throughout the county. They are primarily state and county owned and do not support any major excavations. In the northern portion of the county there are three commercial quarries, PGE, Redie Mix, and Hermiston Sand and Gravel. The Columbia River basalt affords an easily available source of good quality road materials riprap, rockfill and common stone. There are no other mineral resources of significance that have been identified in the county.

General Engineering Features

The Basalt of the Columbia River Group varies in degree of fracturing and alteration and thus also varies

in degree of slope stability. However, in general the basalt is hard and strong, affording foundation strength capable of supporting heavy loads and also furnishing an excellent source of crushed rock for concrete aggregate, fill and road surfacing material. The high bearing strength is a characteristic of the basalt except where scoriaceous and brecciated (broken into sharp fragments embedded in sand or clay) zones, between flows, or where local sedimentary interbeds are present. Such zones should be avoided in obtaining basalt for use as concrete aggregate according to the "Reconnaissance Geologic Map of the Pendleton Quadrangle, Oregon and Washington."

Topography

The northern portion of Morrow County lies along the Columbia River in the northcentral portion of a broad, gently rolling, slightly dissected, lowland plain. The Columbia River is in the axial trough of the 160 mile long Dalles-Umatilla syncline described by Newcomb (1967). Structural dips trend to the northwest within the basalts of the report area and average approximately 30 feet to the mile. The southern portion of the county lies in the Willow Creek Basin, an elongated, 890 square mile area located in Northcentral Oregon. The basin is about 60 miles long and has a maximum width of 23 miles. Willow Creek flows in a northwesterly direction from its source in the Blue Mountains to the Columbia River. About 96 square miles (10.8%) of the total area of the Basin lies above and south of Heppner. The "foot hills" in the southern portion of the county carry from 2300 to 2600 feet in height.

Economy

Morrow County's economy is based primarily on agriculture, wood products, agricultural processing plants and other farm equipment and related businesses both within the County and in western Umatilla County. Energy generation facilities (in particular the Carty Coal Fired Plant and the Kinzua Co-Generation Plant), construction and other business within the County are also of significant importance. The largest employers in the County are:

1. The P.G.E. Coal Fired Plant
2. Morrow County School District

3. Kinzua Mill and Co-Generation Plant
4. Agriculture and related businesses.

The further expansion in agri-business, energy generation and other industries in Morrow County is expected to have a substantial impact in the next five years. Perhaps the greatest impact to occur will be the continued increase of agricultural lands coming under pivot irrigation and the current trend to crop diversification.

Population

Morrow County is one of the fastest growing and most dynamic counties in the State of Oregon. Employment opportunities fostered by the development in irrigated agriculture and food processing industries have significantly altered Morrow County's rate of population change. With further developments in these sectors anticipated and the expansion of energy related and construction employment now underway, the continuance of the recent upward trend seems assured.

The decade of the 1940's and primarily the post war years showed a significant population increase. These years of the "baby boom" era were negated, however, by years of population decline up until 1972, at which time fewer people resided in Morrow County than had thirty-two years before in 1940. This low year of 1972 was immediately followed by the turn-around year of 1973 when the population increased by a booming 6.5% from 4,320 to 4,600.

The relatively stable, although declining population years following 1950, experienced a rapid upsurge in 1973. The following years have continued this shift and the present estimated population of 6,400 is more than 48% higher than just seven (7) years ago, by 1985, the County population is estimated at 8,000.

Natural Resources

Natural resources are vitally important to Morrow County. Five river systems, the Willow-Rhea Creek, Butter Creek, Rock Creek (a John Day tributary) and the Columbia, supply the County with water for fish and wildlife, domestic needs, recreational uses, agriculture, industrial transportation and general

vegetation growth. Additional groundwater sources add to the total supply.

Natural, drought-tolerant grasslands cover the Northern and Central portions of the County, a good setting for dry land and irrigation farming. The Southeast quarter of the County generally lies in forestlands of the Ponderosa Pine and Grand Fir variety, providing the economy with timber, hunting and fishing. These vegetation areas closely follow the County's general geographical and climatic formations of plateau in the Northwest and mountain highlands in the Southeast. As with Eastern Oregon in general, annual precipitation is lower in the County than in Western Oregon and temperatures are higher in the summer and lower in the winter. These conditions affect growing seasons and recreational use of the County's resources.

Several species of amphibians, reptiles, birds and mammals populate the County's forest and grassland areas. Morrow County waters provide spawning, rearing and harvest area for migratory fish, resident trout and warmwater game fish. These resources attract growing numbers of hunters, fishers, and tourists.

Air quality is generally high except when dust storms blow soils under cultivation or harvest high into the atmosphere and across County lands. Water and air resources have brought energy generating industries into the area. Although the County possesses no precious minerals, the Columbia River Basalt that covers most of the County does provide for some aggregate industries.

Land Use

Morrow County has a total land area of 1,321,600 acres. The predominate land uses thereof are rangeland (40%), cropland (35%), and forest lands (18%). As the County continues to develop, competition for the fixed land base will increase, driving up land prices and creating a more precarious ecological balance in the use of land. Proper land use planning at this point should alleviate, or at least minimize, the economic pressures to be forced on the limited resources.

DEMOGRAPHIC PROFILE

Introduction

Morrow County is one of the fastest growing and most dynamic counties in the State of Oregon. Employment opportunities fostered by the development in irrigated agriculture and food processing industries have significantly altered Morrow County's rate of population change. With further developments in these sectors anticipated and the expansion of energy related and construction employment now underway, the continuance of the recent upward trend seems assured.

County Population

The table below sets out the population changes that have occurred since 1940. The decade of the 1940's and primarily the post war years showed a significant population increase. These years of the "baby boom" era were negated, however, by years of population decline up until 1972, at which time fewer people resided in Morrow County than had thirty-two years before in 1940. This low year of 1972 was immediately followed by the turn-around year of 1973 when the population increased 6.5% from 4,320 to 4,600.

The following years have continued this shift and the present estimated population of 6,400 is more than 48% higher than just seven (7) years ago.

TABLE 1

Morrow County
Population Trends
1940 - 1978

Year	Population	% Change Since Last Period
1940	4,337	---
1950	4,783	+10.3%
1960	4,871	+ 1.8%
1970	4,465	- 8.3%
1971	4,430	- 1.0%
1972	4,320	- 2.5%
1973	4,600	+ 6.5%
1974	4,800	+ 4.4%
1975	5,200	+ 8.3%
1976	5,350	+ 2.9%
1977	5,550	+ 3.7%
1978	6,400	+15.3%

Source: U.S. Census 1940, 1950, 1960, 1970
PSU Center for Population Research and Census

Urban Population

County Population growth has brought substantial changes to the five communities in Morrow County. Although two incorporated towns, Lexington and Heppner, decreased in population between 1960 and 1970, all five increased between 1970 and 1977. The most dramatic increases occurred in the two northern rim cities of Boardman and Irrigon.

Boardman's phenomenal growth rate of 531% has changed it from a small roadside community to a dynamic industrial center. Further economic opportunities in agriculture and agriculture processing industries, particularly in the Port of Morrow's industrial complex, will lead to an ever-increasing industrial character for this area.

In 1960, the population of the County within incorporated towns, represented 54% of the County's total population. With the County experiencing a small decline in its population, the 1970 urban population represented 55% of the County's total number of

residents. Since that date, however, the dramatic increase in County population has been primarily an urban growth. Since 1970, the total population of the County grew by 1,085 residents. The total urban population, during the same period grew by 1,328, indicating two important trends for Morrow County: 1) new County residents are city dwellers; and 2) within Morrow County a rural to urban shift is occurring among the long time population.

These trends have changed the County's urban population in 1970 from 55% (as cited above) to the 1977 estimate of 68%, with the percentage for 1978 expected to be substantially higher.

TABLE 2

Morrow County Urban Growth

	1966 - 1977		1960 - 1977		
	1977	%Change	1970	%Change	1960
Heppner	1,700	+ 19.0%	1,429	-14.0%	1,661
Boardman	1,020	+531.0%	192	+25.5%	153
Ione	415	+ 17.0%	355	+ 1.0%	350
Irrigon	415	+ 92.0%	261	+12.5%	232
Lexington	245	+ 6.5%	230	- 4.2%	240
TOTAL/URBAN	3,795	+ 53.8%	2,467	- 6.8%	2,636

Population Projections

Although there are various sources of population projections, the one source utilized as the basis for the "Plan" is referenced herein as the "Preliminary Population and Labor Force Projections - Morrow and Umatilla Counties," Second Draft dated October 1977 prepared by East Central Oregon Association of Counties (ECOAC). Other sources available and considered (as the same way in the afore referenced source) include projections by Portland State University, Pacific Northwest Bell and Bonneville Power Administration.

The methods of projection and related assumptions thereof utilized in the formulation of the subject projection source are set forth in some detail in said report, and are not, therefore, repeated herein. As a basis for the projections set forth herein, however, the basic assumptions utilized are set forth hereinafter.

Basic Assumptions

1. Natural increase assumed to remain relatively constant in correlation with recent trends.
2. Continuance of historical trends.
3. Assumption that a main factor controlling migration is job availability.
4. Assumption of declines in commuter work force numbers.
5. Continuance of recent economical growth trends.

The basic projection method utilized in the referenced ECOAC Report involved the development of a computer program designed to project future County and municipal populations as a basis for other economic forecasting. The program was based on County and enumeration district employment data and cross-checked with State and Federal census data and other economic studies. The model did take into account physical and economic growth constraints.

The result of the referenced projections set forth the following for the County and its various cities:

TABLE 3

Population Projections 1970 - 2000
Morrow County and Cities

Jurisdiction	1970	1978	1980	1985	1990	1995	2000
County Total	4,470	6,400	9,910	10,650	11,670	12,480	13,300
(Rural)	(2,000)	(2,180)	(3,560)	(3,830)	(4,200)	(4,490)	(4,790)
Boardman	190	1,295	2,620	2,600	2,930	3,180	3,410
Heppner	1,430	1,730	1,800	1,850	1,890	1,920	1,950
Ione	360	390	500	600	680	750	780
Irrigon	260	515	1,140	1,440	1,600	1,750	1,970
Lexington	230	290	290	330	370	390	400

Population Composition

Relative to the age distribution of the County's population, the composition is somewhat reflective of most rural counties. The 19 years-of-age and under category accounts for approximately 38%, 20-34 approximately 15%, 35-64 accounts for 32% and the 65 and

older category 15%. Distribution by sex is nearly equal, 49% female and 51% male.

About 2.0% of Morrow County's population is composed of minorities. The two largest groups are those of Spanish heritage and those of American Indian descent. A breakdown is shown below.

Number of Persons by Racial Group, Morrow County 1970

Racial Group	Number	Percent
Total	4,800	100.00
Caucasian	4,695	98.00
Spanish Language	69	1.43
Black	1	.02
American Indian	29	.60
Other	6	.13

Source: OSU Cooperative Extension Service, Income & Poverty Data for Racial Groups, A Compilation for Oregon Census County Division, Special Report 367, September, 1972.

Income Levels

Average family income fluctuates considerably for Morrow County residents, depending primarily on crop prices and yields. 1970 census data (1969 incomes) showed Morrow County's mean family income was \$9,361 and ranked 13th in the state; median family income at that time was reported at \$8,386. Data by the State Housing Division showed the County's median income to be \$14,910.

When this overall median income is broken down into decile categories (groups of ten percentiles), an interesting pattern emerges. Morrow County has the highest median family and renter income of all the five Oregon Administrative District 12 counties in every decile except the lowest. In this percent of households, Morrow County ranks lowest of the five counties. Thus, it has both the greatest incidence of high income households, and the lowest median income among all lowest 10 percent incomes by county. That is, it has the greatest income disparities. Mean (arithmetic mean or average) family income represents the total of all family incomes divided by the number of families in the sample. Median family income represents

the family income that is the midpoint - that is, half the families have incomes greater than the median income and half have incomes less than the median.

Education Levels

According to the 1977 edition of the Socio-Economic Indicators of Oregon, Morrow County had the highest percentage of 9th grade enrollment graduating from high school in the class of 1976 (92%) in the state. The five year average of 9th grade enrollment graduating from high school (87.1%) also ranked first among the counties in Oregon. However, about 1.6% of the Morrow County adult population has attained a fourth grade education or less. This percentage is among the 10 highest in the state. Twelve percent (12%) of the County's adult population has achieved an eighth grade education or less, while 22.3% has not finished high school. These percentages are among the twelve lowest in Oregon.

Information from the 1970 census on education attainment by sex is included below.

Years of School Completed by Population 25 years & over, Morrow County

Education	Number Males	Number Females
Total, 25 years and over	1,283	1,299
No. School Years Completed	4	3
Elementary: 1-4 years	40	24
4-7 years	71	51
8 years	184	161
High School: 1-3 years	271	232
4 years	424	551
College: 1-3 years	185	178
4 years	104	99
Median years completed	12.2	12.3
% High School Graduates	55.6	63.7

Source: U.S. Bureau of the Census, Census of Population, 1970 General Social & Economic Characteristics, Final Report PCW - C39 Oregon, U.S. Government Printing Office, Washington, D.C. 1971.

Employment

Principal industries for Morrow County are agriculture, food processing, trade, lumber and wood

products, government and contract construction. Morrow County is currently experiencing an industrial boom, particularly in the northern portion of the County. The agricultural base has developed and grown into areas which were previously abandoned desert land, placed under irrigation, and now proving to be prime farm land. With the agricultural base broadening, food processing has followed into the area providing large employment opportunities for local manpower and surrounding areas. Lumber and wood products are also showing an increase due not only to increased production, but increased housing and construction needs due to the industrial boom. One additional cause for increase is a \$5 million expansion of the Kinzua plant at Heppner, creating 30 new jobs. The manufacturing outlook for Morrow County is currently and potentially very good and will be for the next five years. Within non-manufacturing industries, trade, government, and contract construction are the main sectors. Trade and government seem to be going through a natural increase based on the increase in the basic sectors. The contract construction has gone through a large increase in 1976 and 1977 due to the coal-fired plant being constructed south of Boardman.

TABLE 3

Morrow County Employment by Sector, October 1976

Category	Number	Percentage
Lumber and Wood Processing	330	8.2
Food Processing	420	10.4
Other Manufacturing	20	.5
Contract Construction	330	8.2
Transportation, Communications, and Utilities	120	3.0
Trade	420	10.4
Finance, Insurance and Real Estate	50	1.2
Service and Miscellaneous	130	3.2
Government	440	10.9
Unemployment	190	4.7
TOTAL*	4,030	100.0

Source: Oregon State Employment Division *Includes agricultural and self-employed

Employment Growth and Unemployment

Morrow County population grew 241 between 1970 and 1977. During the same period, total civilian labor force increased 260% or more than ten times the population growth rate. This growth was particularly evident in the food processing and contract construction industries.

The dramatic growth in total civilian labor force is the result of two primary factors: 1) the influx of new residents, and 2) increased participation in the work force by family members. This second factor is directly related to the increased number of working women. This will have long run impact upon future growth rates due to smaller family sizes.

TABLE 4

Labor Force Participation Rates

Year	Morrow County
1970	39%
1971	42%
1972	46%
1973	45%
1974	59%
1975	65%
1976	71%
1977	80%

Morrow County's dramatic growth in its labor force is substantiated by the incredible growth in participation rates. In 1970, the rate of 39% was lower than that of many other counties while its 1977 rate of 80% approaches the limits of labor force participation. This high rate is only found in rapidly growing areas with characteristically small rural populations - Morrow County's heritage.

During this period when the labor force has increased 260%, the number of unemployed has increased from 116 to 250 or 227%. Total employment growth has remained ahead of the unemployment rate, indicating that the larger number of new County residents are finding jobs and are being employed.

The actual unemployment rate has fluctuated on a yearly basis but is now at 5.6%, well below the 1970 rate of 6.4%.

This same fluctuation from month to month also occurs in Morrow County because of the agricultural emphasis of the economy and the seasonal cycles of its related industries. As the County's economy becomes more diversified and year-round production of food products dampens the fluctuations in agricultural related industries, the cycle of unemployment can be effectively reduced.

TABLE 5

CHARACTERISTICS OF THE UNEMPLOYED

POPULATION OF MORROW COUNTY AND ADMINISTRATIVE DISTRICT TWELVE

	Morrow		District Twelve	
	Actual	%	Actual	%
Total At Risk Population	82	100	2,621	100
By Sex				
Male	47	57	1,469	56
Female	35	43	1,152	44
Youth				
Under 20	8	10)	381	15)
20 - 21	9	11)	288	11)
22 - 44	45	55	1,517	58
Older Workers				
45 - 64	20	24)	406	15)
65 & Over	0	0)	29	1)
Minority				
White	74	90	2,347	90
Black	0	0)	19	0)
American Indian	1	1)	54	2)
Other	7	9)	201	8)
Veterans	19	23	654	25
Handicapped	7	9	215	8
Economic Disadvantaged	11	13	460	18

Source: Oregon State Employment Division,
 "Characteristics of the Active File" (ESARS Table 93,
 dated 4/31/78)