



COMPREHENSIVE PLAN

Hines, OREGON

1930 (Revised 1986)

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SECTION I

HISTORICAL PERSPECTIVE

The earliest recorded settler in or near what is now Hines was George A. Smyth, in 1873. Mr. Smyth, four sons, and immediate family moved from the Willamette Valley to the “Warm Springs,” located just south of Hines. A son-in-law, John J. Miller, settled about one mile northwest at “Miller” Spring.

In September of 1873, the first white child was born in the county to parents not associated with the military: Margaret Louise Smyth. In later years, she married Mr. J. Donegan.

Later settlers included William and Monse Curry, with ranch headquarters located at a small spring in what is now the northwest section of Hines. The brothers moved a small store and saloon to the Hines location in 1878 after a brief business venture in nearby “Axhandle” (present City of Burns), where high water from Spring runoff endangered some of their stocks and supplies. The building was used a few times as a barricade for nearby settlers when rumors of Indian attacks were circulated after the Indian uprising of 1878.

The Warm Spring (presently the site of the E. Hines Lumber Co. log pond) was the site of many “buckaroo” camps for fall and spring cattle round-ups, while also accommodating year-round cattle grazing.

Land included in the present City of Hines was mostly sagebrush or pasture until 1924, when the Fred Herrick Lumber Company, anticipating harvest of 890,000,000 board-feet of Ponderosa Pine from the Bear Valley District of the Malheur National Forest, started the Malheur Railroad Company’s tract of Burns. The “contract” stipulated the lumber mill be located within five miles of Burns, so the site of the Warm Spring, two and one-half miles south, was selected because of the ice-free log pond.

Beset by market slumps and various obstacles, Herrick encountered many delays in completing the 50 miles of railroad north to the timber supply. In 1928, the Edward Hines Lumber Company of Chicago, Illinois, took over the Herrick interests, both railroad and uncompleted mill. The railroad from Crane to Burns passed to the Union Pacific Railroad and the Malheur Railroad Company’s name was changed to Oregon Northwestern and extended north to Seneca in southern Grant County. The mill was completed and two large turbines were installed, with a 6,000-kilowatt capacity providing a surplus of 3,000 kilowatts. The “surplus” was later sold to West Coast Power Company.

As a result of the Hines Company interests, a real estate development firm from New Orleans purchased a large tract of land, developed in lines and water supply with a deep well and tower for gravity flow. Lands were purchased from I.S. Greer, R.E. Reed, the Hotchkiss family and several other ranch and homesite owners by Stafford-Derbes & Roy Company and developed into the beginnings of a new city. Edward Hines and his wife designed and planned the new city around an oval, dedicated to park and recreation. Wanting the city to be different from most mill towns, Mrs. Hines stipulated every house to be constructed with slight differences. “Greater Burns” was underway.

Present “City of Hines”

The City of Hines was incorporated on December 8, 1930. The Hines post office was opened in March 1931 with Mr. Eugene J. Brown serving as first postmaster. In 1931, the Hines Elementary School (still in service) was completed. Mr. R.H. Anderson was the first principal and served in that capacity until 1953.

A grocery and furniture store, a dance and pool hall were completed on the southwest side of Circle Drive, and the Ponderosa Hotel was begun but never finished on the southeast side.

The development company involved in construction of many of the homes and structures in the new city was caught in the Depression and sold its interest to a savings and loan company. Another savings and loan company was also involved, but both encountered financial difficulties. In 1934, the “City Corporation” was chartered as a subsidiary affiliate of the Edward Hines Lumber Company. The “City Corporation” sold houses to employees (rent was based on fifty cents for each day the employee worked; none if there was no work available). House payments were deducted from payroll checks. Shrubbery and trees were given free of charge to residents. The “Corporation” was finally dissolved in 1950.

Recreation equipment and a swimming pool were installed at the Warm Spring in 1935 and paid for through a “raffle.” These remained in service until 1969.

Many of the early residents were former employees of the Hines Company from the east; some from Minnesota, others from Mississippi. During those early years of the Great Depression and subsequent recovery years, there was little public welfare or assistance; friends and “the Company” took care of the needy and helped families through various crises of the times.

Today, the City of Hines still depends on the “mill” for economic stability. The largest major employer in the Burns/Hines area is the Edward Hines Lumber Company.*

* References:

Lewis A. McArthur: “Oregon Geographic Names”

George Francis Brimlow: “Harney County, Ore. And its Rangeland”

Personal Contacts: Charles Walker, Lynn Brinkley, Cal Mosley, William Jennings, Sr. Esther Thompson Jones, Mel Mortenson, O.D. Hotchkiss, Sally Wilke Kahn

City of Hines and Edward Hines Lumber Company

C.B. McConnell “Burns Paiute Indian History Related,” Burns-Times Herald, 8/14/58

Nel Bosch – Harney County Chamber of Commerce .10L80

INTRODUCTION

In 1973, the 57th Legislative Assembly adopted Senate Bill 100 (ORS 197), known as the 1973 Land Use Act, which, among other things, created the Land Conservation and Development Commission (LCDC). LCDC was charged with the responsibility to develop statewide planning goals and guidance to guide local comprehensive planning. Extensive work sessions and public hearings resulted in the adoption of 14 Statewide Goals and Guidelines to be used by state agencies, and implementing comprehensive plans. (Additional Goals were adopted at a later date, but do not apply to Hines.)

Two significant components of the state legislation are first, the authority of cities to establish urban growth boundaries, and second, assurances of citizen involvement throughout the planning process from development through the implementing stages.

Partly in response to the state mandate, the City of Hines embarked on a planning program to develop a Comprehensive Plan. In early 1978, the planning firm of Rodney R. Stubbs & Associates was retained to assist the City in this planning program and to develop a document that fulfills the intent and purpose of the 14 Goals and Guidelines established by the LCDC. In October, 1978, the planning division of Stubbs & Associates was purchased by Morgan, Ryan & Associates, Inc.

Committee for Citizen Involvement

The Hines Planning Commission was designated as the Committee for Citizen Involvement (CCI) and given the responsibility of insuring citizen participation by means of a Citizen's Involvement Program (CIP) through the use of the local media, community surveys, information materials and public work sessions and hearings.

The Comprehensive Plan shall be considered an official statement of the City of Hines. The document sets forth goals, objective and policies to guide the future physical development of the community. The following subchapters depict existing conditions, summarize conclusions, and, where applicable, set forth certain development criteria.

PHYSICAL CHARACTERISTICS

Location

Hines is located in Southeast Oregon in the north-central portion of Harney County. It is approximately 130 miles east of Bend, 200 miles south of Pendleton, and 130 miles west of Ontario, Oregon. Hines is bordered by the City of Burns on the north. The Silvies River is located to the east of the City. The Malheur National Wildlife Refuge lies about 20 miles to the south. One major highway, US 20/395, passes through Hines, giving good vehicle connections, both north/south and east/west.

Climate

Climatic data have been collected in Burns for about 78 years between 1891 and 1921 and from 1938 to date. Records were collected at the Harney Branch Experiment Station (now the Dorland Ray farm) from 1913 to 1953. Data is available for shorter period for Camp Harney and Malheur National Wildlife Refuge south of Malheur Lake. On the basis of these records, annual precipitation averages about 20 per cent less near Malheur Lake. Thus, the annual total for the valley probably averages less than 10 inches. At Burns, the minimum annual recorded precipitation was 5.32 inches in 1949, and the maximum was 18.12 in 1906.

Prevailing winds are from the west and average in velocity from 1 to 5 miles per hour, but higher gusts have been recorded in the area.

Table 1 indicates the monthly temperatures at Burns, and Figures 1 and 2 indicate normal and extreme monthly precipitation at Burns, respectively.

[Figure 1. (A) Normal and extreme monthly precipitation and (B) average maximum and minimum monthly temperature at Burns.]

[Figure 2. Annual precipitation at Burns, 1938-70.]

[Table 1. Monthly temperatures at Burns (National Weather Service records)]

[Map 1. Harney County, Oregon]

Topography

Hines is situated at the far northern end of the Great Basin, a major topographic and geologic feature encompassing southeast Oregon, southern Idaho and much of Nevada and Utah. This area is the remnant of an ancient sea and now forms one of the four major deserts of the United States. The Blue Mountains, which mark the boundary of the Great Basin, start a short distance north of the Hines/Burns area and extend to the Umatilla plain near the Columbia River. The elevation of Hines is approximately 4,160 ft above sea level.

Most of the City of Hines lies in a relatively flat area located between steep hillsides to the west and the Silvies River Flood Plain to the east. Very little of the existing City is developed in these areas of natural hazard at the present time. However, they form a development constraint that will shape the future growth of the City of Hines.

Geology

The land surface in the Hines area is predominantly characterized by volcanic lava flows, associated airborne materials, and sedimentary deposits mixed with volcanics. The larger valleys of the county, including the Silvies River Flood Plain, all have thick unconsolidated alluvial and lake bed deposits.

Silvies River

The Silvies River at its headwaters in a rapidly flowing stream, becoming a gently falling stream over 100 river miles above its entry into Malheur Lake. It is heavily drawn upon for irrigation of upper valley lands and receives substantial return flows before entering the flat lakebed area surrounding Malheur Lake and the Cities of Burns and Hines. It is in these reaches that the stream gradient becomes extremely low and the dissolved oxygen frequently falls below desirable levels. The stream flow is heavily enriched with plant nutrients, and algae growth reaches nuisance levels. The City of Hines does not discharge municipal wastes into the stream, thereby preventing a more serious degradation of water quality. The extremely low assimilation capacity of the Silvies River suggests that the only effective method for maintaining desirable water quality is prevention of discharge of significant quantities of degrading flows.

Soils

Goal #3 of the Statewide Goals and Guidelines requires that certain soils, considered the "prime" agricultural soils, be preserved and maintained for agricultural use. These are defined as the Class I-VI

Soils as classified by the Soil Conservation Service of the U.S. Department of Agriculture. The entirety of Harney County is in a unique situation that detailed soils mapping has not been performed, therefore, detailed soil capacity classification designations do not exist. The S.C.S. has undertaken a program to develop mapping to the scale that is enjoyed by the vast majority of the state, however, this program will take approximately five years to complete. The information developed by the S.C.S. should be included in the next update of the Hines Comprehensive Plan. In the interim, the jurisdictions of Harney County must work with what information exists and take actions that work to implement the spirit of Goal #3.

Generalized mapping of the Burns/Hines area has been completed by the S.C.S. indicating that Hines straddles the line between Class II and Class VI designations. Map 2 shows the location of the various generalized soil types in the Hines area.

The Silvies River Flood Plain area lying to the east and southeast of the City of Hines and including several tributaries feeding into the river in this area, form an area of Class II soils. These were created by alluvial and sedimentary actions of the river. Many of these soils are wet where they occur along the stream course where the river spreads out on the level basin floor during periods of high runoff. Some of these soils are very poorly drained in swales of lower lying areas which are inundated during the wet seasons. The vegetation in this area is primarily rushes and other adapted wetland flora.

[Map 2. Soil Classification of City of Hines, OR and Vicinity]

Soils in the Class II designation have few limitations or hazards. Simple conservation practices are needed when there are cultivated. They are suited to cultivated crops, pasture, range, woodland or wildlife.

The majority of the City of Hines and all of the land to the west and northwest is generally designated as Class VI soils. These are areas which for the most part are underlain by Miocene (19,000,000 years ago) to recent age lava flows and interbedded tuffaceous sediments. The soils in these areas are typically light colored, basic in reaction, and very stony and shallow. The surface layers are generally silt loam and grade rather abruptly to strongly contrasting, well structures, often clay subsoil. A thin discontinuous hardpan is often present immediately above the bedrock. Coarse fragments in the soils and at the surface are nearly always angular and relatively unweathered. The native vegetation includes bluebush wheatgrass, Sandburg Bluegrass, big sagebrush and rabbitbrush.

Soils in Class VI have severe limitations or hazards that make them generally unsuitable for cultivation. They are suited largely for pasture, range, woodland or wildlife. The same types of limitations also exist for urban uses. The shallow soil depths and hardpan cause severe septic limitations and render underground utility installations occasionally impractical due to the high costs that may accompany construction.

Air Quality

Overall, according to the Oregon Department of Environmental Quality, the air quality in the Hines area is considered very good. DEQ indicates that slash burning, agricultural tillage and "upset" conditions (those temporary equipment malfunctions that may increase certain pollutants for a short period of time) at the lumber mill may result in short-term localized impacts on air quality.

The prevailing wind from the west precludes a significant amount of air pollution reaching potential residential areas to the west, especially from the lumber company. It should be noted that the lumber

mill is the largest contributor to the “Total Particulates”, however, the DEQ points out that the air quality, generally, is still very good in Harney County.

Table 2 lists the pollutants as cited by the Oregon Department of Environmental Quality. Ambient air quality and noise data are not available at this time.

[Table 2. Harney County Air Pollutant Emissions]

Noise Quality

The City of Hines’ two primary noise sources are lumber mills and highways and streets. Because of the location of the lumber mills and the level of traffic on the highways and streets, there should be little impact on noise sensitive uses in the City or its UGB.

GOAL

To preserve and maintain physical characteristics, where viable.

GUIDELINES

1. Encourage preservation of agriculture as a major component of the economy of Harney County.
2. Support policies favorable to the agricultural industry so as to maintain a viable support service economy in the City of Haines
3. Encourage and preserve agricultural lands appropriate for that use outside the City of Hines.
4. Encourage use of land not suitable for agricultural development for meeting the County’s non-farming housing needs.
5. Encourage development in the City to meet State and Federal Air Quality and Noise levels.

POLICIES

1. Discourage non-agricultural development on land suitable for viable, economically feasible agricultural uses.
2. Encourage non-agricultural development on land inside the Urban Growth Boundary that can readily be served with urban services adjacent to or in close proximity to existing services.
3. Adopt implementing ordinances to encourage efficient use of land unsuitable for agricultural use but suitable for urban development.
4. Development in the City of Hines shall comply with State and Federal standards for air quality and noise control.

NATURAL HAZARDS AND LIMITATIONS

There are several parts of the Hines area that have conditions that are hazardous or that restrict their suitability for building sites. There are two basic reasons for identifying and addressing these areas: human safety and public cost. In hazardous areas, development without careful design and engineering can bring definite threats to personal health and safety. This can be through violent actions such as flooding or slippage, or through subtle actions such as sewage infiltration into water supplies.

High public costs may be incurred as a result of a natural disaster that affects developed areas. Equally as threatening to the local economy may be the cost of providing services to areas that have natural conditions that make extension of public utilities, especially those that require underground pipe, expensive.

Four basic types of hazards occur in the area. They are described below:

Floodplain

The most prevalent hazard is found in the Silvies River Flood Plain. Map 3 indicates the areas that are subject to occasional flooding. Frequency and major extent are not known at this time. In these areas, construction should be avoided, or if allowed, subject to special standards designed to protect the structure. The Flood Plain should be reserved, for the most part, for open space and agricultural uses.

Other areas that are subject to occasional damage from flooding are those adjacent to the drainage channels. These channels come from the west and impose constraints where potential runoff is heavy and where drainage makes the location of sewers and waste disposal sites a constraint on development. They also serve as reservoirs for storage of flood runoff. Of particular interest is the “sump” area located between Burns and Hines. Unrestricted development in this area will reduce its ability to store water as well as create a hazard to life and property.

Flooding problems along the drainage channels, and most especially, in the Silvies River Flood Plain, are greatest when runoff of the Silvies River coincides with heavy drainage from the hills to the west of the City. The City of Hines is most impacted by Drainage Channels “B” and “C”, as indicated on Map 4. Some of the restraints caused by flooding can be modified by improvements to drainage channels, as was reported in a study conducted by the State Water Resources Board in 1968. The ability to reduce flood peaks on the Silvies River is dependent on upstream flood control storage, something likely only to occur with the assistance of the Flood Control program administered by the U.S. Army Corps of Engineers.

[Map 3. Flood Hazard Areas]

[Map 4. City of Hines and Vicinity, Flood Hazard Areas]

Steep Slopes

The slope areas to the west of Hines (Map 5) are limited in their development potential because of the topography, by the relatively low strength of the soils, and by the frequent volcanic rock outcroppings. If any development is to be allowed in these areas, careful engineering should be required by the City before building permits are issued. Also, extensive disruption of the slopes by cut, fill, and added weight of structures may cause serious slippage and erosion problems. These areas, if used at all, should be treated very carefully. Greatly reduced residential density may be necessary.

[Map 5. Aggregate Resources & Steep Slopes]

Near Surface Bedrock

Near surface bedrock areas have severe restrictions on any type of sewage disposal system. Underground installation of utilities is difficult and expensive. These areas also should have a lower development priority. Development in these hazardous areas is expensive to the builder and risky for the buyer and the community in terms of maintenance and replacement costs. When alternatives exist to provide land for projected community growth, they should be utilized. The individual and public will have less cost, health, and economic risks if the hazard areas are left in low utilization states.

Earthquake Hazard

The history of earthquakes in Oregon is reliable only back to the mid-1800s, as there is an insufficient length of record to allow a determination of either the largest magnitude earthquake that could be

expected or the frequency of lesser shocks. Earlier reports extend from 1833 by these reports are dependent of the size and distribution of population in Oregon.

From 1833 to 1962, most earthquakes were located by reports from observers near the epicenter. Some of the larger earthquakes which occurred from the late 1920s to 1962 were recorded on seismographs located at the University of Washington, University of California and Oregon State University. However, because of the distance involved, instrument limitations and other uncertainties, these instrumentally located epicenters are probably as inaccurate as those located by reports from observers.

In 1962, the U.S. Coast and Geodetic Survey established a worldwide standard seismograph station in Corvallis, Oregon. Also, in 1962, a recording station was established 38 miles east of Baker, Oregon. Later stations included Klamath Falls and Portland. A fifth station was established at Pine Mountain in 1969 as a cooperative project of the University of Oregon and the National Aeronautics and Space Administration (NASA). Since 1963, most earthquakes in Oregon have been located with seismograph stations located in Oregon and the Pacific Northwest. Map 6 shows the location of Earthquake epicenters in Oregon from 1841 to 1970.

[Map 6. Earthquake Epicenters in Oregon 1841-1970]

Earthquakes present a much smaller hazard than the three mentioned previously; in the Hines vicinity, few if any earthquakes have been reported by the U.S. Coast and Geodetic Survey.

Based upon past occurrences, land formations, and present state of knowledge, a generalized map showing the Seismic Risk Zones (Map 7) has been drawn up as part of the Hazard Study (1978) prepared by the Disaster Preparedness Planning Section of the Executive Department, State of Oregon. Hines is classified as being Zone 1, which indicates that a major earthquake may produce minor damage.

[Map 7. Seismic Risk Zones for Oregon]

POLICIES

1. The City of Hines shall recognize the development limitations imposed by the carrying capacities of natural resources; i.e. surface and groundwater capabilities, soils, geology, etc.
2. Natural resource physical limitations shall be one of the primary evaluation factors for development approval. The carrying capacity thereof shall not be exceeded.
3. To maintain development costs at a minimum and to encourage the most efficient use of resources by guiding development to lower hazard or physical limitations areas.
4. Discourage development in floodplains, natural drainage ways, on steep slopes, and other hazardous areas.
5. Preserve the holding capacity of the sump area by discouraging development in the area below the 4,145 foot contour line.
6. It shall be the developer/builder's burden of proof for determining the degree of hazard or physical resource carrying capacity.
7. Development within the identified floodway shall be permitted to the extent the hazard is correctable without adversely affecting other properties.
8. Hines shall continue participation in the Federal Flood Insurance Program as administered by the U.S. Department of Housing and Urban Development, Flood Insurance Administration (in accordance with the Flood Hazard Boundary Map).

NATURAL RESOURCES

Fish Resources

The fish resources in the Burns/Hines area are located mainly in the Silvies River system, which is part of the Malheur Lake Basin. Rainbow trout comprise the bulk of existing trout population while bluegill, pumpkinseed, bullhead catfish, white crappie, and yellow perch are the warm water game fish most plentiful in the Silvies River.

Anadromous fish (fish that travel from salt to fresh water) are not present, as this basin is naturally isolated from the ocean.

The most serious limiting factor for game fish populations is inadequate stream flow during the summer months. Several lakes and reservoirs in the Malheur Lake Basin are either too alkaline or suffer greatly from excessive drawdown (mostly from irrigation) to sustain adequate fish production. Other principal limitations of game fish are high water temperatures and competition (for food and other life supporting elements) from rough fish species.

Wildlife Resources

The Silvies River, which passes through the Burns/Hines area, must be considered as part of a larger system – the Malheur Lake Basin. As such, the wildlife that occurs throughout the Basin encompasses significantly more than the urban area immediately surrounding Burns and Hines.

Although water supplies for game fish are critical within this part of the state, the Malheur Lake Basin provides an essential portion of Oregon's wildlife based recreational activity. These activities include hunting for deer, pheasant, quail, chucker partridge, pronghorn antelope, and sage grouse. In addition to these major hunting activities, there is a limited amount of elk hunting in the Silvies River Area.

While efforts have been made to increase the availability of water storage facilities, the full potential for increased population and distribution in the Malheur Lake Basin is limited by the amount of water. Most upland game species are limited to an environment within a mile or so of a permanent water source, and big game are rarely found more than a few miles from water. Furbearers such as muskrat, beaver and mink depend directly on permanent water bodies for food, shelter and escape cover.

Bird and Waterfowl Resources

Within the Silvies River system, which does include the Burns/Hines urban area as well as the entry point to Malheur Lake, there are several species of bird and waterfowl. Listed here are some of the observable species:

Northern Bald Eagle	American Osprey
Goshawk	Western Merlin
Burrowing Owl	Horned Grebe
White Pelican	Great Egret
White-faced Ibis	Greater Sandhill Crane
Grankly's Gull	Forster's Tern

Caspian Tern	Lesser Scaup
Redhead	Bufflehead
Snowy Plover	Long-billed Curlew
Black-necked Stilt	

The rare and endangered bird, mammal and plant species as identified by the Nature Conservancy as part of the Oregon Natural Heritage Program (Harney County – Data Summary, 1978) include:

Birds:

Margined Sculpin

Malheur Sculpin

Long-billed Curlew

Sandhill Crane

Snowy Plover

Squainson's Hawk

Ferruginous Hawk

Burrowing Owl

Mammals:

Merriam's Shrew

Pygmy Rabbit

Washington Ground Squirrel

Plants:

Lomatium Hendersonii

Mimulus Jungfermonnioides

Ranunculus Reconditus

Talinum Spinescens

(Common plant names were not listed by the Nature Conservancy)

The Silvies River flood plain is mostly privately owned and is used extensively for growing hay, consisting mainly of native grasses. Mowing the hay in mid-summer inevitably destroys some of the bird fledglings; however, marsh and waterfowl production has been high. A more significant threat would be a change to intensive agricultural methods, such as dredging, diking, pumping ground water for irrigation, and shifting to alfalfa and other crops that provide no nesting habitat for the waterfowl and other birds. Clearing the sagebrush on dry uplands, and irrigating with alkaline groundwater, allows good harvest only for a limited time; then salt accumulation in the soil results in decreasing production. Loss of very productive bird habitat through the loss of the grassy wetland is the immediate threat.

Discussion

The Malheur-Harney Lake Basin, with the Malheur National Wildlife Refuge (located approximately 20 miles south of Hines) at its heart, is one of the most important bird nesting and migratory bird stopover points in the United States. It is the main resting and feeding area for birds migrating to and from the interior valley wetlands of California. In 1976, this area produced more ducks than all 14 other waterfowl refuges in the Pacific Northwest combined. In addition to sheer numbers using the Basin, the diversity of birds is also exceptionally high with nearly 300 species having been observed here.

The Silvies River Flood Plain represents a substantial portion of the overall habitat used by waterfowl and marshbirds during the spring and summer as described above. Loss of this habitat would substantially decrease waterfowl numbers using this Basin during spring migration; overall, the diversity and productivity of this area as a bird habitat would be severely diminished.

There are several ways to identify, notify and protect those significant natural areas as discussed by the Nature Conservancy. Specific reference is made to the Harney County – Data Summary, Oregon Natural Heritage Program. The Nature Conservancy, as regards to the tools for protection of these natural areas on the part of property owners, state, federal and local agencies, suggest some of the following methods:

Landowner notification	Agreement with Landowner
Registration	Conservation easement
Fee Acquisition	Designation
Dedication	Land Use Control

This Comprehensive Plan does not endorse any other method of protection, but merely mentions the various alternatives for reference.

SCENIC & HISTORIC RESOURCES

Historically, Hines was constructed as a company town to serve the residential needs of the newly constructed Edward Hines Lumber Company during the early years of the Great Depression (1929). The layout of the original plat of the City is unique and historically significant in itself in that it was a town built to serve one industry; the industry that today is the single largest employer in the Burns/Hines urban area and all Harney County.

The Harney County Historical Society in cooperation with the Harney County Planning Commission, has compiled an inventory of historical sites and structures entitled, Harney County, An Historical Inventory. That inventory provides an excellent basis from which to explore further sites and areas. However, the

current Inventory makes no mention of the Hines area as of today (March, 1979). It does, however, recommend an inventory of “Additional Potential Historic Sites” (Appendix A). That list does recognize potential sites within Hines including the following:

1. The Hines Lumber Company
2. The townsite of Hines

In the plan review of 1986 it has been determined that the two sites listed above are general areas and not specific sites. Therefore, there are no known historic sites in Hines as of January 1, 1993.

The current Inventory was conducted in accordance with several site evaluation criteria in addition to field inspection and personal interviews. The evaluation criteria used by “Region 6 of the U.S. Forest Service” were used in conducting the study and resulting Inventory. They were:

1. Factors appropriate for all cultural resources:
 - a. Is it unique? (Is it the only one left, only one ever made, only one known?)
 - b. Is it representative: (Is it one of a group of similar resources in the area? Does it represent a past way of life?)
 - c. Is it over 50 years old?
 - d. Is it associated with a known person or event?
 - e. Does it have integrity? (Has the setting been altered?)
2. Factors appropriate especially for historical resources:
 - a. Does it relate to an historical theme? (The Fur Trade, The Oregon Trail, etc.)
 - b. Is it associated with a particular event or person? (The first ranger station, a battle, a well-known cattleman, etc.)
 - c. Is it usable or adaptable for use?
 - d. Does it have distinctive features (engineering or architectural, etc.)? (Emphasis Added)

Perhaps the most significant criteria here is 1.c.; “Is it over 50 years old?” Both the City of Hines and Hines Lumber Company are just now attaining the 50 year old status. Consequently, any additional inventories or studies conducted subsequent to the original publication date (1978) in the Hines area should be included in and Comprehensive Plan update.

GOAL

To identify and preserve those sites and structures that represent the historical, social, cultural, economic, and industrial heritage and progress of the City of Hines.

POLICIES

1. Upon identification of historic and scenic sites, a comprehensive approach to the protection of the City’s historic and scenic resources coordinating efforts on the Federal, State, County and Local level should be encouraged.
2. The Harney County, An Historical Inventory, 1978, shall serve as the data base from which further inventories and recommendations shall occur.
3. Completion of the historic sites inventory, based upon information gathered in the Harney County, An Historical Inventory (Appendix A) is encouraged.
4. Public education concerning the scenic and historic sites within Hines and Harney County is desirable and is encouraged.

5. Financial and technical support should be pursued in order to establish a program for preservation of Hines' cultural and historical resources through public and private agencies, firms, community groups and individuals.
6. At such time that a historic site is identified the city shall complete the OAR 660-16-000 process specifically addressing the demolition or major exterior alteration of any future sites.

MINERAL AND AGGREGATE RESOURCES

In general, there is limited activity related to mining of mineral deposits in the Burns/Hines area. Those deposits are limited to non-metallic substances. There is a known deposit of scoria or cinders west of Burns and a pumice deposit southwest of Hines. The site that most directly affects the City of Hines in the "Choate" pit to the west of the existing City Limits. Truck traffic from that "pit" uses Hanley Avenue to get to the Central Oregon highway (U.S. 20/395) to the east, thereby channeling non-residential traffic through a residential area of Hines. Map 5 indicates the general location of those deposits.

There are two identified "gravel pits" within the designated Urban Growth Boundary and the "Urban Reserve" area. The quality of these resources, however, is not significant when compared to other aggregate resources located in other parts of Harney County and therefore are not considered as a primary aggregate resource.

Pumice and pumicite range in color from white to various tones of gray and tan. Cinders are almost always dark red to black. They are also commonly more stony than glassy. Pumice and pumicite are used as abrasives for cleaning and fine polishing.

Cinders and pumice are both used as an aggregate in the manufacturing of light-weight present concrete blocks and bulk pours in applications where insulation, fire-proofing, and weight savings are important factors.

GOAL

To identify and, where appropriate, develop mineral and aggregate resources.

POLICIES

1. The location, quality and quantity of aggregate resources shall be identified and plans shall be formulated for the conservation and/or development of such resources as appropriate to meet future needs. When it is determined that a potential conflict exists between residential development and aggregate resource extraction, residential development shall have priority.
2. Development of mineral and/or aggregate resources shall provide plans for the rehabilitation of mined areas.
3. Harney County Zoning Ordinance provisions relating to mineral and aggregate resource extraction shall apply outside the City of Hines but within the UGB and Urban Reserve areas until such time as sites are annexed. At that time the Hines Planning Commission shall review and recommend appropriate zoning for the site.

WATER RESOURCES

Summary

In general, the surface water quality in Harney County is less than excellent. The Oregon Department of Environmental Quality specifically cites "low flows and coliform bacteria" as limiting parameters for the Silvies River in the Statewide Water Quality Management Plan of 1976. This means that these

parameters are not within established water quality standards or desired limits. In addition, “temperatures appear to be undesirably high during the summer months for salmonoids.”

Specifically addressing the Silvies River, the DEQ goes on to state that, “there are no industrial or municipal discharges into the Silvies River. Therefore, the major impact on the (Silvies) river’s water quality is probably from the agricultural activities along it, such as flood irrigation. Overland runoff generally increases the level of turbidity and coliform bacteria in the waterway.”

“Short term turbidity increases may be caused by bank stabilization projects, bridge construction and repair, dredging or other instream work.” (Source: Oregon Department of Environmental Quality, Water Quality Management Plan, 1976)

Existing Conditions

The semi-arid region of Harney County is dependent upon the availability and quality of water. This important resource is used for agriculture, industry, municipal, and recreation purposes.

Precipitation, largely in the form of snow during the winter months, is small in the lower elevation sand moderate in the areas of higher altitudes, i.e. Steens Mountain area.

There is a good potential for additional ground water storage in the basin; the effective porosity factor is moderate, and the water levels are deep in many places. Aquifers are practically untested and unused but have great potential in some sub-basins, such as Bear Valley on the upper Silvies River.

Surface water in Harney County is part of the “Closed Lake Basin.” In theory, it would be possible for Basin waters to flow through the South Fork of the Malheur River to the ocean, but this has not occurred in recent times. Inflow to the system is from precipitation; outflow, or discharge is by evapotranspiration (use of water by plants and evaporated from the soil).

Lakes

There are about 45 lakes and reservoirs in the Malheur Lake Drainage basin, which encompasses much of Harney County. The areas are quite variable depending upon the amount of rainfall occurring each year. Malheur Lake, south of Hines, has an area of about 64,000 maximum surface acres when it is near its maximum elevations, and Harney Lake has an area of 33,000 maximum surface acres; both of these lakes have been known to be dry in years of severe drought.

Water flows out of Malheur Lake only when its elevation exceeds 4,093 feet (approximately) and its outflows are discharged into Harney Lake. (For specific information, the reader should consult the U.S. Department of Housing and Urban Development Federal Insurance Administration Flood Hazard Boundary Map for Harney County, April 18, 1978, Panel 410083 0035A). The frequency with which high flows to Malheur Lake have occurred has been such that it was waters that are not highly saline. Harney Lake, however, has no consistent outflow, losing water only by evaporation (except in rare instances), with the result that its waters are highly saline; there is no fish life in this lake.

Present Water Requirements

Irrigation

Irrigated agriculture in Harney County has its beginning late in the nineteenth century, and by 1902 about 74,000 acres were under irrigation; by 1919 the irrigated acreage had increased to about 119,400,

reaching 126,000 acres in 1929. The irrigated area in 1964 amounted to about 140,000 acres. The present distribution of these acreages is about 60 per cent in the Silvies River basin, 30 per cent in the Donner and Blitzen basin, and about 10 per cent in the Silver Creek basin. Currently, there are about 145,000 acres under irrigation in Harney County; 110,000 acres under natural or "wild-flooding" and 35,000 acres irrigated through more sophisticated methods, i.e., sprinkler systems.

Most of the irrigation is accomplished by wild flooding in the early spring when the water is available. Because of the limited supply, it is estimated that the depletion is about 40 per cent of that which could occur and is estimated to be 0.6 acre-feet per acre; thus the depletion due to irrigation was estimated to have been about 84,000 acre-feet in 1964.

Municipal, Domestic and Industrial

Next to irrigation, the largest user of water is the Snow Mountain Pine Limited Inc., being the largest industrial user also. No accurate measure of industrial use is available, but the lumber mill south of Hines has three large-capacity wells, two of which pump nearly continuously to supply water for plant operation and to sprinkle the large log deck always present. Outflow from the mill operation is used to irrigate an adjacent hayfield and meadow.

Groundwater

Groundwater is used widely for domestic supplies at many ranches throughout the area. A number of suburban homes a short distance from Hines have individual wells for domestic supply. Much of the stock water used in the area also comes from wells, particularly in the areas east and south of the "island" between the two Silvies River branches. Even near the river, some stock water may be supplied by wells, especially during the summer and autumn.

Groundwater occurs beneath the land surface in an aquifer (a permeable formation of consolidated or unconsolidated rock material). In places it may be confined under hydrostatic pressure by less permeable overlying strata (in which even the pressure will cause the water to rise in a well or even flow at the surface), or it may be unconfined (water level in the well the same as in the aquifer).

In this "closed" hydrologic system of the Harney Valley, 1) the deeper confined aquifers remain filled at a volume that is essentially constant, 2) the shallower unconfined aquifers, over a term of years, remain filled to an average water-table stage which is locally related to the stage of the Silvies River, and 3) over the same term of years, recharge must be equal discharge. For such a system, water moves through the shallow, unconfined zone to recharge deeper, confined aquifers in recharge areas. In discharge areas, the confined aquifers lose water upward through the unconfined aquifers.

The ultimate source of ground water in the area is precipitation on the surface of the catchment area. Recharge to the ground to the ground water body results from infiltration of precipitation on the land surface and from percolation from streams. At the present time, the water quality of the City of Hines is considered excellent.

As in most areas of Oregon, water levels in wells in the Harney Valley fluctuate seasonally, being highest in early spring and lowest in the late summer and autumn. During wet seasons, water levels rise largely in response to additions of water to storage, and water levels decline owing to the movement and withdrawal of water by natural discharge and pumping during summer.

Three deep wells furnish Hines with municipal water. Hines has an elevated storage tower to maintain water pressure. Thermal artesian water at temperatures of 70 to 80 degrees Fahrenheit underlies an area of several square miles near Hines.

According to the 1973 report (Ground Water Levels, 1968-1972) by the State Engineer, "some decline of artesian pressure near Hines is expected."

In general, from the information available, it appears that the Harney Valley, which includes Burns and Hines, can sustain additional groundwater developments without serious overdraft.

Municipal use and use in light industry was estimated to be about 250 gallons per capita per day (gpcd).

POLICIES

1. The City will continue to maintain the present water quality that exists in the area.
2. Development in the City of Hines shall comply with State and Federal Water Quality standards.

SCHOOL FACILITIES IN BURNS, HINES AND HARNEY COUNTY

The City of Hines has one school facility located within the City Limits: Hines Elementary School. "Hines Elementary School, District No. 3", including a kindergarten program. The school has certified teachers and is located in the western portion of the City of Hines at the end of West Barnes Avenue.

There are 12 classrooms in the existing building with other facilities available for library use, music activities, physical education programs and computer room.

The Hines Elementary District pays tuition to the Burns Elementary District in order to have the 7th and 8th grade Hines students attend Lincoln Junior High School in Burns.

The Hines Elementary School District offers programs in special education, music, library and physical education. The Hines Elementary School plans no new facilities in the immediate future, however, an 11- acre site was purchased several years ago for future expansion or relocation. That site is located next to the public Valley Golf Course.

Due to the overall size of the County and the vast distances involved, the education systems in Harney County are related, either by attendance or by financing programs. What follows is a description of the education facilities and programs in the remainder of the County.

Public education in Harney County is provided by 11 different school districts. Some administrative and support services are provided by the Harney County Education Service District (E.S.D.). A description of each of the school districts and facilities follows (NOTE: With few exceptions, student attendance and figures are for the 1992-93 school year):

ELEMENTARY SCHOOLS

Filmore Elementary School

Kindergarten – 3 AM and PM classroom sessions

Classroom total – 4

Number of teachers – 3

Number of students – 98

Ave. student/teacher ratio – AM session 15.33:1, PM session 15.33:1

Slater Elementary School

Junior 1st – 1 classroom

Blended – 2 classrooms

Grade 1 – 4 classrooms

Grade 2 – 3 classrooms

Grade 3 – 3 classrooms

Total Classrooms – 13

Number of teachers – 14

Number of students – XXX

Ave. student/teacher ratio – 21.28:1

Lincoln Junior High School

Grade 7 & 8

Number of teachers – 15.5

Number of students – 177

Ave. student/teacher ratio – 11.41:1

Elementary Enrollment

Kindergarten – 98

Grade 1 – 122

Grade 2 – 92

Grade 3 – 84

Grade 4 – 90

Grade 5 – 97

Grade 6 – 90

Grade 7 – 84

Grade 8 – 93

Total – 850

The Junior High School facility does not have significant recreational areas, especially for field sports, and depends upon the grounds at nearby Slater Elementary School when this type of space is used. The Junior High also uses the Slater cafeteria and music facilities.

HIGH SCHOOLS

Burns High School

Burns

339 students

This is a four-year high school. Two counselors are also on the staff.

The Burns High School offers remedial programs and is very strong in vocational education programs, such as business, mechanics, metal and wood shops. Art and home economics are also strong programs at Burns High School. The school owns its own observatory which is operated by the high school astronomy club.

An accelerated learner program is now offered that concentrates on college preparatory classes. Currently, approximately 30 per cent of the Burns High School graduates go on to college.

The Burns High School has had a stable student population over the past few years. The District does not anticipate any significant increase from the area, based on current student loads in the elementary schools and junior highs. There may be some in-migration that will affect the student population, but that has not been projected or dealt with by the District. At this time, few new facilities or capital improvements are planned.

Crane Union High School No. 1

28 miles southeast of Burns

85 students

Five-person Board of Directors

This is a boarding high school with dormitories to house students throughout the week. Crane is the only public boarding high school in the country, with the distance from home to school making this necessary. Crane Union High School shares the same administrator with Crane Elementary District No. 4. The board members represent the rural areas of the county attendance area.

The High School has 12 classrooms with 11 teachers. The school had 11 students in 1969 and 85 during the 1976-77 school year, indicating an average annual increase of 4 pattern of an approximate 25% increase over the next 5-10 years. The Crane Union High School District has an 8:1 student/teacher ratio.

The high school facilities are designed to accommodate 108 students, so there is room for the projected expansion. However, close recreational space, which is shared with the Elementary School, is limited. The District has not planned for any capital construction in the near future.

PARKS, RECREATION AND OPEN SPACE

An integral part of the character of any city is the areas set aside for recreation and aesthetic enjoyment. Hines is blessed in this regard because of its location in the immense vastness and beauty of the open space provided by Harney County. Access to spectacular areas of natural beauty is relatively easy for the citizen of Hines, with only short distances to the Blue Mountains, Malheur National Wildlife Refuge, and Steens Mountain. Even much closer to the city are the hills to its west and the flood plain area of the Silvies River to the east.

Hines has a considerable amount of centrally-located park space that was set aside in the original plan of the city. The area west of the highway has many trees, some picnic benches and tables, playground equipment, and tennis courts. The eastern portion is the site of the fire department and city hall, however, most of the area is vacant. The continued development of the four quadrants of this central park space, utilizing more trees, recreation equipment, park benches, etc., would provide an even stronger focal point for Hines that could be readily enjoyed by all the city residents, as well as enjoyed and appreciated by those traveling through the city.

Hines residents also have easy automobile access to the several park facilities and to the commercial recreational facilities located in Burns. The nine-hole public golf course, located in the flood plain area, provides an important development recreational facility for the citizens of these two cities.

Table 3 lists those recreational facilities that are available not only in the Burns/Hines area, but throughout Harney County.

[Table 3. Inventory of Recreational Developments]

GOAL

To develop and maintain a variety of park and recreation facilities to serve the recreational needs of the City of Hines and the urban area.

POLICIES

1. When the community determines there is a need for such facilities, areas be required for neighborhood parks.
2. Neighborhood parks should be within walking distance from residential areas they are intended to serve, and that the sites not be separated from the service area by major barriers to pedestrian traffic.
3. Park and recreation facilities be developed to meet the needs of all age groups within the community and the urban area.
4. Encourage the further development of a bicycle/pedestrian path from Burns to Hines in addition to the existing path along U.S. 20/395.
5. Attention should be given to possible park sites to the west of the existing City limits but within the Urban Growth Boundary.

PUBLIC FACILITIES AND SERVICES

GOAL

To provide adequate public facilities and services to meet current and potential community growth.

General Discussion

Police Services

The City of Hines Police Department is located in the Hines City Hall. It has two officers and three patrol vehicles. The department is actively involved in traffic control, crime prevention and investigation. Also, an extensive school liaison program has been undertaken with policemen giving programs on various aspects of safety and law to schoolchildren of all ages. At this time, they patrol 16 hours out of the day.

The police department is aware that Hines has a faster growth rate than Burns or the rest of Harney County. Commercial expansion in its northern portion near the High School and continued residential growth put much greater demands on the department. New commercial facilities sometimes bring demands on the police force that greatly cut into the existing efficiency and time availabilities in residential areas. There is the possibility that new commercial facilities bring increased amounts of theft and vandalism, and would suggest that commercial establishments have burglar alarm systems which would require around the clock police monitoring.

POLICY

The existing level of police services appears to be adequate, but with projected increases in population and intensified development, an increased level of service should be anticipated within a few years.

Fire Department

The Hines Fire Department consists of 20 volunteer firemen, of which there are the Fire Chief, Assistant Fire Chief, a Captain and two Lieutenants. There are never less than 18 men in the department and at least 80 per cent of the time is at full strength with 20 volunteers.

The City of Hines has an insurance rating of "Class 5."

The Hines fire dispatching is done through the Burns police office in Burns.

The equipment consists of:

- A. 1963 fire truck with a 1,000-gallon water tank, equipped with a 1,000-gallon per minute pump and a 250 gpm booster pump, with all fire hoses and equipment that is required.
- B. 1974 fire truck with a 750-gallon water tank; 750 gpm pump; 250 gpm booster pump; hoses.
- C. 1983 Ford Brush Truck with a 300-gallon water tank.

The fire station is a two-story wood frame building. It contains two bays for fire trucks, storage facilities and has one of the city wells (water) and a pump room. The availability of water at the pressure needed for service seems to be adequate in all but the most extreme cases.

There are occasions where there is a deficiency in manpower due to the nature of the volunteer fire department system. This occurs because most of the firemen are mill workers. Should a fire occur during mill working hours, the department is short-handed until the workers arrive.

Unless there is a large unexpected increase in the population of Hines, the existing facilities and equipment, with proper maintenance, care, and periodic replacement should be adequate for years.

There is a need to increase that available manpower over the next few years to keep up with expanding population. As Burns and Hines continue to grow, perhaps they could consolidate, or form a fire district, taking in the unprotected area surrounding both cities. They would then be able to support and maintain a partially paid department, perhaps to the extent of lowering the insurance rating.

The oldest fire truck is now 30 years old. A sum of money should be put in a reserve fund every year to go toward the purchase of a new fire truck in the future.

POLICIES

1. The Hines Volunteer Fire Department should plan for an increase in available manpower over the next few years.
2. The City of Hines and the City of Burns should consider the consolidation of fire protection services through the formation of a fire protection district.

Medical and Health Facilities

All medical and health facilities for the Harney County area are located in the County Seat of Burns. Below is a summary of the services provided by those facilities.

- A. Harney District Hospital
The Harney District Hospital is a 44-bed, short-term general hospital which provides medical, surgical, and obstetrical care. It is a well-equipped facility with recently expanded laboratory capabilities. The medical staff consists of four resident physicians and an employee staff of 70. Two important features of the hospital are the Intensive Care and Coronary units. Emergency air service (Air Life) is available to the hospital which also contains a small part-time pharmacy.
- B. Health Care Professionals
The Burns/Hines/Harney County area is served by the following health care professionals:
 - 1) Four physicians
 - 2) Four dentists
 - 3) One optometrist
 - 4) One physician assistant
 - 5) One nurse practitioner
 - 6) One mental health nurse practitioner
 - 7) One (part-time) psychiatric consultant
 - 8) Two full-time mental health clinicians
 - 9) Three to five mental health clinicians
- C. Harney Counseling and Guidance Service
Counseling and guidance services are available on an "ability to pay" basis.
- D. Alcohol Treatment
Alanon, Alateen, and Alcoholics Anonymous groups are located in the Burns/Hines area. Service is available to any person seeking help, 24 hours a day. An alcohol treatment unit is available at the Harney County Counseling and Guidance Center.
- E. Senior Citizen Center
There is a center for seniors located in Burns. The center provides entertainment, mini-clinics, health, legal advisory counseling, and various other services.
- F. Health Care Center
Burns Health Care Center, Inc. has a 49-bed facility; 33 beds for intermediate care and 6 beds for mental and emotionally disturbed residents.

POLICY

The quantity and quality of medical and health facilities appear to be adequate to meet existing needs within the community, but should be re-evaluated at the next Comprehensive Plan Update.

Library

Harney County Library, built in 1969 and located in Burns, distributes books throughout the County. Material is available from the Oregon State Library in Salem on a loan basis. The Library provides a Children's Story hour for pre-school age children and the capability for art or craft display, space permitting; availability of 20 art reproductions for loan; historical data and an Oral History Project.

Museum

Harney County Museum is located next to the County Library in Burns and has a good display.

Solid Waste Disposal & Recycling

The largest amounts of solid waste are generated in the urban areas. Eighty-five per cent of Harney County's solid waste is generated in the Burns/Hines area.

1. Location

The Burns/Hines solid waste disposal site is located about one mile west of Burns. It is owned and operated by a private individual with a franchise on waste collection in Burns and Hines.

2. Operations and Collection

There are collections made by the franchise but not all individuals in the area use it.

3. General

This site is geologically suitable. Soils are tuffaceous, silty sediments of low, hydraulic conductivity and are unsaturated. Ample cover material, mostly from pit excavations, is available. Sufficient ground (160 acres) is available at the site for further excavation as necessary. With the amount of land at this site, it should last in excess of 25 years. With the anticipated facilities for recycling and recovery, the life of the waste disposal site, or the potential use time for the facility could be lengthened beyond the estimated 25 years. The pit is served by all-weather paved access road. Drainage water is diverted away from the pit by berms constructed where the pit is excavated. A "blow fence," designed to prevent flying debris from nearby properties has been constructed on a significant portion of the site. The pit is being covered about three times a week during the summer; once or twice a week in the winter.

4. Units Served and Waste Received

This site receives about 30.75 cubic yards of compacted waste daily, serving over 125 commercial and public units and 1500+ residential units and urban units in Burns/Hines.

POLICY

1. Solid waste disposal facility west of Burns appears to be adequate to meet the needs of the urban area over the next several years, but should be reviewed at subsequent Comprehensive Plan Updates for negative impacts on urban growth.

2. The City of Hines shall continue to coordinate planning with Burns and Harney County.

TRANSPORTATION

Streets

The City of Hines street pattern is somewhat different than other communities throughout the country, or for that matter, the State of Oregon. The street pattern is one of curvilinear streets combined with rectangular blocks. Map 8 illustrates the unique layout of the street in Hines.

[Map 8. Street & Transportation]

The main thoroughfares of the central business district are U.S. 20/395, West Circle Drive and East Circle Drive. The majority of the through traffic is on U.S. 20/395, which bisects the town and more or less parallels West and East Circle Drive.

All of the streets in the City of Hines are paved. The right-of-way for these streets occupy about 145 acres or approximately 35% of the total developed area in Hines. Most of the streets in Hines have a 60 foot right-of-way, with paved surfaces to a width of between 18 and 20 feet, with a few paved to a width of 40 feet. Most of the streets in Hines are without curbs and gutters.

The cost of street paving in Hines is paid for out of the City receipts from the state allocated gasoline tax. As a result of the unique development and different street standards, this source has provided enough revenue so that most of the streets in Hines have been paved as it has developed. The traffic counts for the Burns/Hines area are listed below. Although a majority of the traffic counts are for the Burns area, the total traffic pattern of Burns has a direct or indirect effect on traffic patterns in Hines.

[Table 4. 1977 Traffic Volumes]

Recent Major Improvements

West Monroe Street in Burns is now a four-lane thoroughfare from its intersection with Broadway to Hines Boulevard, continuing as Oregon Boulevard to the south city limits of Burns and into Hines. This 1.34 mile section of highway recently was improved in a major project costing in excess of \$750,000, and included relocating the existing bike path from the east side of the highway to the west side.

Airports

Burns

- A. The Burns Municipal Airport consists of two hard surface (asphalt) cross runways of 150 by 5,100 feet. It is located six miles east of Burns at an elevation of 4,141 feet.
- B. "Davis." Elevation 4,141 feet. Private 2,600 by 60 feet dirt strip located two miles east of Burns

Hines

The "Choate" private airstrip is located immediately west of the Hines City Limits and is approximately one-half mile long, with a "cinder" surface.

Railroad

Burns is served by a spur of the Union Pacific Railroad from its main line in Ontario, 130 miles to the east. The railroad has not provided any service to the Burns/Hines area since 1983 due to the high water level of Malheur Lake. As of April 1993, the railroad has been removed, with no future plans to rebuild.

Bus Service

1. Municipal

At this time there is no municipally operated bus line in the Harney County area.

2. Commercial

There is one private bus company serving the Burns/Hines area: Trailways. It offers passenger and express service west to and from Bend and east through Harney County and Malheur Counties to Nyssa, Ontario and Vale on U.S. 20. There are no plans for expansion of Trailways service at this time. This is the only form of passenger carrier service in Harney County.

3. Senior Citizens Center Bus

There are two buses on an "on-call" basis to serve the needs of the senior citizen segment of the local population in Burns and Hines who do not drive a private automobile.

Taxi Service

There is no service available throughout Harney County at this time.

Motor Carriers

Three freight lines provide service to the Burns/Hines area.

United Parcel Service (UPS), Federal Express and Pony Express provide service to Harney County.

Bike paths

The first bike path (asphalt) in the State of Oregon was constructed in the 1960's parallel to U.S. 20/395 from central Hines to Burns (near the "Les Schwab" store) for a distance of about 2 miles. It is the only designated bike path in Harney County.

As part of the 1978, 1.34 mile improvement of U.S. 20/395 from near the Hines city limits to N. Diamond Avenue in Burns (to a four lane facility with storm sewers and curbs), an eight-foot concrete bike path was constructed along the west side of the thoroughfare. The existing asphalt bike path along the east side of U.S. 20/395 ends near the beginning of the improvement necessitating crossing of U.S. 20/395 to the newer concrete bike path on the west side.

It is anticipated that as the portion of U.S. 20/395 is improved in Hines, the existing asphalt bike path will be located from the east side to the west side to tie in with the recently completed section in Burns.

Bike paths on a county-wide basis are somewhat impractical for Harney County due to the sparse population and vast distances between population concentrations, other than Burns/Hines urban areas.

GOAL

To provide and encourage a safe, convenient and economic transportation system to serve the needs of the citizens of Hines, the residents of the urban area, and Harney County that will meet the requirements of the Oregon Transportation Plan and the American Disabilities Act (ADA).

POLICIES

1. Maintain and upgrade the overall transportation system within the city to meet present and future needs.
2. To provide, at a minimum, paved streets within the community.
3. Design of new roads, streets and thoroughfares should preserve and enhance natural and scenic resources.
4. Commercial bus service to areas outside of Harney County should be retained.
5. At a minimum, rail freight service to Harney County should be retained.
6. A bike path should be completed from central Hines to central Burns.
7. An "Airport Master Plan" should be developed to assure the Burns/Hines urban area of adequate air service in the future.
8. All future improvements of existing streets shall comply with the standards set forth in the subdivision ordinance.
9. Shall encourage State Highway Division to improve Highway 20/395 and provide for a pedestrian overpass near the elementary school.
10. Designation of any new truck route in the city limits shall be reviewed by the City.
11. Shall encourage participation in the Burns/Hines landscape plan for beautification.

EXISTING WATER SYSTEM

System Description

The present water system serving the City of Hines is shown on Map 9. The system is supplied by three wells. Well No.1 is located next to the water tower on the hill west of Hines. Well No. 2 lies in the old City Hall building (maintenance shop) in the town center at Barnes Avenue and Highway 20. Well No. 3 is located on Lot 12, Block 1 of the unplatted "Choate Tract" just west of the present Hines City Limits. Table 5 below outlines present capacity, depth, elevation, etc., of the three wells:

[Table 5. Well Information City of Hines Water System]

[Map 9. Sewer & Water]

Water from Well No. 1 is pumped directly to a 250,000-gallon elevated steel storage tank. The tank and well lie on an eight-acre tract of City land, providing the only storage in the Hines system. Overflow elevation of the tank is approximately at the 4,445 foot elevation, therefore, making the reservoir capable of serving all areas below the 4,435 foot elevation (approximately). This elevation is the approximate upper limit of the water system without additional pumping, storage or pressure systems.

The backbone of the distribution system is the 8-inch main running from the Tank and Well No. 1, east along Barnes Avenue to the east City limits. Well No. 2 connects to this line. The remaining system mainly consists of 6-inch lines branching off of the main, reducing in size to 4 and 2 inch lines. No extensive grid or looping has been developed with the distribution system. An 8-inch main runs between Well No. 1 and Well No. 3, continuing north through "John Woods Addition" to "Pleasant Valley Addition." The line connects with the Burns Water System at the City Limits on North Saginaw Avenue.

Service Area

The City's current water service area is shown on Map 10. This assumes all areas within 250 feet of existing mains can obtain adequate water service. In addition, the City presently provides water service to immediate areas outside the City. This is mainly in the areas south and southeast of the present City Limits: Skelton, Revak, and Choate Tracts, scattered houses and the gas station on W. Byrd Avenue.

[Map 10. Existing Water Service Area]

Service Levels

As controlled by the elevation of the water tower, the upper limit of the existing service is approximately at the 4,345 foot contour. This line is also shown on Map 11. The lowest elevation in Hines is about 4,140 feet, near the railroad tracks on the east boundary on the City. Table 6 below summarizes the existing service tract and includes future levels for the area west of the City.

[Table 6. Hines Water Service Levels]

As can be seen from the data above, existing Service Level No. 1 suffers from high pressures at its lower elevation. Normal criteria calls for a maximum static pressure in a system at approximately 100 psi (pound per square inch). Pressure reducing valves are installed where pressures may exceed this limit. For Hines, this would mean the installation of the pressure reducing station at the 4,125 foot level.

Existing Water Usage

To date, the City of Hines provides water service to 540 unmetered accounts as shown below:

[Table 7. Water Accounts]

Commercial users, such as restaurants, service stations, and motels use significant amounts of water, but others, such as barber shops, stores and offices, have a relatively low water demand.

Determining water usage for the City is difficult as: 1) users are unmetered, and 2) there are no master meters at the wells. In order to determine an approximate system demand, water usage from comparable communities without meters is used to determine present demands on the Hines system. For the purpose of this report, it is assumed that average per capita water usage is 250 gpd during the summer and 150 gpd during the winter. Similar communities that have individual meters normally use approximately 100 gpd per person. Based on this, estimated water demands are shown below:

[Table 8. Present Water System Demands]

WATER SYSTEM PLANNING CRITERIA

Source of Supply

The existing wells are believed to be capable of supplying water at a rate of about 2,600 gpm (3.74 gpm). Maximum daily demand at present (1995) is estimated at 771,300 gpd. To be considered adequate, the system should be able to provide the maximum daily demands while providing fire flows. This may be done a number of ways. For example, the system could be designed to meet those needs entirely from its sources of supply, or partly from supply and partly from storage.

Storage

Distribution system storage requirements are determined primarily by required fire flows plus some additional capacity for meeting peak hourly demands and allowance for emergency conditions. The existing elevated water tank overflow elevation (4,445 feet) is designed to provide service pressures between 43 psi and 130 psi. Ideally, a second reservoir at an elevation of 4,400 feet should be provided on the opposite side of the system, which would help minimize fluctuations in pressure during periods of high demand. Unfortunately, no such reservoir site exists either north or east of town. The only location at this elevation line is approximately $\frac{3}{4}$ of a mile west of the Snow Mountain Pine Ltd plant off of Forest Road No. 19. This site, however, is fairly well isolated from the rest of Hines.

Distribution System

Distribution grid pipe lines are designed to deliver at velocities in the range of 4 to 6 feet per second. Velocities in this range generally produce the most economical balance between pumping power costs and pipe line costs. At a velocity of 5 feet per second, capacities of various pipe sizes are shown below:

<u>Pipe Diameter (inches)</u>	<u>Capacity (gpm)</u>
2	50
4	200
6	450
8	800
10	1,250

Pumping Stations

Pumping stations are used to either boost flows and pressures in areas where pressures are low, or to transfer water from one service level to the next higher level. Capacities of pump stations are determined by the maximum daily demand in the area the station serves. Dual pumps are considered the minimum necessary for reliable service along with provisions for a standby power supply, such as portable generators.

Valve, Hydrant, Pressure Reducing Areas

This report is not intended to discuss distribution system details to any great extent. Such things as hydrant spacing, valve arrangements, stub outs for future main extensions, "blow-offs" at low points, and air/vacuum valves at high points of the distribution system should, however, be considered during the preparation of construction plans and specifications.

Easements, Land, Water Rights, and Permits

The water distribution network typically mirrors the road or street network of a city for obvious reasons. Future or proposed pipeline improvements should follow existing rights-of-way whenever possible. In areas where no public roads exist, easements need to be acquired. Easements for pipelines should be a minimum of 10 feet in width and preferably 15 feet for lines larger than 10 inches in diameter. Temporary easements should be acquired in addition to permanent easement, wherever possible, covering the anticipated construction period. This practice will avoid many conflict between the contractor and property owners and will likely decrease bid prices for the work. Easements should

provide the City rights of access to the pipeline at all times and at any time, in case of emergency. Permanent structures should be prohibited over the easement area.

Land and property acquisition will also be needed for such improvements as wells, reservoirs, and pump stations. Access rights-of-way and easements should also be provided to these areas.

Water rights for the withdrawal of ground water also have to be acquired from the Oregon Department of Water Resources. Permits for highway, railroad and river crossings are generally required.

WATER SYSTEM

Goal

1. To maintain and enhance the quality of water service to all customers.
2. To conserve water and encourage its wise use.

Policies

1. Development of land uses that require a high water consumption should be considered only after determining the impact on the existing system capacity.
2. All land use developments are required to install distribution lines that will provide at least minimum water pressure and flow for the proposed land use and future land uses.
3. To maintain adequate water flow and pressure, the City of Hines is encouraged to continually strive for a “loop system” and standard pipe sizes.
4. Develop supply, storage and distribution facilities that are able to satisfy insurance fire flow requirements and provide a given reserve for maximum daily use and emergency needs.

EXISTING SEWER SYSTEM

Present Sewer Service Area

The City of Hines presently serves the entire City limits, plus limited acreage outside the City.

The City reports 509 sewer accounts as shown in the table below.

[Table 9. 1978 Sewer Accounts]

The present sewer service area is shown on Map 9.

Sewage Collection System

The majority of the collection pipe was installed in 1955. This piping is concrete sewer pipe with rubber gasket-type joints. Table 10 below shows the size and footage of the sewer mains.

[Table 10. Pipe Installation Hines Sewer Collection System]

The length of servicing piping is estimated as follows:

509 service connections x 60 feet typical side sewer reach = 30,540 feet.

Pumping Stations

One pump station also serves the Hines area. This station is located on the sewage lagoon site and pumps all sewage from the City into the lagoons.

[Table 11. Existing Pumping Station]

In the design of this pump station, room was left for a third pump, which could be installed later.

This new station was installed in 1977 as part of the City of Hines Sewage Treatment Plant Improvements.

Sewage Treatment and Disposal

Sewage treatment is provided by two stabilization lagoons, in series followed by chlorination. Raw sewage is pumped from the sewage lift station through an 8-inch force main to a flow metering station. Here, the sewage flows are measured, then flow by gravity into Lagoon No. 1. Lagoon No. 1 overflows into Lagoon No. 2. The treated sewage then enters a chlorine contact tank where chlorine is added to the water for disinfection. The chlorine tank provides the required 60 minutes detention at a flow of 324,000 gpd. The chlorinated effluent, after being measured again, flows out onto an area west of the lagoons where it seeps into the ground for final disposal.

The stabilization lagoons total surface area is 21.6 acres. Lagoon No. 1 at the original pumping station was constructed in 1955. In 1969, the Edward Hines Lumber Company constructed Lagoon No. 2. A pump station and 6-inch force main were installed. During the summer of 1977, the existing Hines pump station was upgraded and the chlorinator facilities were constructed by 75 per cent grant monies from the Environmental Protection Agency. These upgraded facilities are designed for a population of 2,700 persons. Table 12 provides information about the various components of this system.

[Table 12. 1978 Flows and Waste Loadings]

SEWER SYSTEM PLANNING CRITERIA

Service Area

Map 11 shows the present sewer service area. Also shown is the approximate limits of existing gravity service. Areas inside this line could be served by extensions of existing sewer mains and laterals. Areas outside this line would have to be served by either: 1) installation of major trunk lines to these areas, or 2) area pump stations with pumping to existing mains.

[Map 11. Existing Sewer Service Area]

Sewage Collection System

1. General

Systems for sanitary sewage collection receive and conduct the various sewage wastes from a given area to the point of treatment. A gravity collection system conveying sewage flows to the treatment plant for ultimate disposal is the most desirable.

Sanitary sewer systems generally consist of a network of interceptor, trunk and main sewers. These sewers receive the sewage flows from smaller lateral sewers and conduct the flows to the treatment site. Trunk and main sewers are generally 10 inches in diameter or larger.

Waste flows are highly variable. It is vital that a sewer system be designed to maintain a sufficient velocity to keep solids in suspension. In order to achieve this, sewers are constructed with property slope to assure adequate velocities. Manholes for access points are installed in the sewers at frequent intervals to provide for removal of obstructions or blockage when and if they occur.

2. Standards for Sanitary Sewers

The Oregon State Department of Environmental Quality (DEQ) has published policies covering the preparation of plans for sanitary sewer systems. The principal DEQ standards are:

- a. All sewers, excepting dwelling connections, shall be at least 8 inches in diameter. Short runs of 6-inch pipe will be allowed in the upper sections of any line less than 250 feet in length.
- b. The minimum grade allowable is such that the velocity of the sewage flow is not less than two feet per second.
- c. Manholes must be installed at each change in grade or alignment, or at intervals not to exceed 500 feet.
- d. Sewers designed to carry both storm runoff and domestic sewage will not be approved for new construction.
- e. Sanitary sewers and domestic water lines should not be laid in a common trench.
- f. All sewer joints should be water tight so as to exclude as much storm and groundwater infiltration as possible.

3. Sewer Capacity

Sanitary sewer systems, particularly sewer mains, are commonly designed to provide capacity for the peak estimated flows from a completely developed area. Sizing of sewer mains to serve the ultimate development of an area is quite logical, since installed sewers have a fixed capacity which cannot be expanded without complete replacement or installation of new parallel sewers. Both of these methods are costly. Economic considerations usually dictate that the initial design provide capacity for the estimated ultimate sewage flows. However, in this period of high interest rates, careful analysis of the cost of ultimate facilities versus smaller initial lines with further parallel relief lines must be made. It may be more economical in some cases to install facilities in parallel stages when great oversizing is required to provide for ultimate area needs.

In order to ensure that sanitary sewers remain capable of handling the sanitary wastes in their respective areas, they must be constructed in such manner as to prevent excessive infiltration of groundwater. Regardless of the material used in construction, some storm water enters the system through the tops of manholes, through illegal drainage connections and because of substandard construction of service lines from the lateral sewer to the house connection. By the time the area is completely developed and the maximum waste load is placed on the system, the sewers will probably have been in use for many years. Because of the natural deterioration of the sewer pipe and joints, the design allowance for groundwater infiltration must be that anticipated for a sewer line 50 to 75 years old. The leakage allowance at the time of construction must be much less than the design allowance.

Sewage flow, in most cases, can be directly related to domestic water use. From a review of domestic water use throughout the Pacific Northwest, design criteria have been developed for residential areas in terms of per capita flow per day. Peak flows from small areas may be high as 350 gallons per day (gpd) per person. As the contributing area increases the peak flows per person tend to decrease. The Oregon DEQ in their sewer system design standards recommends laterals and mains be designed for 350 gallons

per capita per day based on the total estimated future population. Sewer trunks and interceptors should have capacity to at least 250 gpcd. This basic design criteria is summarized below.

[Table 13. Sewer Design Criteria]

Experience has shown that normal design criteria for residential development result in sewers with adequate capacity for most industrial and commercial establishments. There will, however, be special cases in which larger quantities of liquid waste are discharged to the sewer system. These must be considered individually as they occur. Examples are canneries and similar food processing industries.

4. Sewer Location

Since it is necessary that sewers flow downhill, it is not always possible to locate them in public rights-of-way or even in undeveloped sections of private property. Whenever possible, sewers are located in the shoulders of roadways where they can be constructed with a minimum of damage to pavement and a minimum disruption to traffic. When there are curbs, water lines, or other obstructions along the shoulder, the sewer must be located elsewhere, usually in the roadway.

In hillside development, houses are frequently located much lower than the roadway. Service to these houses from the roadway would require a sewer too deep to be economically feasible. Normally, the most satisfactory solution is to construct a sewer along the back property line of low-lying residences. This sewer is often required in addition to a line which serves residences on the higher side of the road.

When it is not practical to provide gravity sewer to a building, the City could consider the following:

- a. Allow the building to continue using a septic tank.
- b. Require that the owner install and maintain an automatic sewage pump that lifts the sewage from the building up to the sewer.
- c. Install individual pumping units to each building and include the cost as a part of the entire system.
- d. A modification of Alternatives A and B above would call for a pump to lift septic tank effluent up to the sewer. A less expensive pump, pumping only liquid wastes from the tank, can be utilized.

5. Pump Stations

In some cases, it may be necessary to use pump stations at low points in the collection system. In general, two types of pump stations are used. They are:

- a. A factory-built type (wet-pit and dry-pit) which is an all steel or fiberglass unit shipped to the jobsite as a completely prefabricated unit is preferred for most installations of substantial size.
- b. For small capacity requirements and limited budgets, a wet-pit type installation is popular. This type contains a submersible pump with automatic controls, level versions and the components necessary for basic operations.

A third type, similar to the existing pump station at the sewage lagoon, is custom built pump stations. This usually involves considerably high capital expense due to design and construction requirements.

Sewage Treatment and Disposal

1. Sewage

A community's sewage contains a variety of wastes that vary in amount and composition from hour-to-hour throughout the day. The concentration of domestic sewage is generally about the same in each community, if infiltration rates are normal. Industrial waste, such as that discharged from canneries, packing houses, plywood mills, and large creameries, increases the strength of sewage. For example, some wastes discharged from canneries are significantly more concentrated, gallon for gallon, than domestic sewage. The concentration of sewage can be measured by many tests. The principal tests are suspended solids and the bio-chemical oxygen demand (BOD). Normal domestic contribution of BOD and suspended solids are 0.

2. Treatment Processes

Sewage treatment can be divided into three distinct processes, termed primary, secondary and tertiary treatment. Primary treatment involved the removal of suspended and settled solids by screening, grinding, sedimentation, or flotation. Primary treatment processes will normally remove 50 to 60 per cent of the suspended solids contained in sewage and will reduce the BOD approximately 30 per cent. This process generally consists of quiescent settling of the sewage for a period of approximately two hours. Solids remove in the clarifiers (settling basins) are transferred to digestion tanks where complete bacterial decomposition takes place. The highly putrescible solids are converted into a relatively stable humus-like material in 30-90 days. After these materials are digested, they are withdrawn from the tank and discharged onto sand beds, mechanically dewatered, spread on land as liquid fertilizer, or stored in lagoons.

Primary treatment alone is no longer acceptable to the DEQ and will in all cases be followed by a minimum of secondary treatment.

Secondary treatment, using conventional biological processes, removes up to 95 per cent of suspended solids and 75 to 95 per cent of the pollutional (BOD) load. The principal methods employed in modern sewage treatment to provide secondary treatment are:

- a. Activated sludge process.
- b. Modified activated sludge processes.
- c. Trickling filters.
- d. Waste stabilization lagoons (non-aerated and aerated).

The City of Hines employs waste stabilization lagoons as its treatment system. This method is discussed below.

3. Waste Stabilization Lagoons

The waste stabilization lagoon is essentially a body of water three to five feet deep into which untreated sewage is introduced. The waste is detained for a period of time sufficient to permit stabilization of the sewage solids by a complex natural process involving sunlight, air, water currents, algae, and bacterial action. The surface area of such a pond is necessarily large, about six acres per 1,000 population equivalent served.

Oxygen supplied to the lagoon by direct contact with the air, and by the normal life process of algae in the presence of sunlight and in adequate food supply, maintains a high dissolved oxygen content in the pond, thereby minimizing the possibility of odors. Many waste stabilization lagoons have been designed in such a manner that no effluent is discharged from the lagoon. In fact, the original sewage lagoon for Hines was designed as a non-overflow lagoon. In these cases, the sewage inflow is entirely balanced by

evaporation from the surface of the pond and by percolation into the soil. Where ponds are designed to overflow, as in the case of the present Hines lagoon system, the effluent has been normally observed to be as satisfactory as that obtained from conventional secondary sewage treatment plants.

Operation of waste stabilization lagoon indicates little difficulty with odor problems. Normally, these ponds have the appearance of a clean body of water having to connotations of sewage.

Advantages of the waste stabilization lagoon method of treatment include low operating and maintenance costs, simplicity of operation, and low initial cost. The major disadvantage is that total land requirements are the largest of any type of treatment. Despite the large land requirements, the waste stabilization ponds are often an economical and satisfactory method of treatment if land is available.

4. Tertiary Treatment

For areas requiring an extremely high degree of treatment, usually for environmental considerations, a third stage of treatment is used. Tertiary treatment can be expected to remove BOD and suspended solids in the 98 to 99 per cent range from secondary effluents. In addition, phosphates, nitrogen compounds, and other dissolved inorganics can be removed.

Among the processes employed in tertiary treatment are: sand filtration, granular carbon absorption, chemical coagulation and sedimentation, ammonia stripping, electro-dialysis, ion exchange and reverse osmosis. The methods most often used are sand filtration, chemical coagulation, and carbon absorption.

Tertiary treatment is not widely used. The processes require sophisticated operational skill and involve considerable capital expense. Applications are mainly limited to discharges entering waterways having low assimilative BOD capacity and/or threatened by nutrient enrichment. Since Hines presently discharges its sewage effluent to a seepage area next to the lagoons, and therefore, not to a lake or a stream, it is not expected that tertiary treatment would be required for many years in the future, if ever.

5. Individual Disposal Systems

In areas where sanitary sewers are not available, sewage disposal is most often accomplished by septic tank and underground drainfield installations. Performance of the system is dependent on soil permeability and depth of groundwater.

Permeable soils, not subject to high groundwater levels or flooding, generally are acceptable for this means of sewage disposal. For widely separated residences septic tanks are usually less expensive to construct than sewers and central treatment plants. Almost all of the homes in rural and suburban Harney County presently employ septic tank systems.

Properly designed tanks have sufficient capacity for anticipated amounts of household wastewater and solids. Tanks must be large enough to retain solids, thereby preventing passage of solids into drain lines. Sufficient lengths of drainfield line must be installed to permit effluent percolation into the soil without waterlogging the area. It is imperative that the liquid be capable of filtering into the subsoil, evaporating or being absorbed by plant growth.

In an effective system, air and soil bacteria destroy most of the dissolved solids. Percolation proceeds at a sufficient rate so that no wastewater overflows onto the surface of the ground. Tanks normally need their solids content pumped out at intervals of about two years.

Impervious soils seldom support a drainfield satisfactorily. Percolation is drastically impeded by low seepage velocities. Drain trenches often become waterlogged, causing surface breakout of tank effluent. In addition to being esthetically offensive, the overflow may contain microorganisms causing typhoid, dysentery, hepatitis, and other diseases. Enlargement of the system is generally only a stopgap.

6. Sewage Treatment Requirements

Oregon Revised Statute 449.077 declares it "...to be the public policy of the state to conserve the waters of the state and to protect, maintain, and improve the quality thereof..."

ORS 449.081 and 449.086 specifically empower the Department of Environmental Quality to set and enforce standards of water quality. These standards of stream quality, in effect, determine the degree of treatment required for wastes discharged to waters within the state.

In 1976 the DEQ proposed, and later adopted, the Water Quality Management Plan – Malheur Lake Basin which:

- a. Establishes water quality standards in Malheur Lake Basin "necessary to serve all recognized beneficial uses to the greatest possible extent".
- b. Protects "existing water quality where such quality is higher than the established standards".
- c. Guide "logical and orderly planning and implementation of such waste treatment capabilities and waste controls as may be necessary to accommodate planned future growth and development without sacrificing water quality".
- d. Identifies "water quality deficiencies and standards noncompliance and to propose and implement the necessary corrective action to the problems".

The major tool for the enforcement of these DEQ standards lies in the Waste Discharge Permits Requirement. Under provisions of ORS 468.740, no waste shall be discharged into water of the state without a permit Discharge Elimination System (NPDES), a national waste discharge permit program. This is in compliance with provisions of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) and of the Environmental Protection Agency (EPA).

The City of Hines currently operates its treatment facilities through this waste discharge permit system (NPDES #1811). Due to the nature of Hines' facilities and that sewage effluent is currently disposed of on land, there are no permit limits on conditions for Hines.

SANITARY SEWER, WATER AND DRAINAGE SYSTEMS

GOAL

To provide and develop a timely, orderly and efficient arrangement of community facilities and services to serve as a framework for development within the Urban Growth Boundary as adopted by the City of Hines and Harney County.

OBJECTIVES

1. Encourage new development to locate where public facilities and services currently exist.

2. To maximize existing investments, service line extension policies should be developed to encourage development within the City of Hines.

POLICIES

1. Encourage the provision of community facilities and services as a guide to urban development within the Urban Growth Boundary.
2. Encourage development of vacant and partially developed lands within the city limits prior to urbanization of Priority Development Areas 1 and 2.
3. Sizing and location of sewer, water and storm drainage lines should reflect and design requirements of desired land use arrangements and densities of the existing and potential service area.
4. The installation, repair or resizing of municipal service lines should be done prior to, or concurrent with, street improvements.

POPULATION AND PROJECTIONS

BURNS/HINES URBAN AREA

General

The major causes for growth in Harney County have been developments in the cattle and lumber industry. Support services necessary to maintain these industries have, for the most part, been located within the cities of Burns and Hines. Because these basic economic resources employ people, the urban areas have grown to meet the demands in housing, consumer goods, and services. Due to public agency policies that are designed to maintain a sustained yield of timber, grasslands and wildlife from public land, the county's dependence upon the harvest of natural resources from these public lands stabilizes the county's growth. Unless there is a drastic change in public policy, existing industries dependent upon natural resources will continue to have a base from which to operate and will increase their production at a limited rate. It can be assumed, therefore, that population growth within the cities of Burns and Hines will continue at a relatively steady pace following historical trends.

Harney County has had a steadily decreasing growth rate over the thirty years between 1940 and 1970, averaging approximately one per cent growth per year, but reducing at approximately 50 per cent per decade. At this time (1978) a supplemental census is not available for the entire county area so the eight year period between 1970 and 1978 is not known. However, the incorporated area of Burns and Hines showed a 10.4 per cent growth rate during this period and it therefore can be expected that the entire county during this period and it therefore can be expected that the entire county had a comparable rise, representing approximately one per cent per year for the eight year period. From the table it can be seen that the growth of the two city area has traditionally been greater than that of the county, except for the 1960 to 1970 period in which the incorporated area actually experienced a decline. This can be attributed to rural residential housing occurring at a greatly increased rate outside of the existing city limits of the two communities. Also, mobile home courts and subdivision development has taken place near the city limits and in areas that will eventually become parts of the city.

Graphs 1 and 2 illustrate the actual population growth patterns for Hines and Burns over the last 48 and 88 years, respectively. It can be seen that for the period between 1940 and 1978 there is a stabilization of growth averaging around 1.2 per cent per annum for the urban area, including both cities.

[Graph 2. P.S.U. Population Projections]

[Graph 1. City of Hines Population Trends]

[Graph 3. City of Burns Population Trends]

Portland State University projected Burns' and Hines' populations from 1970 to 1977 with an average annual increase of 1.7 per cent for Burns and 2 per cent for Hines. These projections have proven to be too high. Graph 3 shows the annual projections and the actual 1978 census results for Hines. The actual average annual increase for this period has been 1.1 per cent for the urban area. This is consistent with the previous 48 year trend.

Three separate elements can go into a change of population and must be considered in estimates and projections. These include the birth and death rates, population increases due to annexations, and in- and out- migration. Also it must be realized that, while based on these factors, major changes may occur that could drastically alter the population of the urban areas of Harney County in a relatively short period of time. If events such as this occur, the following projections are not valid and must be re-evaluated in light of these circumstances. Therefore, the following assumptions are made as part of these population projections:

1. The form of government and the political, economic and social organization and institution of the United States will remain substantially unchanged.
2. No all-out war, internal revolution, devastation, epidemic, or other disaster will occur which will affect the area.

No new major employer will locate within the urban area nor will one relocate out of the area.

The economic section of this plan will be making economic forecasts indicating the employment levels to be anticipated for the various industry classifications over the course of the life of this plan. Those projections show that approximate 1.6 per cent annual increase in employment opportunities in the communities. It can be anticipated that this would represent an approximate population growth somewhere between a .5 per cent force that moves into the new employment opportunities, the reduction of the local unemployment rate because of the new opportunities, and the utilization of local female labor force in any new employment opportunities.

It is also assumed that the City of Hines will continue to receive a greater proportion of the urban area population. This is based on historical trends and on the availability of easily serviceable vacant land. The area north of the City of Hines that does have ready access to sewer and water lines is within, for the most part, the Hines city limits rather than the Burns city limits. Therefore, it can be assumed that the Hines population increases will range between 1 to 2 per cent per annum while the Burns increases will range from .5 to 1.5 per cent per annum, giving an average urban area increase of .67 per cent to 1.67 per cent.

The population figures for each community are higher than the official urban areas included. These figures were arrived at by using the average persons per dwelling unit for the entire Urban Area compared to the inventory of dwelling units outside of the City Limits. The computations are below:

HINES

$20 \text{ S.F.} + 42 \text{ M.H.} = 62 \text{ D.U.} \times 2.97 \text{ People/D.U.} = 184 \text{ People} + 1573 \text{ (City Population)} = 1757 \text{ Hines Area Population.}$

BURNS

$15 \text{ S.F.} + 39 \text{ M. H.} = 54 \text{ D.U.} \times 2.97 \text{ People/D.U.} = 160 \text{ People} + 3522 \text{ (City Population)} = 3682 \text{ Burns Area Population.}$

The following population projections for Burns, Hines, and the entire urban area are derived from the above assumptions and conclusions.

[City of Burns - Population Projections]

[City of Hines - Population Projections]

[Urban Area - Population Projections]

Population Characteristics

Table 14 and 15 show the age and sex of the population for the City of Hines and the City of Burns. The Burns data is more conclusive because it includes census results from the 1970 census while information such as this was not obtained for residents within Hines. The reason for this being that census data is "broken down" into categories for analysis for those cities over 2,500 population. In 1970, and for that matter in 1979, Hines had a population of less than 2,500. Therefore, the analysis of this information is based in general terms upon the experiences of the City of Burns assuming that Hines would follow suit. Table 15 shows 1970 census population for Burns in different age and sex, 1978 information, and the percentages of change in each of those groups.

[Table 14. Hines Age and Sex of Populations]

[Table 15. Burns Age and Sex of Populations]

Those statistics show an interesting trend for the cities. It can be observed that there are significant decreases in the population under 20 and in the population between 40 and 55. At the same time, there are significant increases in the 20 to 40 bracket and the 55 and up bracket. The median age of both Hines and Burns at the 1970 census was between 25 and 29 years of age. Today, for both communities it is between 30 and 34 years of age. This is assumed to reflect a greatly declining birth rate over the last 19 years, following national trends, and a significant out-migration of the middle aged individuals. At the same time, young adults are increasing in the community, possibly reflecting employment opportunities and higher birth rates in the "baby boom" era. The large increase in post-retirement age population may be indicative of earlier population increases for both communities that were significant 20 to 30 years ago and with those individuals which moved into the community at that time now reaching retirement.

Whatever the reasons for these trends, it indicates a large young adult population and a significant senior citizen population. This young adult population will provide the major labor force for the next 10 to 20 years, however, unless there is a significant change in the birth rate, in-migration will have to occur in order to support the local labor needs during that same time period as the young adults approach retirement age. The statistics also indicate that there may be a significant need for special services for senior citizens that did not exist eight years ago.

The above statistics indicate a consistent but relatively slow growth rate for the Burns/Hines urban area. The communities will continue to receive less than a proportional share of the state's population growth, which is projected at 3 to 3.5 per cent until the year 2000. State projections anticipate that the vast majority of that growth will occur in the Portland Metropolitan area and throughout the Willamette

Valley. At this time there are no new major employers for Harney County, or most of southeastern Oregon, that appear to be interested in utilizing this area for significant manufacturing facilities and therefore employment opportunities. Increases in existing manufacturing and agricultural uses, coupled with a corresponding increases in support businesses and services should yield population increases well within the limits outlined in the above projections.

There may be a future shortage of labor in the area, due to the apparent decline in birth rates, unless immigration is achieved at a level that maintains a consistent or a growing population in the 18 to 65 labor force age range. This will probably not result in a net increase in population or in population growth rates, rather than on birth rates to supply those population figures. This presents a challenge to the communities in attracting new young families to the area by providing the amenities, and assuring the employment opportunities that will be necessary if the communities are to enjoy continued growth.

The Center for Population Research and Census of Portland State University on 12/31/84 provided the July 1, 1984 Certified Population Estimate as 1,435. While this population is lower than the estimates of 1979, the city believes there should not be any changes at this time. The city believes that the drop in the population is due to the time that Snow Mountain Pine was not in operation. Now that the mill is operating it is believed that the population growth rate will meet the 1979 expectations.

ECONOMY AND EMPLOYMENT

Historically, Hines has been a “company town” that was constructed specially to house mill workers when the Edward Hines Lumber Co. Mill was built in the late 1920’s and early 1930’s. While the City of Hines was built for one specific purpose, the adjacent town of Burns was, by the early 30’s established. It had served for many years as a business and service center for agricultural activities and with the construction of the Hines Lumber Co. Mill, a business and retail center for the forest products and agriculture industries for Harney County. Since its construction, Hines has served more as a residential community than a commercial, industrial or governmental center. Major retailing and business activities are located in the Burns area. The Hines commercial area serves mainly as a convenience center for the local residents and for “through” traffic on the Central Oregon Highway (US 20/359).

Overall, Harney County’s economy has been based on a strong agricultural, lumber and forest products industry. Agriculture includes livestock production, range management and crop cultivation. The “economic” beginnings of Harney County date back to the cattle ranches of the late 1800’s. Later, attempts were made at “dry land” farming, but not profitable and resulted in the further stimulation and development of the livestock industry which is not, and will continue to be, a major factor in the economy of the county. Livestock feed production, on both base and range areas, dominates the land use pattern and will continue to do so.

One major climatic factor may have some influence over the future of the livestock industry: the potential for a drought situation, as experienced in the mid-1970s. Numbers of cattle were reduced significantly, as much as 30 per cent below normal (Fall 1977). Since this area is dependent upon the cattle industry for about 80 per cent of its agricultural income the reduced figure illustrates a major negative impact on the county’s agricultural related employment and economic return.

According to an “Area Manpower Review” for the Fall of 1977:

“(D)espite a significant upturn in the number of national housing starts, wood products employment in Harney County is below that of July 1976. Most of the contract loggers have been laid off for

extended periods of time since the first of the year. Large fog inventories at the (Hines) lumber mill are cited as the major reasons for these layoffs.

Jobs in the trade and services sector have been stable over the months and years, as indication of an unchanging level of economic activity. A depressed cattle industry and a stable wood products industry have given these sectors little reason to expand. Drought conditions are responsible for a slowdown in tourist activities with the threat of range fires and lack of water limiting recreational use.

High fire danger did account for some increased jobs as additional personnel were hired to fight fires. Special federal programs have also helped to expand public sector employment as local and state governments hire people through the use of CETA and other federal funds.

In this rather isolated, sparsely populated county of southeastern Oregon, the population is very dependent upon the wood products, government and agricultural industries. With all of these industries being seasonal in nature, the county experiences high rates of unemployment during certain times of the year. With this in mind, we find that the labor pool is made up of a number of people who are seasonally unemployed. Most are of an unskilled or semi-skilled nature and often they do not seek other work outside of their primary occupation.”*

*Source: State of Oregon, Employment Division, Department of Human Resources, “Area Manpower Review – Burns (Harney County) Labor Area, Fall 1977.”

Table 16 shows the work force and employment trends in the various industries in Harney County for the 1970 through (November) 1978 period. That table is graphically summarized in Chart 1. As can be seen from the data available, Harney County’s economy is stable with the lumber and wood products industry being the single largest consistent employer by government, trade and service, and miscellaneous related employment.

[Table 16. Harney County Nonagricultural Wage and Salary Employment (Annual Average)]

[Chart 1. Employment]

There was a slow but steady increase in the total civilian labor force for the 1970 - 1977 period with a slight decline in 1978. Agriculture related employment showed the greatest gain during 1978 (through November) increasing by 8.3 per cent and an overall gain for the nine year period of +1.5 per cent in employment. As can be seen from Chart 1, as the agricultural employment declines, the unemployment figures rise.

Major commercial and industrial activities are centralized in the Burns/Hines urban area. The Snow Mountain Pine Company is the largest single employer in the urban area. Much of the economy in the Burns/Hines area is dependent upon the continued stability of that mill. The service related industries; trade, finance, real estate, etc., provide support and needed goods not only for the mill-related worker but to the large agriculture community as well.

OUTLOOK

The Burns/Hines urban area and most of Harney County can expect little change in the economic outlook over the next few years. Based on historical trends, the overall civilian labor force in all of Harney County can be expected to increase by about 2 to 2.45 per cent a year. Normal seasonal patterns

will occur including differing employment levels in agriculture, trade, construction, and government. Livestock production, timber harvesting, and wood products are the present major industries of Harney County. There appears to be various opportunities to develop certain types of recreational and tourist facilities within the county. Due to the lack of all modes of transportation, the distance to large markets, and available labor supply, it has been difficult to attract new industries to Harney County. Future socio-economic growth will depend on the expansion of the agricultural and timber industries and the farther development of the recreation and tourist industry, which now ranks third among the major economic segments of the community.

One indicator of the dependence of Harney County on the major industry of the timber and wood products can be illustrated in the amount of "National Forest Receipts Dollars Returned to County". The table below summarizes the dollar and percentage amounts for the 1973 through 1977 period.

[Table 18. National Forest Receipts Dollars Returned to County]

The significant reductions in dollar receipts for the period between 1974 and 1975 can be directly attributed to the severe drought experienced in eastern Oregon. This one illustration demonstrates that the overall economy, and more particularly the timber and wood products and other agricultural activities, namely livestock production, is largely dependent upon an adequate water supply. There is basically no other major industries within Harney County that could absorb a significant amount of short term or long term unemployed.

LABOR FORCE

The available adult male labor force in the Burns/Hines area is closely aligned with the local demand. The adult female labor supply greatly exceeds the demand, as indicated in Table 19, as does the supply of youth for part time work during the school year and full time work in the summer. This indicates there is an opportunity to utilize the female labor force for future industrial development.

[Table 19. Harney County Work Force and Employment by Sex and Minority Status]

The agricultural labor force is limited and is somewhat restricted by seasonal trends. The seasonal agricultural labor force is becoming more and more limiting, thus, automation is stimulated. There continues to be a need for qualified ranch and farm management personnel as increased absentee ownership is dependent upon this technical and professional labor force. It appears that there will be an increased demand for professional ranch management in the years to come. The agricultural sector is presently improving the quality of its vocational labor force through education, incentive opportunities, tenure, and future economic growth. This attitude by ranch ownership will have a material effect on stimulating this labor in the future.

One element of a potential expansion in the overall county economy lies in the exploration, development and extraction of mineral, geo-thermal, oil, and gas resources. Several leases have been secured for large portions of Harney County for the possible location and development of these natural resources. With the ever increasing demands for alternative sources of energy the geo-thermal, gas and oil potential in Harney County may prove to boost to the employment segment and provide added revenues to the county. The filing of several hundred "leases" in early 1979 may signal the beginnings of resource development in Harney County, which may encourage further diversification of economy which, at this time, is overly dependent upon a small number of major industry employers.

Due to the inter-dependence of Burns and Hines area on the same major economic activities, the overall economic goals and policies are very similar.

GOAL

To maintain, stabilize, and strengthen existing important sectors of the overall economy; including, but not limited to, forestry, agriculture, government, and recreation.

POLICIES

1. Coordinate decisions concerning economic base resources in the county and to maintain an economic-environmental balance in all resource management and allocation decisions.
2. Major economic development plans should be based on the best information available and to take into account areas suitable for economic development, effects on existing economy, available resources, labor market factors, transportation, energy availability, and community livability.
3. Encourage a diversity of labor and capital intensive economic development.
4. Encourage location of major economic developments where public facilities and urban services can be readily provided.
5. Provide adequate protection for all existing and potential economic development areas, including areas for expansion.
6. Develop a cultural and financial climate that will encourage diversified residential, commercial, and industrial growth and development.

ENERGY

As the United States enters a future of restricted energy resources, a city comprehensive plan should examine the topic of energy. Hines is located on a major through highway, U.S. 20/395. The tourist and business oriented traffic is dependent on the availability of petroleum. Future petroleum price increases could affect Hines' retail and service market oriented toward the auto and in some ways, any industrial expansion relating to transportation needs.

Available Energy

C.P. National of California supplies electrical power to the Burns/Hines urban area. The company retails power from the Bonneville Power Administration from the west and Idaho Power from the east and north. The three directional feeder system to the area makes prolonged power interruption highly unlikely.

The Harney Electric Cooperative serves a majority of Harney County as well as the area to the south, east, and west of the Burns/Hines urban area.

Natural gas service is not available in the Burns/Hines urban area or throughout Harney County.

Potential Energy

1. Geothermal

Oregon, along with the other western state, is within the zone of volcanic activity which surrounds the Pacific Ocean. Volcanic activity in Oregon should not be considered extinct; but dormant. The High Lava Plains, the Basin-Range and the Owyhee Upland, where Harney County is situated, contains (along with

the Cascade Range) almost 80 per cent of the thermal springs known in Oregon. Map 12 illustrates those areas that have potential for significant exploration and possible development.

2. Solar Energy

Solar energy is the world's most abundant permanent source of energy. The amount of solar energy intercepted by the planet earth is 170 trillion kilowatts, an amount 5,000 times greater than the sum of all other inputs (terrestrial nuclear, geothermal, and gravitational energies and lunar gravitational energy).

Harney County, located in southeastern Oregon, enjoys over 300 days of sunshine per day. There may be possibilities in the future to utilize some of the vast areas of Harney County for collection systems.

3. Hydroelectric

Due to the lack of large volume flowing rivers, the Harney County area generally has no potential water power sites with capacities large enough to significantly affect the overall inventory of existing or potential hydroelectric sites. In the past, when transmission from outside power sources was not feasible, some small water power sites were developed, and sites were studied... on Kiger Creek and Donner and Blitzen River in the southeastern part (of the "Closed Lake" basin). These streams have sufficient fall and discharge in certain reaches to make small water power developments and has made the smaller sites economically unattractive.

4. Oil and Gas Resources

There have been several leases secured for large areas of Harney County for the potential exploration and development of oil and gas resources. Major development of these resources may have a significant impact on the economy of the County while providing necessary energy sources to meet a segment of energy needs in the future.

5. Conservation

The comprehensive plan can promote energy conservation through various techniques. Some techniques include encouragement of efficient land use patterns, encouraging effective housing rehabilitation and construction controls, and formulating energy efficient transportation policies, such as those concerning bike paths, carpools and pedestrian travel. Unfortunately, Harney County does not have the large urban centers that characterize some other counties in Oregon. The alternate modes of transportation concept perhaps does not fulfill the needs of Hines, due to the vast distances involved in the lack of a concentrated urban population, except in the Burns/Hines urban area.

In this particular instance, the greatest potential for the consumer to conserve energy is through measures such as the use of energy-efficient appliances, better management of home energy used, home improvement programs and the recycling of domestic waste products. The consumer can also, through home insulation, greatly reduce home heating and cooling bills.

In January, 1983, Eliot Allen & Associates completed the Harney County Renewable Energy Plan. The document is a total energy study done for Harney County and includes the Burns/Hines area. The study addresses Biomass, Geothermal, Wind, Solar, and Hydro Resources; and Resource Conservation and Development.

GOAL

To promote the conservation, development of alternative sources, and the efficient use of energy.

POLICIES

1. Future commercial, industrial, and residential development within and adjacent to the City of Hines should progress in the most efficient and logical manner possible.
2. The majority of residential development should occur in urban areas where it is less expensive and less energy is consumed in providing public facilities and services.
3. Housing should be located near commercial and industrial employment centers in order to reduce the amount of energy consumed in transportation between home and job.
4. Commercial services should be located within or adjacent to residential areas to limit the energy consumed between residential and commercial areas.
5. Development should progress in an orderly manner. It is more energy efficient to develop vacant lands within or contiguous to the existing Hines urban area rather than to allow continued "leap-frog" development patterns.
6. Residential, commercial, and industrial should be energy efficient in design, siting and construction.
7. The expansion of present energy resources must be examined with consideration for the impact such development would have in regard to natural resources, changes in land use patterns, and the economy of Burns, Hines and the entire area.
8. In an effort to conserve energy, the development of recycling facilities and the use of recycled materials should be encouraged where applicable.

LAND USE

Residential

Hines is predominately a residential community with little commercial or industrial activity within the City Limits. Highway 20/395 bisects the original platted town site of Hines into its western and eastern parts. Along this highway lies a small commercial center, vacant public land, a developed park and municipal buildings. Commercial strips are developing north and south of the central "hub." The unique character of the town has influenced the residential growth so that it occurs at the periphery of an elliptical system of streets and blocks. Historically, this has occurred in an orderly fashion and the original hub of the town is somewhat developed with new growth occurring on the vacant land at the periphery. There is a considerable amount of land available for residential growth within the City Limits.

The east Hines neighborhood includes the residential area east of the Highway 20/395. This area contains the "sump", golf course, and a well-developed residential neighborhood bordered by the railroad tracks and agricultural land. There are very few vacant lots remaining here.

The west Hines neighborhood includes the western portion of Hines from the central hub and from the northern to southern City Limits. Around the hub is a limited amount of commercial development, a post office, Public Park, and tennis courts. As the highway proceeds north, there is random commercial development. The central part of this neighborhood contains the Hines Grade School and park areas. The principal area where residential expansion is occurring and may be expected to continue to occur in the future within the City is in the far northern reaches of the City extending northerly to the Burns City Limits.

[Map 13. Single Family Residential]

[Map 14. Multi-Family]

[Map 15. Mobile Homes]

There is significant area of subdivided land south of the City Limits and west of the highway. This area is not served with sewer or water, nor does it have paved streets. The lots in this area are only approximately 50 per cent occupied.

Commercial

The City of Hines only has limited commercial facilities relying heavily on the well-established facilities in Burns to meet the day-to-day shopping needs of the Hines residents. Two per cent of the Hines developed area, encompassing approximately 8 acres, are used for commercial activity. Included in this area are two separate sub areas. First is the hub of the community which contains a few restaurants, a store, a credit union, and a post office.

The second sub area includes the commercial activity strip along Highway 20/395, both north and south of the central “hub”. In these areas are other stores, service stations and motels. Much of the potential area along the highway strip is unused or underutilized. This provides opportunities for commercial growth in the future as demand increases with population growth. There should be little need for rezoning property outside of these areas to allow for commercial development.

Industrial

The major industrial activity for all of Harney County is the lumber mill immediately outside and southeast of Hines. There are no areas within the City of Hines itself which are devoted to large scale manufacturing or other major industrial use including a significant portion of vacant land. Therefore, there may be a little need to allow future industrial development in Hines as there is a large amount of land in the area already available. However there may be some sites along the highway, especially near the lumber mill, that may be appropriate for industrial use and that if developed and annexed may provide an economic boost for the City and region as a whole. As well, this could provide a “buffer” area between the heavy industrial use and the nearby residential area.

[Map 16. Commercial Land Use]

[Map 17. Industrial Land Use (Within City)]

Determinants of Land Use

The City of Hines has developed in a pattern that was molded by manmade and natural conditions of the land. To the east, several factors present development constraints. These include the sump drainage area at the far northern part of the Hines City Limits, the golf course immediately south of the sump, the Silvies River Flood Plain which abuts immediately adjacent to the existing subdivided area, and the Hines Lumber Company to the southeast. To the South, the Hines Lumber Company offers considerable constraint for the area east of the highway. The area west of the highway has fewer constraints than many of the other portions of land around the City as evidenced by the significant partitioning activity that has occurred in the area. To the west is an area characterized by occasional steep slopes and rocky lands. Although residential growth can occur in these areas, it will be more expensive for the City to provide facilities and services such as streets and sewers into this area. To the north, residential growth is generally unconstrained for the City of Hines, except for the Burns City Limits.

Growth Potential

In order to accommodate the anticipated future growth of the City of Hines, areas must be designated as acceptable for the growth to occur. These should be areas that balance all of the factors that present constraints or opportunities for residential and commercial development. These include: natural hazards and limitations that bring potential safety or economic burdens upon the persons residing within these areas, or upon the community as a whole, the existing land uses, such as the lumber mill, that are not generally compatible with immediately surrounding residential land use; and on the preservation of better agricultural soils in order to help preserve the agricultural based economy of Harney County. This includes the area east of the City of Hines, which is currently in agricultural use, is classified as Class II soils according to the Soil Conservation Service, and that for the most part falls within the Silvies River Flood Plain.

[Map 18. Existing Land Use]

[Map 19. Vacant Lands]

Using these constraints, it is obvious that the majority of residential and commercial growth for the City of Hines should continue in a linear fashion along the highway axis. The majority of this growth should come to the northwest of the highway as this is the area where fewer and smaller extensions of public facilities would be necessary, where there is a majority of the land available, and where development can occur away from the potential influence or conflict of the lumber mill.

HOUSING

Housing is, of course, one of the most critical elements of the urban community. The provision of safe, decent, and sanitary housing in types and price ranges adequate for all segments of the community in an adequate supply for existing and future populations is a primary goal of the State of Oregon and of the City of Hines. The housing needs of Hines can best be met by an analysis of existing housing and to relate that to future population projections. City ordinances and policies that encourage the provision of safe and sanitary housing at all price ranges and in adequate quantities are essential for the continued social health of the community of Hines.

There are three major components to this housing element of the Hines Comprehensive Plan. They are:

1. An analysis of existing quantities and types of housing;
2. An analysis of the existing conditions of housing; and,
3. Projections of housing needs during the life of this plan based on population projections.

Analysis of Housing Stock

Table 20 below is the result of a certified census of population and housing within the Hines city limits taken in June 1978. The material in Table 21 below indicates the existing composition within the entire Hines area.

[Table 20. Housing Data for the Hines Incorporated Area]

[Table 21. Housing Composition Percentages By Neighborhood]

The information contained within Table 20 takes on greater significance when compared with information categories from the 1970 Census of Population. This gives an indication of trends that have

occurred within Hines over the last eight years. In 1970 there were 403 dwelling units, with 529 in 1978. This represents a 3.9 per cent average annual increase. The person per dwelling unit figure has dropped from 3.49 in 1970 to 2.97 in 1978.

It is easy to observe that there is an overall trend in the City of Hines toward a high degree of home ownership and a relatively low vacancy rate. There is also a very low percentage of the housing stock in mobile homes.

[Table 22. Urban Area Housing Characteristics]

From this information it can be concluded that the majority of development of owner occupied housing is in the Hines area. There has been minimal development of renter housing or mobile homes in the City, with Burns absorbing the majority of these housing types. In order to balance out the housing distribution, assuring fair densities of all types of housing, Hines should be prepared to meet the public need by allowing apartments and mobile homes in appropriate amounts at appropriate locations.

The figures above indicate that there is an overall lowering of population density within the Hines urban area as the area expands. If this trend continues, it will mean that a much greater amount of land will be necessary than if higher people per dwelling unit figures were maintained, or than if greater dwelling unit per acre densities were realized.

Table 20 indicates a moderate vacancy rate for both single-family and multiple-family units. This single-family vacancy rate is approximately 4 per cent and the multiple-family rate is approximately 5 at which a community can efficiently operate. 7 to 10 per cent is a normal, healthy housing situation.

The percentage of multiple family units does not on the surface seem to correspond with the low vacancy rate for multiple family units. The market demand and therefore public need, is probably not being met. The census was taken at a time when traditionally a large amount of population migration is taking place as the normal school year was just completed. It is the conclusion of this report that even though the vacancy rates are low for rental housing, the percentage of housing in rental use is very low, indicating that there is a demand and need for housing of a rental nature.

There is a limited amount of subsidized housing in the Hines area. One housing project, with 40 units, contains almost all of the subsidized housing for Burns and Hines. There is a waiting list for this project with a very low turnover rate. Several additional units of subsidized housing have been authorized by HUD, but no developers have yet to accept this opportunity. It is in the city's best interest to encourage subsidized housing, in appropriate locations, to meet the needs of the citizens. Utilization of new, subsidized housing may help to alleviate some of the problems with dilapidated units in the community.

Housing Conditions

The second factor in this analysis of housing for the City of Hines relates to the condition of the existing housing stock. Condition means the ability of housing to be classified as safe, decent and sanitary. Sound housing is the keystone of the health of the community. Dilapidated housing erodes this health through reduction of property values, visual eyesores, increased fire hazard and the psychological effects on the dwellers of such housing. The general thrust of Hines' housing goal is to maximize the availability of sound housing structures for the benefit of the residents and the whole community.

During May of 1978 a windshield survey was taken of all structures in the City of Hines. One purpose of this survey was to determine types and conditions of residential structures. This survey, in terms of housing conditions, cannot be considered an accurate reflection of a structure's conformance or

nonconformance to any building code. Rather it is a general indication of structural condition. This survey is not intended to be an evaluation of any individual piece of property; rather it is an indication of general trends and conditions for larger areas of the city.

Three separate structural categories were used. These were: Sound Structure, Rehabilitation Feasible, and Rehabilitation Questionable. Several elements of the structure were observed to establish its place within the above three criteria. Most particularly these included the condition of the chimney, roof, siding, windows, porch, steps and the foundation. Severe deterioration in several of these elements for a particular dwelling would place it in "Rehabilitation Questionable". Deterioration in one or possibly two of these elements places this structure in "Rehabilitation Feasible". Overall good condition of the structural elements placed the structure in "Sound Structure". The generalized results of that study are shown in Table 23 below.

[Table 23. Housing Condition Percentages By Neighborhood]

One basic assumption of the housing survey is that the mobile homes are generally in sound condition. This is backed by the fact that the vast majority of the mobile homes within the community have been located here since 1970. During this decade, codes and standards for the construction of mobile homes have been improved to a point where they can be considered generally as sound as a typical site-built structure. The assumption of this report is that little if any of this relatively young housing has become deteriorated in this period. Therefore, the above table deals only with single and multiple family dwelling units.

It can be seen that Hines has an excessive percentage of housing that cannot be considered currently sound structures. A majority of these are found in the eastern half of the community. The majority of housing in Hines was constructed during the "boom" years of 1940 to 1960. This survey indicated that much of the housing that has fallen into poor condition was built during that period and has not been maintained in the interim. The percentage of "rehabilitation questionable" housing is normal and compares with the "norm" for the State (4-6%). This housing must generally be considered as housing to be replaced in terms of meeting the future market demands. Rehabilitation of the structures is generally unfeasible because of cost. Rehabilitation may greatly exceed the value of the structure itself.

The "rehabilitation feasible" housing percentages are relatively high. These housing units can be successfully rehabilitated without undue expense by the owner. Therefore, they should be considered as part of the continuing housing stock.

The "sound structure" housing units are found in both parts of the community. The west portion has the higher proportion of "sound structure" housing stock due to the younger age of the housing in this area.

The above analysis of housing stock indicates that there are no serious problems for the community. Generally, Hines has a relatively good housing stock as compared to the balance of the State. However, upgrading of this housing stock is desirable, and can happen through rehabilitation of structures where possible and through demolition of structures where not. Demolished structures should be replaced with housing that is compatible with the neighborhood and provides for the needs of the people desiring to live in the particular area. The governing agencies of Hines should take steps to encourage or see that this type of housing upgrading takes place. This can occur through relocation of codes governing mobile home location, encouragement of local financial institution to provide low interest loans, and by pursuing federal money for rehabilitation program, such as the Community Development Block Grant program of the United States Department of Housing and Urban Development.

Housing Projections

Projections of future demands for housing are necessary as part of a community's overall urbanization program in terms of the community understanding the demand and being able to accommodate its impacts.

Another portion of this Comprehensive Plan document deals with population projections for the City of Hines. Based upon those projections and certain assumptions, housing projections to accommodate growth have been made. The Urbanization section of this plan combines these figures with those of Burns to provide information for the entire urban area.

The assumptions that go into these projections are as follows:

1. Maintain an eight per cent average vacancy rate.
2. The ratio of housing types will remain constant.
3. People per dwelling unit densities will remain constant.

Table 24 below contains the housing projections for the City of Hines. These projections are based on the P.S.U. figures for the City. Land consumptions projections based on population of the entire Urban Area will be found in the Urbanization section.

As stated in the population section of this plan, the City believes the recent drop in population is not a true picture of the growth of Hines. Therefore, the housing projections of 1978 are still current for the 1986 review.

[Table 24. Housing Projections to Accommodate Growth]

GOAL

To assure that provision of safe, decent, and sanitary housing in types and price ranges adequate for all segments of the community in an adequate supply for the existing and future population of the City.

1. Appropriate ordinances and programs will be developed and adopted that work to implement the Housing Goal and Policies. These ordinances and programs will be reevaluated and updated on a periodic basis to determine their continuing value in implementing the Community's goals.
2. Hines shall recognized that greater share of the non-single family housing of the Burns/Hines urban area should be located within Hines to help assure an equitable distribution of all housing types.
3. Multi-family units shall be encouraged when there is a demonstrated public need for this type of housing. Multi-family units should be located in areas where it is determined that impacts on public facilities and services, especially streets and schools, will be minimized.
4. Mobile homes will be allowed in conventional housing areas when they conform to standards to be set by the Planning Commission concerning width, skirting, foundations, utilities, etc., that are designed to minimize health and compatibility problems.
5. Mobile home parks will be encouraged when there is a demonstrated public need.
6. Rehabilitation of housing shall be a high priority of the City. Efforts shall be made to provide financing and/or financial incentives to those who undertake rehabilitation projects. The City shall encourage local lending institutions to provide low interest loans for this purpose and shall investigate federal and state programs that may provide the necessary aid.
7. The City shall anticipate future housing demand by planning for capital improvements necessary to meet the projected growth well in advance.