

SECTION 9.200 ENVIRONMENT

The primary **Statewide Planning Goals** (Goals) related to this Section of the Plan are **Goals 5, 6, and 7**, although other Goals also have natural environmental implications.

Goal 5 reads: "To conserve open space and protect natural and scenic resources." In partial response to this goal, this element of the Plan includes an inventory of natural resources including geology, soil and aggregate resources, surface and groundwater resources, natural vegetation and fish and wildlife resources. Also included are a series of policies to help insure the wise management of natural resources for future generations and to avoid land use conflicts potentially damaging to the natural environment.

Goal 6 reads: "To maintain and improve the quality of air, water and land resources of the state." In partial response to this goal, this element includes consideration of waste process discharges including water pollutants, air pollutants and noise pollutants. Policies are included to insure that waste and process discharges do not threaten to violate, or violate, state or federal environmental quality statutes, rules and standards, nor exceed the natural environmental carrying capacity of the area.

Goal 7 reads: "To protect life and property from natural disasters and hazards." In response to this goal, this element includes an inventory and map of known areas of potential hazard. Included in the policies are appropriate safeguards to help protect against loss of life and property from natural disasters and hazards. The primary hazards in the Turner area include flooding and potential hillside slide hazards. Lesser problems include localized ponding, high water table and stream bank erosion problems.

This Section also includes a brief discussion of **Goal 3**, "To preserve and maintain agricultural land" and **Goal 4**, "To conserve forest lands by maintaining the forest land base" even though these statewide goals are not applicable to the City of Turner.

The City of Turner Local Wetland and Riparian Area Inventory, November 20, 2000, Mid-Willamette Valley Council of Governments is hereby included in the Turner Comprehensive Plan by reference.

Planning Opportunities & Constraints

The primary purpose of the Environmental Section is to identify the existing environmental conditions in the Turner area so the environmental resources can be protected and enhanced while accommodating needed growth and development.

Maintaining Turner's environmental quality is essential to the livability of the community. At the same time, there are environmental conditions that can detrimentally impact development unless they are properly addressed.

Flooding and earth slides due to steep hillsides are potentially hazardous conditions that will require careful consideration to accommodate development. In the most severe conditions, this may require some the land to remain in a protective natural state.

These conditions, in addition to preservation of wetlands, riparian areas and other natural features will reduce the potential buildable lands within Turner that could necessitate expansion of the Urban Growth Boundary to accommodate growth.

If properly managed by the City, growth and development can occur while protecting the area's natural resources. The City has a choice. Either the community will capitalize on the amenities of the local environment, or it will fail to do so and waste its resources.

SECTION 9.210 CLIMATE

The climate of Turner is similar to that of most Willamette Valley communities although the adjacent hills provide some local microclimate modifications. Turner has a temperate climate with moderately warm, dry summers and mild, wet winters.

The average summer temperature ranges between 51 and 82 degrees. The average winter temperature ranges between 46 and 32 degree. Extreme temperatures of -12°F in December and 108°F in August have been recorded.

Annual precipitation averages about 39 inches, most of which occurs as rainfall at low intensities. About 84 percent of annual precipitation occur from October through April. December is the wettest month with 6.8 inches while July is the driest month with only 0.6 inches. An average of 6.5 inches of snow is possible, generally in December and January. The prevalence of moist marine air causes relatively high humidity and heavy dews throughout the year.

The prevailing winds are from the west and northwest during the summer and from the south and southwest during winter storm periods. Occasional easterly winds bring cold, clear weather in winter and exceptionally dry, warm weather in summer. Wind velocities are generally moderate in the range of 4 to 12 mph from April to September. Winter storm winds of 40 to 50 mph are not uncommon from October to April.

The growing season occurs between March and November for an interval of 263 days.

Climate extremes can produce hazardous conditions. Lightning can cause forest fires. Freezing rain can create hazardous traffic conditions. Strong winds can cause property damage like the 1962 Columbus Day winds that exceeded 70 mph. However, the predominant local hazardous condition is flooding caused by rapid snowmelt and prolonged rainfall like the floods of 1964 and 1996.

SECTION 9.220 TOPOGRAPHY & SLOPE

Turner is situated on an alluvial terrace called "Turner Gap" where the larger valley floor constricts to form a narrow gap between the Salem Hills to the west and the Waldo Hills to the east. Valley elevations in the City range from approximately 260 to 295 feet above sea level, sloping gently to the north. Hillside elevations rise to 600 feet in the Val View residential area of northeast Turner. Hillside slopes in most of the Val View area range between 5% and 15% although a band of steep slopes that exceed 25% in some areas extends around the hillside along the east and northeast slopes near mid elevation

SECTION 9.230 GEOLOGY & MINERAL RESOURCES

Lower Turner is located on a large, thick gravel fan deposited by the North Santiam and Willamette River between the older volcanic basalt formations of the Salem and Waldo Hills.

Turner is underlain by marine sedimentary rocks of the Oligocene age. The rocks consist of sandstone, siltstone, and tuff of unknown thickness. On top of these rocks are Columbia River basalts and on top of them, intrusive rocks of the Sardine formation. All three rock types crop out in the Salem and Waldo Hills on the east border of Turner. The various bedrock layers comprise the southeast wing of a northeast plunging trough that is centered approximately on Salem. The layers dip toward the northwest at a shallow angle, generally less than about 10 degrees.

The valley and plain areas around Turner are composed of Linn gravel deposits that were flushed into the basin by ancestral Willamette and North Santiam Rivers. Clay and silt layers are found at numerous locations. The clay layers form an impregnable barrier to the downward movement of groundwater and they frequently affect surface drainage as well. Where the layers are discontinuous or absent, water that has infiltrated the surface has a direct path to the water table, and contamination by septic tank effluent becomes a possibility. Where the layers are continuous, perched water tables and surface ponding occur.

The geology in the Turner area, and elsewhere in the Willamette Valley, have been deformed by faulting and folding. There are two faults in the Turner area. The Mill Creek Fault extends east-west through the City and separates the Stayton Basin from the uplifted formations of the Waldo and South Salem Hills. North of the City, The Waldo Hills Fault marks the northwest margin of the Waldo Hills. Movement rates along the two faults are estimated to be very low, but quakes in the Woodburn and Scotts Mills areas during 1990's demonstrate that motion is still occurring along faults in the Willamette Valley.

However, it is the extensive gravel resources in the Turner area that continue to attract aggregate mining operations. Several companies in the area market these resources. Two companies mine aggregate in Marion County, immediately adjacent to the City' boundary. Turner Gravel Inc. is located on Delaney Road adjacent to the west bank of Mill Creek that forms the west City Limits of Turner and Riverbend Sand & Gravel is located on Marion Road to the south of the City limits.

Mineral & Aggregate Resources

The main commercial minerals of Marion County are sand and gravel, stone and clays. Within the Turner area, sand and gravel deposits occur in suitable quantities to be of commercial value.

The City of Turner is situated on an alluvial terrace called "Turner Gap" where the valley floor constricts to form a narrow channel between a series of basalt hills southeast of

Salem. The Salem Hills are located on the west side and the Waldo Hills on the east. Historically, the North Santiam River flowed through Turner Gap until nearly the end of the last ice age.

Turner is underlain at depth by marine sedimentary rocks of the Oligocene age. The rocks consist of sandstone, siltstone, and tuff of unknown thickness. On top of these rocks are Columbia River basalts and on top of them, the valley and plain areas around Turner are composed of Linn gravel. Linn gravel was deposited by the North Santiam River during the late Pleistocene glacial period before the river changed course. This gravel ranges in thickness from 30 or 40 feet to more than 100 feet at Turner Gap. Linn gravel averages 3 inches in diameter, but stones up to 8 to 12 inches are not uncommon.

Statewide Planning Goal 5 provides the framework for land use planning of natural resources. It is the goal of the state to conserve and protect natural resources. Mineral and aggregate resources are specifically identified as natural resources that are subject to the Goal. Oregon Administrative Goal (OAR) 660, Division 16 specifies the requirements and procedures for complying with Goal 5 and provides a stepped approach to address the Goal requirements. The five steps for achieving the Goal are:

1. Inventory the location, quantity and quality of the resource (LQQ).
2. Identify conflicts with the inventoried resource site and the impact area affected.
3. Consider the impacts on the resource and on the conflicting uses by analyzing the economic, social, environmental and energy consequences (ESEE).
4. Decide on a program to resolve conflicts and achieve the Goal.
5. Implement the program by adoption of clear and objective standards.

Each local government is required by Statewide Goal 5 to evaluate available information to develop an inventory of significant mineral and aggregate sites.

The City of Turner has not conducted a study of mineral and aggregate resources and must therefore rely on information from other sources. In 1992 the City of Turner received an application from River Bend Sand & Gravel Co. that provided the City of Turner with substantial data and evidence on the location, quality and quantity of the resource.

The River Bend Site was the only approved and inventoried Significant Aggregate Resource Site in the City of Turner.

SECTION 9.240 SOILS

The U.S. Department of Agriculture through the Natural Resource Conservation Service has prepared soil resources data of the Turner area for land use planning and community development. Resource information includes a series level soils map and soil interpretations for uses ranging from agriculture to engineering considerations for urban land development. Each soil was rated according to its limitations for building and development sites, and also classified as to their agricultural capability.

Factors used in determining soil limitations for building and development sites are excessive slope, high water table, and soil characteristics such as permeability, bearing strength, shrink-swell potential, and depth to bedrock. Soils rated as slight have few or no limiting factors. Moderately rated soils have limitations that normally can be overcome careful design and good management. A severe rating indicates that the particular use of the soil is doubtful and careful planning and above average design and management is required for its use. Use of soils with severe limitations is generally unsound, and would be suitable only for pasture, woodland or open space. Table 9.200 B lists the interpretations of soils delineated on Map M-1.

For agricultural purposes, a land capability classification system was used to group soils according to limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. Soil characteristics such as depth to bedrock, wetness, texture, slope, erosion hazard, permeability, water holding capacity, runoff, inherent fertility and climatic conditions as each influence the use and management of land, are used in categorizing the soils into eight capability groupings. Class I soils have few limitations that restrict their use; Class II soils have moderate limitations due to drainage or runoff potentials; Class III and IV soils have severe limitations that require special conservation and management practices; Class V, VI and VII soils have very severe limitations and are generally restricted to use as pasture or woodland; Class VIII soils have land form limitations that restrict their use to recreation, wildlife or open space.

There are ten soil mapping units within the Turner UGNA ranging in capability classification from Class II through VI soils. These soils are:

- (Ck) Clackamas Gravelly Loam - Class III
- (Cu) Courtney Gravelly silty clay loam - Class IV
- (HaD) Hazelair silt loam with slopes of 6 to 20 percent - Class IV
- (MaA) McAlpin silty clay loam with slopes of 0 to 3 percent - Class II
- (NeB) Nekia silty clay loams with slopes of 2 to 7 percent - Class II
- (NeC) Nekia silty clay loams with slopes of 7 to 12 percent - Class III
- (NeD) Nekia silty clay loams with slopes of 12 to 20 percent - Class III
- (NkC) Nekia stony silt clay loam with slopes of 2 to 12 percent - Class III
- (NsF) Nekia very stony silty clay loam with slopes of 30 to 50 percent -Class VI
- (St) Sifton gravelly loam - Class III

The predominant upland soil series in Turner is Nekia silty clay loam which is found in the hills to the west and east of Turner. It consists of well-drained silty clay loam over clay soils formed from basalt colluvium. Nekia silty clay loam is rated marginal for septic tanks on slopes up to about 25 percent gradient and unacceptable on steeper slopes. The principal restriction with Nekia silty clay loam is the depth to bedrock of 20 to 40 inches.

The prominent soils in lower Turner are Clackamas gravelly loam, Courtney gravelly silty clay loam, and Sifton gravelly loam. These soils occupy virtually the entire lowland area of Turner. Courtney soils are found along the lowlands adjacent to Mill Creek and its tributaries. It consists of poorly drained, fine textured soil formed from gravelly and

clayey mixed alluvium and the major limitation is a seasonal high water table. Clackamas gravely loam occupies an intermediate land position with respect to Courtney and Sifton soils and has many of the properties of both. Sifton gravely loam occupies the uppermost lowlands on nearly level alluvial terrace areas. It consists of excessively drained soil formed from gravely alluvium and is the soil underlying the majority of older residences in Turner. The main restriction with Sifton gravely loam is coarse-grained materials or excessive permeability.

The soil limitation information listed in this plan is of a general nature and is not to be confused with actual uses allowed for soils within Turner. The final judgment with respect to septic suitability of all soils in the area lies with the Marion County Community Development Building Inspections Department inspectors who test the soils as a requirement for building permit allocation. With the new municipal sewer system, septic systems will be rare within Turner although continued use will occur within the Urban Growth Notification Area (UGNA).

**TABLE 9.200 B
SOIL LIMITATIONS FOR TURNER**

Soil Type	Septic Absorption Fields	DEQ Septic Suitability*	Foundations For Low Buildings	Industrial Development	Roads and Streets	Capability Class
Ck	S(p)	U(w)	M(w)	M(w)	M(w)	IIw
Cu	S(p)	U(w)	S(w)(Ss)	S(w)	S(w)	IVw
HaD	S(p)	U(b)(w)	S(w)(Ss)(1)	S(w)	S(Ss)	IVe
MaA	S(p)	U(w)	S(1)(Ss)	M(w)	M(w)	IIw
NeB	S(p) (b)	M/U (b)	M(b)(1)	SL	SL	Ile
NeC	S(p) (b)	M/U (b)	M(b)(1)	M(s)	M(s)	IIIe
NeD	S(p) (b)	M/U(b)(s)	M(b)(1)	M(s)	M(s)	IIIe
NkC	S(p) (b)	M(c)	M(b)(1)	M(s)	M(s)	IIIe
NsF	S(s)	U(c)(s)	S(s)	S(s)	S(s)	VIIs
St	SL	M(c)	SL	SL	SL	IIIIs
Degree of Limitation			Limiting Factors			
SL - Slight			b -depth to bedrock		1 - low strength	
M - Moderate, marginal (DEQ)			p - permeability		Ss - Shrink-swell	
S - Severe			s - slope		e - erosion hazard	
U - Unacceptable (DEQ)			c - coarse grained material		w - wetness	

Source: Soil Conservation Service

*Based on Department of Environmental Quality septic suitability criteria which differ in a number of important respects from SCS criteria.

SECTION 9.250 WATER RESOURCES³

Water and water related resources in the Turner area are comprised of perennial and intermittent streams, ponds, riparian areas and wetlands. Primary water features include Mill Creek, The Mill Creek Bypass, the Perrin Lateral, Franzen Reservoir and several unnamed watercourses and drainageways. Turner is located in the Main Stem Willamette Subbasin of the Willamette Basin and lies entirely within the Mill Creek Watershed.

Mill Creek

The Mill Creek watershed is about 24 miles long and 6 miles wide with a total area of 71,040 acres. The watershed area above Turner is about 42,880 acres. The Mill Creek watershed drops from 2,200 feet in the Western Cascades to 120 feet at the confluence with the Willamette River. The last gauging station was deactivated in 1978 and recorded an average annual discharge of 138 cubic feet per second (cfs). The December storms of 1937 and 1969 produced peak discharges of 8,320 cfs and 7,800 cfs respectively. Substantial flooding occurred again in 1995 and 1996 reaching 500-year occurrence levels. Peak discharges are not noted due to gauge deactivation. A gauge station is needed to track local flooding events to assist in flood controls for the City.

Mill Creek flows east to west through Turner, then northerly along the west City limits. Battle Creek from the west and McKinney Creek from the south flow into Mill Creek west of Turner. Mill Creek then winds its way toward Salem, flooding its banks annually

inundating the lowlands along the creek during winter months. Friends of Mill Creek are working to establish a watershed council to address watershed needs.

A 1983 Mill Creek drainage study characterized land use in the watershed as follows:

Cropland	62%
Pasture	1%
Forest	18%
Urban	19%

Portions of the entire Mill Creek Watershed is zoned for urban use resulting in a high potential for degradation of water quality and increased runoff.

The Turner UGNA is divided into five subwatersheds:

Mill Creek North	484 acres
Mill Creek South	203 acres
Mill Creek Central	423 acres
Mill Creek East	42 acres
Perrin Lateral	216 acres

The Mill Creek Watershed has been substantially modified over the years to drain farmland, distribute water for agricultural and industrial uses, reduce flood damages and provide for storm water runoff. The Mill Creek Bypass and the Perrin Lateral are examples of these efforts. There are also 10 bridges across these waterways.

Water diversion from the North Santiam River began in 1855 for industrial uses in Salem. Today the Santiam Water Control District diverts up to 180 cfs of water from the North Santiam River to the Mill Creek watershed for irrigation purposes in the summer. This additional water maintains Mill Creek that would otherwise have very low to no flows in late summer.

Groundwater

Important groundwater resources or aquifers are located in the alluvial deposits and the underlying basalt base.

The alluvial aquifers in the Stayton Basin yield moderate quantities of well water up to 1000 gpm in shallow wells less than 100 deep. These wells are hydraulically connected to Mill Creek and other smaller streams and are recharged by local seasonal precipitation. Considerable groundwater movement in the Turner area occurs, caused by porous soils and the large volume of water reaching the water table. The direction of movement essentially parallels that of surface water. The water table in some places extends to within a foot or two of the soil surface while in a few places it is more than 10 feet down. During heavy rains the water table may actually reach the soil surface and cause ponding and surface flow.

The basalt aquifers in the Columbia River Basalt base yield varying quantities of water and quality is good. As a water bearing layer, basaltic lavas may be expected to yield low to moderate amounts of water, typically 100 gpm. High yields of several hundred

gallons per minute to as much as 1000 gpm can be obtained in areas of waterworn, fragmented rocks. However local yields are usually in the 10 to 30 gallons per minute range.

Water storage is limited, and where large quantities are pumped, aquifers have declined. These deep aquifers are recharged from the Western Cascades and water rises in wells drilled into these aquifers.

Declining water levels have been occurring in these aquifers and Turner is located between two Groundwater Limited Areas (GLA) identified by the Oregon Water Resources Department. Water right permits have been indefinitely discontinued for non-exempt wells in this area. Marion County has also instituted a Water Management Plan to review permit exempt uses to assess their risk to the aquifer and exiting wells. Turner is included in this Sensitive Groundwater Overlay area.

Water Quality

Water quality is regulated by the Oregon Department of Environmental Quality (DEQ) and the Oregon Health Division (OHD) in compliance with the standards of U.S. Environmental Protection Agency (EPA) and water quality investigations for the Willamette Basin conducted by the U.S. Geological Survey.

The Clean Water Act (CWA) requires states to publish a "303(d)" list of surface water bodies that fail to meet water quality standards. The 303(d) list identifies types and location of water quality problems but does not identify causes. Mill Creek is identified on the 1998 303(d) list as having beneficial use limitations due to low water quality. Water contact recreation was not advised due to high fecal coliform bacteria levels. Mill Creek was also rated severe for water quality affecting fish and moderate for conditions affecting aquatic habitat. Other water quality problems noted by the Mill Creek Watershed Task Force in 1983 included high turbidity levels at high flow, fuel spills in urban areas and cannery waste discharges.

Mill Creek is degraded by agricultural practices and urban runoffs. Pesticides and nutrient contamination occur with the first fall storms and large spring rains after application of fertilizers and pesticides. Turner has a strong local contaminant signature related to on-site sewage disposal that should improve with the new wastewater collection and treatment system.

Regional groundwater quality is generally good with some saline, iron/manganese, and arsenic content in wells. Recent studies show shallow wells less than 80 feet deep are affected by chemicals associated with human activity. About 9% of wells tested exceed the drinking water standard for nitrates resulting from irrigated agriculture upstream. Low concentrations of pesticides were also detected in about 33% of sampled wells but only dinoseb, a common herbicide exceeded the drinking water standard. Higher concentrations of solvent compounds were associated with urban land uses.

Franzen Reservoir

Franzen Reservoir is a water storage facility for the City of Salem located on the east Waldo Hill area within the City of Turner at an elevation of 413 feet. The reservoir was

constructed in 1952 with a 100 million gallon capacity and a surface area of 14.7 acres. It is 2,040 feet long, 200 feet wide and 28 feet deep.

Water is received from the North Santiam River through a 48 to 52 inch pipeline from a diversion and filtration system located at Geren Island near Stayton. Turner obtains its municipal water from this Salem Water System.

Improvements are planned for the reservoir that include lining and covering of the reservoir and a new 75 MGD pipeline from Geren Island to Franzen Reservoir is planned to replace an existing 36 inch water pipeline.

Lake Turner

Lake Turner will be created as part of the 2009 City-approved development and reclamation of the River Bend gravel mining operations located at the north end of town. The Lake contains approximately 70 acres with surrounding residential development that includes single-family, medium density, and multiple-family and a small public use area on the west side of Turner Road. The property owner/developer may request in the future City consideration of limited commercial uses in the northwest section of the development.

Flood Hazards

The largest known flood in the Willamette Valley occurred in 1861 and inundated 513,000 acres. Within the Turner planning area, one of the major constraints to development is Mill Creek flooding. In the 1964 Flood the City sustained an estimated \$100,000 in damages and flooded 3,000 acres in the Mill Creek Watershed. The 1996 Flood caused over \$146,415 in damages and may have been a 500 year occurrence flood.

The City participates in the federally subsidized National Flood Insurance Program. The program seeks to provide flood insurance nationwide while assisting state and local governments in protecting people and property in flood prone areas. As part of the program, the City has adopted a Flood Hazard Overlay-District and has adopted standards and policies to guide development and minimize losses due to flooding. The Federal Emergency Management Agency (FEMA) provides Flood Insurance Rate Maps (FIRM) that depict the Turner floodplain and identify varying degrees of potential flood hazards within the area. As shown on Maps M-5 and M-6, the flood prone areas occur along Mill Creek and the Mill Creek Bypass encompassing much of the City.

The primary flood hazard area addressed by FEMA are those "Base Flood" lands with a potential inundation by a 1 percent chance or 100-year frequency flood. Other flood zones are also identified on the FIRM Maps including the floodways, 500-year flood zones and other flood fringe areas. The Base Flood elevation of Mill Creek is approximately 260 feet at the northern City boundary and 296 feet at the southeast boundary where Mill Creek flows under Marion Road. The floodplain is approximately 3,500 feet wide on the northwest boundary of the City and 2,350 feet wide at the southeast boundary. The flood plain narrows to 400 feet wide on the east border of the City where Turner Gap constricts the flow.

Dikes have been constructed at several locations along Mill Creek, and in 1968 a diversion channel was constructed across the southern part of town in an attempt to control flooding. Removal of debris from stream beds and utilization of stormwater runoff controls can help to lessen flood impacts, but due to the large watershed and relatively flat terrain, flooding is a condition that may have to be accommodated.

SECTION 9.260 VEGETATION & OPEN SPACE

Ecoregions are geographic areas with characteristic physical features, ecosystem processes, and plant and animal communities. Ecosystems are an interrelated assemblage of living organisms and the supporting physical environment. Turner is located in the Willamette Valley Ecoregion.

Current land use patterns have substantially altered the pre-settlement vegetation patterns and wildlife habitats, although the natural vegetation inside of the Turner UGNA shows the same diversity as that of the pre-settlement era.

Steep slopes are forested areas composed of Douglas-fir, Big-leaf Maple, and Oregon White Oak and on the ridge tops, remnants of Madrone and Poison Oak occur. Flatter slopes are dominated by pasture and tree farms.

Narrow riparian woodlands containing Oregon Ash, Big-leaf Maple and Oregon White Oak are located along Mill Creek, the Mill Creek Bypass and the old Perrin Lateral Canal location. This riparian vegetation is fairly extensive along Mill Creek between Delaney Road Bridge and the railroad bridge at the north end of Turner, and between the old and new locations of the Perrin Lateral Canal in south east Turner.

A 1983 Mill Creek drainage study characterized vegetative use in the watershed as follows:

Cropland	62%
Pasture	1%
Forest	18%

Forest Lands

Forest lands occur within the Mill Creek Watershed as scattered, irregular patches of timberland ranging in size from 10 to 160 acres. There are no commercial forests within the Turner UGNA.

Agricultural Lands

Agriculture plays an important role in the Turner area. A majority of the lowlands surrounding the City and the UGNA are currently in agricultural use as pasture or grass and grain crops. Lands around Turner are classified as Class II-IV soils, which are suitable for agricultural purposes with some severe limitations in the Class III and IV soils.

There are 80.41 acres within the City zoned for Industrial use that is generally used as agricultural pastures as an interim use. An additional 76.93 acres is included in the UGNA for future industrial use that is also utilized for pasture. Soils in this area are classified as Clackamas Gravelly Loam (Ck) with an Agricultural Capability Class of Type IIIw having severe limitations due to wetness and Courtney Gravelly silty clay loam

(Cu) with an Agricultural Capability Class of Type IVw having very severe limitations due to wetness. Agricultural use of this property is limited and considered not to be prime farm land.

Wetlands

Wetlands are areas that are inundated or saturated by surface water or ground water at a frequency and duration to support a prevalence of vegetation typically adapted for life in saturated soils.

Approximately 137 acres or percent of the Turner City limits and the UGNA are mapped wetlands. Of this total 115 acres were considered "Significant." Excluding Lake Turner, the River Bend Sand and Gravel Company wetland mitigation project, there is only 51 acres or percent of mapped wetlands within City limits. Of this total twenty-nine (29) acres are considered "Significant."

A total of 56,723 linear feet (10.7 miles) of linear wetlands were mapped and are assessed in the riparian areas inventory. The total non-linear wetlands by sub watershed ranked in abundance order was:

Mill Creek North	5.1 acres	
Lake Turner	85.7 acres	90.8 total
Perrin Lateral	21.5 acres	
Mill Creek Central	16.5 acres	
Mill Creek South	8.1 acres	

The wetlands assessment indicated that most wetlands in Turner provide relatively high ecological functions for wildlife habitat, water quality and hydrologic control.

The Perrin Lateral subwatershed had the most acres and lineal feet of wetlands and had the highest assessment results for most ecological functions.

Turner should seek to maximize the ecological and social benefits provided by wetlands and riparian areas by pursuing a management plan that preserves wetlands but allows for social uses such as education, recreation and open space that can enhance the aesthetic and recreational benefits to the community.

Riparian Areas

Riparian areas occur immediately adjacent to surface water such as rivers, streams, ponds, lakes, wetlands, and springs consisting of transition areas between an aquatic ecosystem to terrestrial ecosystem.

There is approximately 78,360 linear feet (14.8 miles) of identified riparian area within the Turner UGNA. Excluding Lake Turner, there is 73,644 linear feet (13.9 miles). Riparian area widths varied from 60 to 120 feet, or an average of 90 feet. Thus, the riparian acreage varied from 108 acres to a maximum of 213 acres, or 8 to 16 percent of the Turner UGNA.

Soils located in riparian channels were Courtney and Wapato and comprised about 213 acres or about the same size as the riparian area based on a width of 120 feet. The riparian area density is 57 lineal feet per acre for the Turner UGNA.

Most of the riparian areas in the Turner UGNA have been disturbed by human activity. Typical riparian vegetation in undisturbed areas was forest over shrub areas with sparse groundcover.

Subwatershed riparian lengths and densities from high to low are:

Perrin Lateral	26,365 lineal feet (34%) or 122 lineal feet per acre.
Mill Creek South	19,864 lineal feet (25%) or 98 lineal feet per acre.
Mill Creek North	11,771 lineal feet (15%) or 24 lineal feet per acre.
Lake Turner	4,716 linear feet (06%) or 10 lineal feet per acre.
Mill Creek Central	15,642 lineal feet (20 %) or 37 lineal feet per acre.

Turner should increase the percentage of tall woody vegetation in the riparian areas and flood prone areas to improve water quality, flood management, thermal regulation and wildlife habitat. Minimizing human disturbances in riparian areas is also necessary. Buildings and roads should be located outside of riparian areas and natural vegetative corridors should be maintained in developing and undeveloped areas of the City.

Open Space Resources

There are no identified ecologically or scientifically significant areas, wilderness areas, Oregon recreation trails, or wild and scenic waterways within or adjacent to the Turner UGNA.

The Waldo and Salem Hills coupled with agricultural lands, Mill Creek and other riparian areas provide scenic opportunities and open space amenities for residents of Turner. Forest, agricultural and open space resources contribute to Turner's rural character and should be preserved.

SECTION 9.270 FISH & WILDLIFE

The Department of Fish and Wildlife (ODF&W), the Division of State Lands (DSL), the Oregon Department of Forestry (ODF), and the Oregon Natural Heritage Program (ONHP) are sources of information on fish and wildlife habitat in the Turner area. Also, the US National Marine Fisheries Service (NMFS) monitors fish population trends and lists species protected by the Endangered Species Act (ESA).

Plants and animals threatened with extinction are protected under the ESA. Presently 65 animal species and 23 plant species in the Willamette Basin are considered at-risk. Existing records of rare, threatened and endangered plant and animal species maintained by the ONHP indicated 8 occurrences within a two-mile radius of Turner including:

The Oregon Spotted Frog
Winter Steelhead

Oregon Chub
 Willamette Valley Larkspur
 Shaggy Horkelia
 Meadow Checkermallow
 Nelson’s Sidalcea

ODF has mapped Mill Creek as fish-bearing, but other watercourses in the Turner area were not shown as fish-bearing.

Native fish populations in Mill Creek include:

Minor runs of Winter Steelhead
 Some spring runs of Chinook Salmon
 Cutthroat Trout
 Rough Fish

The upper Willamette River Winter Steelhead and Spring Chinook Salmon are listed as threatened with extinction.

Wildlife populations in Marion County include:

- | | |
|--------------------------|----------------------------|
| | <u>Cougar</u> |
| <u>Upland Fowl</u> | <u>Non-Game Wildlife</u> |
| Ring-necked pheasant | Bobcat |
| Valley quail | Coyote |
| Mt. Quail | Red Fox |
| Bobwhite quail | Gray Fox |
| Ruffed grouse | Raccoon |
| Blue grouse | Brush Rabbit |
| Doves | Eastern Cottontail |
| Band-tailed pigeons | Snowshoe Hare |
| | Nutria |
| | Gray digger |
| <u>Waterfowl</u> | <u>Furbearing Wildlife</u> |
| Geese | Muskrat |
| Ducks | Beaver |
| Coots | River Otter |
| Snipe | Mink |
| Swan | Marten |
| <u>Big Game Wildlife</u> | |
| Roosevelt Elk | |
| Black-tailed Deer | |
| Black Bear | |

The composition of the species lists changes and it is important to check locally with the ODF&W and ONHP for the most current version of the list. Field checks and agency consultation for species are typically a part of the permitting process for projects requiring a permit from DSL and those projects supported by federal funds.

Vegetation along Mill Creek provides riparian cover essential to water temperature and bank stabilization. Riparian vegetation also provides wildlife habitat and protective cover for fish that might otherwise be exposed to environmental stress. Continued water pollution and stream improvements to alleviate flooding could be detrimental to fish life.

There are no identified ecologically or scientifically significant areas, wilderness areas, Oregon recreation trails, or wild and scenic waterways within or adjacent to the Turner UGNA. Native vegetation and wildlife habitat have been substantially altered by agriculture and urbanization in the Turner area. Therefore it is very likely that fish and wildlife habitat will not be abundant in the Turner UGNA.

The ODF&W overall goal is to assure minimal impacts to the environment and protect fish and wildlife habitat while still permitting most other land uses. Other goals seek to protect natural areas and preserve recreational and aesthetic opportunities. The Turner Comprehensive Plan is consistent with these goals and has included policies to support the recommendations of ODF&W.

Development in the Turner area does not lend itself to, nor is in conflict with, the existence of significant numbers of wildlife. However, parks and open space are extremely important because they provide habitat for small non-game mammals and birds. The City has adopted open space policies which seek to preserve these areas for their importance to the rural character of the community. The City also recognizes the need to protect its natural areas for recreational and aesthetic purposes and consequently is in conformance with Goals 5 & 6.

SECTION 9.280 AIR QUALITY & NOISE CONTROL

Air Quality

The Environmental Protection Agency (EPA) has designated air quality control regions to aid in the implementation of the Federal Clean Air Act of 1970 as amended. Turner is currently located in Portland's Interstate Air Quality Control Region for which the control of pollution emissions is necessary. The Department of Environmental Quality (DEQ) has jurisdiction over the air quality standards in the state and has developed air quality rules, regulations and standards toward which the region should conform. Automobile emissions and state controlled and monitored field burning are the major generators of air pollution in the Turner area. Additional information on air quality standards, controls, and permits can be obtained from DEQ and are provided in the Oregon Administrative Rules, Article 340. The City should also be regularly informed of new DEQ rule making activities to ensure compliance with statewide planning goals.

Noise Control

The Union Pacific Railroad is the City's most significant noise source and is subject to only federal regulations. Due to the track elevation noise mitigation is difficult. Adjacent

buildings compatible with rail use, earth berms and vegetative screening can provide some dampening although not to a significant degree. The Department of Environmental Quality Noise Pollution Control rules and guidelines (Oregon Revised Statutes 467.010 to 467.990 and Oregon Administrative Rules, Article 340, Division 35, Sections 5 to 100) establish standards regulating and controlling various forms of excessive noise. Future development that may generate excessive noise will be required to comply with the Turner Revised Code for Noise, Section 5.20.00 and the State DEQ noise regulations. The City has sought to minimize noise problems through land use planning standards that ensure compatibility of adjacent uses and separates noise potential activities from residences and other non-compatible business activities. Noise generation will be a consideration factor in all proposed developments subject to City review and approval.

SECTION 9.290 ENVIRONMENTAL GOALS & POLICIES

GOALS & OBJECTIVES

1. To recognize the opportunities and constraints posed by the natural environment.
2. To protect and improve the environmental quality of the Turner area.
3. To conserve open space and protect natural and scenic resources.
4. To ensure that future development will not result in adverse impacts on the natural resources of the area.
5. To preserve agricultural lands until needed for urban use.
6. To protect fish and wildlife resources and habitats.

POLICIES & RECOMMENDATIONS

General

1. All development proposals shall be within the carrying capacity of the air, water and land resources of the development site, the City of Turner and the surrounding area.
2. The City shall strive for continual and substantial progress toward improving the quality of the local environment by supporting strict enforcement of all applicable environmental quality standards and regulations and shall notify the governing agencies of any identified violations or potential problems.
3. The City shall encourage developments that reinforce the aesthetic appeal of the community's natural setting.

Topography & Drainage

1. Development proposals for sites with excessive slopes shall comply with the Turner Code to ensure that no environmental problems will result from the development.

2. Natural drainage channels and vegetation shall be protected from disruption.
3. Drainage courses shall be protected and maintained as natural greenway buffers wherever practicable.

Geology

1. Development proposals in areas considered to pose geologic hazards such as flooding, poor drainage, ponding, high water table and slippage, shall submit engineering investigations of the site, as required by the Turner Land Use Development Code, for review and approval of the City to ensure that no environmental problems will result from development.
2. Areas posing natural hazards to life and property shall be subject to strictly enforced development standards.
3. Open land uses, such as agriculture, parks and open space, shall be encouraged for natural hazardous areas to avoid potential loss of life and property.

Soils

1. Urban growth shall be contained within the adopted Urban Growth Boundary to preserve productive agricultural soils until revision of the boundary is necessitated by additional growth.
2. Expansion of the Urban Growth Boundary shall recognize the need to preserve productive agricultural soils.

Water Resources

1. Area watercourses, drainageways and wetlands shall be preserved to the maximum extent possible to protect water resources, fish and wildlife habitats, to preserve recreational and scenic resources, and to serve as natural buffers within the community.
2. Proposals for future development shall include plans for protection of on-site water resources and wetlands.
3. Public access to local watercourses shall be secured and maintained wherever appropriate and possible.
4. Developments requiring channelization, removal of streamside vegetation, alteration of streams banks and filling of stream channels are discouraged. Alterations considered necessary shall be submitted to the City for review and approval.
5. Developments adjacent to water courses, ponds and sloughs that may contain wetlands or riparian areas shall provide protective measures to insure environmental quality is maintained and enhanced.
6. The City should urge the Department of Environmental Quality to continue periodic monitoring of Mill Creek and local water courses to guarantee that water quality standards are being maintained.

7. Flood prone areas, particularly areas adjacent to Mill Creek and the Mill Creek Bypass, should be maintained in open land uses that are compatible with flooding conditions unless safeguards are provided to mitigate the flood hazard.
8. Development in identified flood prone areas shall conform to the standards of the City Code and the standards of the National Flood Insurance Program.
9. Essential flood protection measures shall be conducted in a manner least disruptive to the natural environment.

Water Quality

1. All developments within the City shall comply with applicable local, state and federal water quality standards.
2. The City shall work with local, state and federal agencies to reduce or eliminate potential contamination of ground and surface water resources.
3. The City shall work in close cooperation with Marion County and other agencies and jurisdictions to control the use of septic tanks to protect ground water resources within the Turner area.
4. The City recognizes the potential for groundwater contamination due to the existence of a shallow alluvial aquifer present throughout the low-lying areas of Turner. Groundwater impacts shall be a consideration when reviewing new development including Underground Injection Control (UIC) systems that require permit approval from the Oregon Department of Environmental Quality (DEQ).
5. Groundwater resources shall be protected from potential pollution from septic tank wastes, urban run-offs; solid and liquid waste disposal, and agricultural contaminants.
6. The City shall seek to reduce problems of erosion and sedimentation of water resources through their land use review procedures.
7. The City shall work with DEQ to implement Best Management Practices (BMP) contained in the City's current NPDES MS4S Storm Water Permit and its TMDL Management Plan

Vegetation & Open Space

1. Riparian vegetation along Mill Creek and other watercourses shall be preserved or restored to the maximum extent possible to protect water quality and wildlife habitat associated with riparian corridors.
2. Greenways along water courses should be designated and preserved to protect natural vegetation and water resources.
3. Parks and open areas shall be managed to protect existing native vegetation. Undeveloped natural areas in existing and future parks shall be protected to the

maximum extent possible while still meeting the recreational needs of the community.

4. Development proposals for residential, commercial or industrial developments shall recognize the value of existing on-site natural vegetation and shall identify and preserve these resources to the maximum extent feasible.
5. During development, large live trees shall be protected and preserved wherever possible, and dead trees should be preserved for wildlife habitat when there is little hazard or obstruction to doing so.
6. The creation of vegetative buffers between industrial areas and other land uses shall be encouraged.
7. Agricultural uses are recommended and approved as interim open space uses until urban development occurs.

Fish & Wildlife Resources

1. Mill Creek and other drangeways and watercourses should be managed to leave natural vegetation and non-hazard snags whenever possible.
2. The City will cooperate with appropriate federal, state, and local agencies to protect and improve fish and wildlife habitat in the Turner area.
3. In evaluating discretionary land use applications, the City shall consider the effects of the proposed use upon identified fish and wildlife habitats. Conflicting uses are to be prohibited unless satisfactory mitigation measures are provided.
4. Identified endangered species shall be protected. Proposed developments shall specify protective measures to protect endangered species within the vicinity of the proposed development site.

Air Quality & Noise Control

1. All development within the City shall adhere to applicable federal and state air quality standards.
2. The City shall encourage the use of alternative modes of transportation in an effort to reduce pollution from vehicle emissions.
3. The City will consider meteorological information such as the direction of prevailing winds when making land use decisions regarding proposed uses having the potential to adversely affect air quality.
4. The City shall require compliance with local, state and federal air quality regulations and requirements for development proposals submitted to the City.
5. New or expanded industrial development with a regulated air contaminant discharge shall be reviewed by the DEQ for assessment of the impact of the proposal on air quality in the Turner area.

6. Proposed industrial developments with air contaminant discharges shall be required to undertake mitigation measures to reduce potential impacts and shall comply with all federal and state air quality standards.

Noise

1. The City shall require noise reduction measures for future development proposals.
2. Proposed developments shall comply with the Turner Revised Code, DEQ Noise Control regulations, the Oregon Noise Control Act and all other applicable federal, state and local noise control regulations.
3. The noise impact of future development proposals shall be considered in the City's project review procedures.
4. The City shall require the separation and/or buffering of potential sources of noise from residential areas.
5. Proposals for new and improved streets shall include consideration of noise impacts on nearby properties and shall provide vegetative buffers, berms, or other means to minimize any adverse noise impacts.
6. Vegetative buffers shall be provided on the perimeter of industrial operations and other noise potential uses.
7. The existing vegetative buffers along the railroad and roadways shall be maintained to the maximum extent possible. Additional buffers shall be encouraged along the railroad.
8. Future noise sensitive land uses such as residential areas should not be located near noise sources.