

Regional Growth Concept Environmental Evaluation

The **Region 2050 project** encourages the citizens of the region to look forward and envision the southern Willamette Valley as they would prefer to see and experience it in fifty years.

This project encourages us to think “outside the box” when we consider how to deal with the impacts of population and employment growth. A land use paradigm that has been “typical” over the past 20 years will need changes as more people require essential services and demand that their quality of life be maintained or bettered.

The Challenge

A balance will need to be struck between development and environment. Humans are a part of the ecosystem requiring jobs, houses, schools, roads, food production, transportation, etc. These facilities and activities are necessary and must be accommodated and provided. However, many of these actions, especially as they were carried out in the past, have proven to have deleterious effects on the local and regional environment, and will likely continue to do so in our lifetimes, albeit (hopefully) with a decreasing impact as we fashion smarter solutions. Past ignorance of *cumulative effects* has led to problems that are now degrading resources that we have previously taken for granted. For example, nitrate pollution is affecting ground water quality; wetland fill has reduced floodwater storage and infiltration; loss of habitat and rising water temperatures are affecting salmonid stocks.

The Need

The following outlines some existing issues that center on the nexus of development and environment:

i) Loss of natural habitat and the Oregon landscape

- Urbanization and development almost inevitably leads to fragmentation and degradation of habitat with resulting loss of populations of certain native species. For example, the meadowlark and the acorn woodpecker are declining because of the lack of sufficiently large areas of suitable habitat.
- Being able to identify with a place is based on the characteristics of the urban and the rural landscape in the vicinity of one’s town.
- Many people derive significant pleasure from viewing wildlife and experiencing the “natural world”.
- There are sensitive species in the Willamette Valley that need large areas of good habitat to avoid extinction. Acquisition and restoration of sufficiently large areas of good quality habitat can reduce the likelihood of disruptive, divisive and expensive problems that arise when a species is listed as threatened or endangered (T&E).

ii) Recreational area use

- Residents of the region place a high value on being able to access and interact with the natural resources of the area. (See Appendix A).
- As the population of the area increases and the density within the cities increases, existing recreational areas will become over-populated and over-used. There is a need for more parks and open space and other areas for both passive and active recreation.
- With the increasing cost of travel, opportunities are needed that are close to cities and that are accessible by a variety of travel modes.
- Recreational amenities are important to attracting and keeping workers.

iii) Degradation of Water Supplies

- Nitrate, bacteria and elevated temperature in surface and ground water threatens the quality of drinking water.
- Water pollution increases costs for all users and is difficult to solve using only local initiatives.
- Pollution threatens livelihoods of fishermen and others dependent on clean water
- Conserving and restoring certain habitats can aid in improving water quality.

iv) Buildable Land Supply and Resource conflicts

- Lands with wetlands and endangered species typically undergo lengthy review and permitting processes, with no guarantee for property owners that issues will be resolved in favor of development.
- Requirements to preserve habitat on large parcels of industrial land may reduce the effective size of the properties so that they are not useful for siting large buildings.
- There is uncertainty due to resource conflicts as to whether existing urban growth boundaries (UGBs) contain sufficient buildable lands for industrial and residential development. Mapping and defining the issues and solutions on resource-challenged lands would bring more certainty to developers and city leaders and provide a better understanding of the land inventory, and consequently, the need or otherwise to find alternative building sites.

A New Paradigm?

Natural ecosystems are now being more widely recognized and valued for their production of essential benefits for humans (“ecosystem services”) – maintaining water quality, water quantity, providing pollinating insects for crops, moderating temperature extremes, decomposing wastes, retaining floodwaters, sequestering carbon, etc. (Attachment 1 is a fact sheet by the Ecological Society of America that provides further information and references. Appendix B outlines services provided by floodplains, wetlands and riparian areas). As these ecosystems have been degraded over time, new or improved infrastructure or other interventions are often called upon to compensate for the loss. These cost money and time, and can be incomplete solutions that are unsustainable over the long term. Further, while engineered solutions may be able to solve the

immediate problem, they are unlikely, due to cost issues, to provide ancillary amenities such as recreation.

Conserving natural areas in sizeable extents and in strategic locations assists in conserving ecosystem services, in providing recreational and aesthetic enjoyment for citizens, in providing a sense of place that uniquely identifies the region, and in conserving sensitive species. The “face” of conservation is typically seen as habitat, but natural areas can provide much more.

Conservation and protection of the natural environment should thus not be viewed as a *luxury* that is unaffordable or unattainable, but should be regarded as an *essential* component in a long-term effort to provide and maintain a livable and efficient community.

Looking forward over the next 50 years, policy can therefore be directed to preserve the functioning and form of natural ecosystems of this region so that an optimum blend of built solutions and natural processes can be achieved in order that citizens gain maximum benefit from the result.

All parts of the region have a stake in the outcome of this approach and have a role to play. Local issues and geography set the priorities for each city; best practices within urban areas call for plans that deal specifically with stormwater, parks and open space, energy, etc. Regional initiatives are needed when the externalities of urbanization (city or rural) spill over outside the local area and affect neighbors or when proposed solutions to problems are of a scale and expense that require collaboration. Dealing with non-point source pollution is necessarily a regional effort.

Impacts on Natural Resources and the Environment

Using the Region 2050 preferred growth scenario, Tables 1-4 itemize the coincidence of the cities’ footprints on the 100-year floodplain, wetlands, riparian areas and other habitat, detailing the areas within the current urban growth boundaries (UGB) and within the 2050 growth areas. Figures 1-11 map each city showing their location relative to the floodplain, wetlands, and rivers. Appendix B describes the ecosystem services provided by floodplain, wetlands and riparian areas, some of the threats posed by development as well as some mitigating approaches.

The results in the tables and figures utilize the FEMA mapping for the 100-year floodplain and the floodway. Note that while the preferred growth scenario did not necessarily identify floodways as Parks/Open Space, no capacity was counted for growth areas inside the floodway. For wetlands, the National Wetland Inventory is used except where local wetland delineations were available (Eugene, Springfield, Coburg, and Veneta); for local delineations, only wetlands classified as significant or potentially significant were included. In a few cases, sewage lagoons are included in the inventory (e.g. Junction City). The length of rivers, streams or lakes inside or within 500 ft of the

boundary of a city was computed; 500 ft was chosen to ensure that waterbodies in close proximity to urbanized areas were included.

Habitat estimates were obtained from the 1990 and 2000 land use/land cover mapping produced by the Institute for a Sustainable Environment at University of Oregon¹; these data are at 30 m resolution and are obtained from analysis of LANDSAT satellite data. The 90+ land use/land cover classes in these data sets were combined into a smaller set of groupings as shown in Table 4. Any vegetated area can be habitat for a particular species, and some species do well in urbanized landscapes. However, species of concern unique to this area are found in areas of native vegetation, and thus, in Table 4, the highlighted vegetative types regarded as most likely to be synonymous with native vegetation are selected as “possible native habitat”. Due to the limitations of the data, there can be confusion between some categories: for example, “natural shrub” may in some areas actually represent “oak” due to the life stage of the oak trees and the density of vegetation. Also, the quality of the habitat cannot be deduced from these data and the areas listed in Table 4 are definitely over-estimates of the amount of habitat available for selective species. Thus, the results in Table 4 should be viewed as a rough estimate of the types of vegetation present in each area.

Effects on natural resources and ecosystems arise through both point and non-point sources. Point sources can be regulated so that their effects are minimized to the extent possible by current best management practices, current knowledge, and the willingness of citizens and policy makers to undertake mitigating measures. Non-point sources, however, are much more difficult to control as they arise from seemingly small individual effects spread out over the landscape; the cumulative impact is large.

Managing Local Effects

It is essential that impacts to natural resources within urbanized areas be recognized and handled locally: ideally, allow no net increase in runoff from a new development, treat all water runoff to prevent pollution from being carried downstream or into the ground water; prevent pollutants from being emitted into the air; prevent open water bodies from becoming overheated, and so on. Of course, it is unlikely that 100% prevention can be accomplished, but cities and the county (where applicable) may (and are strongly encouraged) to:

WATER

- Adopt stormwater plans with state-of-the-art best management practices;
 - Manage impervious surfaces - roads, parking lots, rooftops all funnel potentially polluted water quickly to streams and rivers (directly or indirectly through infrastructure pipes). These surfaces accelerate flow, causing peak levels of runoff that increase the threat of flooding, and erosion. Increased velocities move greater amounts of pollutants.
 - Reduce the amount of impervious surfaces: use pervious surfaces such as grass pavers, pervious concrete, roof gardens.

¹ <http://www.ise.uoregon.edu>

- Capture runoff and detain: use rain barrels, detention ponds, constructed wetlands
- Provide natural filter strips, buffers and infiltration areas to treat runoff where created on site.
- Prohibit development in floodways;
- Adopt riparian protection plans with adequate buffers on waterways;
- Provide incentives or require retention of forest cover in areas that are susceptible to stream channel instability
- Require regular inspection of septic systems; permit proven composting toilets and other small flow sewage systems;
- Institute “pooper scooper” laws to prevent contamination of water by pet droppings;
- Require and inspect for proper animal manure management on small farms and large lot rural residences;
- Carry out educational campaigns to reduce the misuse of potentially polluting household and garden chemicals;
- Provide toxic waste collection services for households, including motor oil, antifreeze, paints, pesticides and herbicides;
- Regulate chemicals that have been shown to cause significant pollution;
- Require special permits and periodic inspections for underground storage tanks;
- Conduct intensive educational outreach to businesses and residences in well-head protection areas.

AIR

- Use fuel efficient and less polluting cars in government fleets;
- Use less polluting fuels in off-road and construction equipment used by public works departments;
- Require government contractors such as garbage services to utilize cleaner burning fuels;
- Prohibit extended idling of vehicles including trains within city limits; require electrification of truck stops and intermodal transfer sites;
- Ban open backyard burning;
- Prohibit home-wood heating or require stoves to meet clean-burning standards, replacing those that do not meet clean air standards.

HABITAT

- Conduct a comprehensive Goal 5 natural resources inventory to determine the location and context of sensitive lands.
- Protect rare and endangered species by purchasing the lands on which these species exist and providing buffers for protection;
- Adopt riparian protection plans with adequate buffers on waterways;
- Require wildlife crossings and properly sized culverts when building roads or paths through natural areas;

- Adopt a “dark skies” ordinance that regulates the type of outdoor lighting to avoid disrupting wildlife as well as to enable residents to enjoy star-gazing;
- Adopt an urban forest plan and planting plan requirements that ensure utilization of native species when feasible and that prohibits invasive species;
- Encourage home-owners to plant native species and prohibit local sales of invasive plant species.

LANDUSE

In addition to preventing harm in the first place, certain types of development should be encouraged in order to minimize detrimental effects of development:

- Site schools, hospitals, and retirement homes and others used by sensitive populations (children, pregnant women, elderly, and sick) at least 500 ft from high volume roads to avoid exposure to diesel particulate matter emitted by heavy duty truck.²
- Rehabilitate, cleanup and develop brownfields – abandoned, idle and underused properties that may be or may have the perception of being contaminated.
- Do not site hazardous waste disposal facilities in ground water aquifer recharge areas or well head protection areas;
- Cluster residences – development of this form is encouraged to reduce environmental impacts, maintain the rural character of the countryside, and reduce conflicts with farm and forest activities. This form of development (also known as conservation development) has not been promoted or encouraged in this region, but looking forward over the next 50 years at further pressure for development or redevelopment of large rural properties or urban fringe greenfields, it is highly recommended that this concept be further investigated and pursued. Cluster development can be appropriate for the development of any large parcel be it inside a UGB or in a rural area. Places outside this region that are now experiencing growth pressures are investigating this option – for example, attachment 2 is an excerpt from rural design guidelines developed for a county in Virginia. This document compares the various patterns on the land under different development designs³. The following provides a brief discussion of this issue.

Promote Cluster Development

The subdivision of large parcels into small parcels of a few acres impacts habitat, water quality and quantity, and increases costs of infrastructure, particularly access to roads and utilities. These impacts can be reduced by using cluster development.

Clustering has multiple benefits:

- It maintains large areas of open space and thus keeps the landscape “rural”
- It can buffer residences from other land uses, thus removing conflicts.

²Canada Ministry of Environment (www.cher.ubc.ca/PDFs/BAQS_feb16_06.pdf) and State of California (Senate Bill 352, 2003)

³http://www.james-city.va.us/resources/devmgmt/planning/rurallands/RLS_Mtg_PubWork.html

- It does not take away the development potential from property owners but changes the form of the development. A density bonus for cluster development could be employed as an incentive.
- It is cheaper for the developer – infrastructure costs are reduced, land clearing costs are reduced. Schueler (1995) reports a reduction in costs from 10-33%.
- Access management to public roads is improved – a single point of entry/exit to the public highway is safer, and has less effect on capacity of the roadway. School bus stops can be located on the safer low-speed access road.
- Owners can share facilities and upkeep costs such as private road maintenance, stables, gardening plots, community wells and possibly sewer systems.
- A sense of community can be established and public safety is improved.
- Fire protection can be established and maintained through vegetation management and strategic siting and use of ponds
- Open space and trails can be established for use of the residents.
- Unbuilt areas/open space could potentially be managed for habitat or resource protection and be eligible for tax credits or other benefits.
- Fragmentation of habitat can be reduced thus reducing threats that arise from edge effects and lack of interior core habitats
- Development can be more easily sited to avoid sensitive areas, and the number of houses that can be built might be larger under clustering than would be feasible under conventional development on parcels with sensitive areas.
- Impervious surface is reduced due to the reduction in the road network⁴
- Stormwater runoff and pollutant loads are reduced due to reductions in impervious cover. There is also sufficient open space to install interventions for capturing and treating runoff, and maintenance is more likely to be assured.

Cluster development does not prohibit development or otherwise impinge on an owner's right to make money by developing his land. Some may argue that the market would not accept this style of development. The Urban Land Institute explored this issue in a report (Attachment 3)⁵, opining that while cluster (also known as conservation) development is a niche market at this time, it will become the norm in the near future. In California, large subdivisions of houses in cluster developments sold at a premium with open space, walking and bike trails important selling points. Houses in such developments appreciated in value more quickly than houses in conventional developments. Further, a survey found that nearly 90% of buyers would pay extra for green features, and 66% would pay \$2,500 or more for these features³. Thus, if the design of the development is sensitive to privacy issues and provided amenities that a single residence would not

⁴ Our Built and Natural Environments. A technical review of the interactions between land use, transportation and environmental quality. EPA-231-R-01-002 January 2001. US Environmental Protection Agency. http://www.nahbr.org/greenguidelines/userguide_site_innovative.html

⁵ The Practice of Conservation Development: Lessons in Success. Urban Land Institute Policy Forum Report, Dec 2002. ULI Catalog Number 677. <http://www.uli.org/AM/TemplateRedirect.cfm?template=/CM/ContentDisplay.cfm&ContentID=11047>

otherwise have access to in a conventional development, it seems likely that buyers would be interested.

Incentives such as density bonuses could be offered to promote cluster over conventional development in sensitive areas. This would include areas that serve as wildlife corridors where interaction with humans is detrimental. Also, areas with rare habitats or hazardous conditions – clustering would permit selection of the most suitable areas for development and would permit more houses than would otherwise be possible. A mapping of the region to develop overlays which detail these areas would be necessary, and a would be a first step in defining sensitive areas.

The impact of large Measure 37 claims both on the environment and on nearby neighbors could be reduced by considering this form of development.

Regional Initiatives

Local actions are significant, but cannot compensate for the effects of impacts that are spread out over the region and are each by themselves seemingly insignificant or uncontrollable. The cumulative effect of these “thousand cuts” adds up to a major impact. Loss of habitat is a prime example of this problem. As development proceeds both inside and outside the cities, formerly large intact natural areas are fragmented into small remnants which are not likely to support certain species that need large ranges for breeding or feeding. Edge effects increase the problems with predators such as cats, and the presence of lights, noise, motion and invasive species can be detrimental to certain native species. Migration corridors can be cut off.

Outside the cities, by the very nature of conventional rural development and rural resource extraction, rural activities are spread out over a large area, and tend to be less easily regulated than in the cities. Interventions to collect and treat stormwater, for example, fall upon the individual owner rather than the local government which is more likely to have the experience and funding to be able to respond successfully to this need.

To maintain ecosystem services and prevent degradation of essential resources while maintaining community support, an approach is needed that compensates for the “thousand cuts”, and that is a compromise between unfettered development and no development. For scarce resources, this is not done by merely preserving existing habitat – there would be no net gain and thus no advance over the current status; instead, it is accomplished by restoring degraded habitat to functioning status.

MITIGATION BANKING

The West Eugene Wetlands (WEW) conservation plan was an innovation when it was first developed in 1980's. It brokered a workable solution to environment/development conflicts that afflicted the west Eugene industrial area. Without this plan and buy-in from federal and state regulators, orderly development in west Eugene could not have proceeded. Now, 25 years later, large tracts of wetlands have been restored and secured

from development, and are managed for the ecosystem services they supply plus species conservation, recreational and aesthetic qualities. The purchase and restoration efforts have been funded by grants and by developers who, in effect, pay impact fees to a mitigation bank to compensate for filling wetlands on their properties.

This type of planning is thus a proactive approach that is strategic and large-scale and that attempts to address impacts that are scattered across the landscape– it directs efforts to places in the landscape that are of particular importance for the resource, and coordinates efforts so that the results are of a magnitude that can have significant and useful outcomes. The objective is to minimize environmental damage and make use of ecosystem services while permitting development to proceed on sites best suited to the planned use. A cornerstone of this approach is the development of a mitigation process that enables developers to compensate/mitigate for their actions that harm the resource – the amount of credits required depends on the value of the resource and is assessed by consideration, among other things, of location and habitat type, its proper functioning, the quality of the resource, and the resident species.

The steps in developing such a conservation plan include

- 1) Map and classify the resources. Without knowing where, what and how much, it is not possible to make sensible decisions judging impact. A well-done and comprehensive Goal 5 natural resources inventory would serve here.
- 2) Assign quality indices to each separate resource. Develop a process that weighs the long term sustainability of each resource if preserved or restored in-situ, and that evaluates the ability to successfully restore a degraded resource area.
- 3) Define the costs in terms of mitigation credits for development based on the quality of the resource that will be impacted, its location/context, etc.
- 4) Develop a mitigation bank that partners with the Federal and State agencies, and that sells credits to developers.
- 5) Define the service area of the bank and the types of resources that can be mitigated with the bank
- 6) Establish buy-in by the Federal and State regulators
- 7) Perform enhancement on properties that will be funded through the bank. This should be done as early as possible to establish the viability of the site and restoration procedures.

The West Eugene Wetlands plan was developed by the City of Eugene for properties only in West Eugene since Eugene had sufficient area of wetlands within its UGB to make this approach feasible. However, the resource evaluation process and banking infrastructure could have been set up to serve other jurisdictions in the area that had similar wetland conflicts. In fact, the service area for the WEW bank may now be extended to encompass most of the valley portion of the Region 2050 area (excluding Cottage Grove).

Wetlands have typically been the focus of this approach due to the regulation of wetland fill by the US Corps of Engineers and the Oregon Dept. of State Lands, based on the

public benefit provided by wetlands – water storage, water cleansing, ground water replenishment as well as unique habitat and species, and the huge loss that has occurred since European settlement.

It is proposed that the local governments and the county extend mitigation banking to address impacts on other sensitive habitats including oak woodlands and savanna, old growth conifers, pine/oak areas, and upland prairie, as well as ecosystem functions that provide public benefit.

Table 4 suggests that, not including the impacts of rural development, some 5200 acres of natural habitat could be developed over the next 50 years in the growth areas of the preferred growth scenario, and some 6300 acres are possibly at risk or are dysfunctional within existing UGBs. By using a collaborative approach among government in the region, a small impact in one area can still be meaningfully mitigated.

Further, this approach could be expanded to

mitigate for impacts to other environmental resources that provide public benefits or ecosystem services.

Impacts to floodplains due to building of revetments and levees, removal of floodplain forest, increases in impervious surface, addition of fill and reduction in storage volume; impacts on water quality through discharges of heated or polluted water, increases in impervious surfaces, etc. – these impacts cause harm to public benefits normally provided by the ecosystem. An impact fee or system development charge directed to mitigation projects could be imposed. For example, floodplain impact fees could fund large scale projects such as the reconnection of cut-off side channels and oxbows to the floodplain to allow access by flood waters during floods. Table 1 indicates that, within the Region 2050 urban growth areas, there will be about 990 acres of land developed in the floodplain and 340 acres of known wetlands.

As an additional benefit to the community, it is likely that these large scale restoration or conservation areas would provide recreational opportunities, just as the West Eugene wetlands restoration areas have been augmented by multi-use paths that are used by pedestrians, bicyclists, nature lovers, and even commuters. And, as the natural vegetation is restored, certain species that are dependent on floodplain forests (of which there has been a large reduction since European settlement) would likely stabilize their populations, thus averting a crisis reaction by the Federal and State governments.

Development of conservation plans and characterization of natural resources within the cities and county would provide certainty to developers and planners. If mitigation bank service areas were set up to serve the region rather than a particular city, the economies of scale and the greater number of banks serving the need would likely decrease the cost of credits. Properties throughout the region, including those outside the UGBS, would be able to take advantage of the bank.

The cost of a credit could be shared between the developer and local government – in some cases, local government could absorb all the cost; in other cases, developers would pay the full cost. Where the bar is set is a policy decision that each city would make.

The marketplace would ultimately set the price for a credit of a certain type. Rare habitat, by its very nature, would be most expensive, reflecting the high public cost incurred when it is destroyed. Owners of habitat that could be enhanced to restore its value or function could establish, or perhaps provide a conservation easement to, a mitigation bank as a business endeavor. Restoration efforts in the region would promote a new industry for farmers and foresters in growing native seeds, shrubs, and trees, and in providing cultivation and management services.

ODFW CONSERVATION OPPORTUNITIES STRATEGY

The Oregon Dept. of Fish and Wildlife have issued a report “ Conservation Strategy for Oregon”⁶ that outlines priority areas in which conservation and restoration areas are desirable in order to provide permanent protection for Oregon’s unique plant and wildlife species. In the southern Willamette Valley and Region 2050 area, eight areas are outlined (Figure 12). The intent is to focus conservation efforts in these areas to get the greatest reward for the effort expended. Siting regional mitigation bank enhancement areas in the appropriate opportunity areas will support ODFW’s strategy and will augment a systematic and strategic approach to restoration.

As is shown in Figures 1-11, most cities, except for Cottage Grove and some of Eugene’s central city residents, are within 3 miles of a priority area. Thus, establishment of the restoration areas will likely provide recreational benefits as well as ecosystem benefits.

PUBLIC BENEFIT REBATE SYSTEM

King County, Washington, is experimenting with an incentive approach that encourages rural owners to manage their land for conservation and ecosystem service benefits, above and beyond the minimum required by law. A landowner who carries out an approved Rural Stewardship Plan developed in coordination with a county resource planner can apply for a tax reduction based on the amount of land dedicated to open space and the characteristics of that open space. Critical areas are mapped by the county to satisfy particular needs, and property within those areas are eligible. Further, the county is offering flexibility in meeting regulated resource protection and other development standards when a stewardship agreement is developed.⁷

This approach appears similar to the Habitat Conservation and Management Program and the Riparian Tax Incentive Program administered by ODFW. To the author’s knowledge, only farm and forest lands qualify for these programs. Rural residential lands are excluded. More flexibility appears to be needed, given the large area of rural residential properties. Inclusion of rural residential property that is developed in cluster form into these two programs could be a valuable tax incentive.

⁶ <http://www.dfw.state.or.us/conservationstrategy/contents.asp>

⁷ Stewardship Planning Programs in King County. June 2006. <http://www.dnr.metrokc.gov/wlr/cao/>

Summary

Local and regional initiatives are needed to ensure that ecosystem services and habitat are maintained into the future. While fifty years seems like a long way in the future, some of the actions suggested in this report take considerable time. It is suggested:

- 1) That an expert panel be assembled to fully investigate the use of mitigation banks for resources that are not at this time regulated by the State or Federal governments, and that a technical group with members from all cities and the county, meet over the next year to develop a proposal for collaborative action,
- 2) That an expert panel be assembled to fully investigate cluster development and incentives that might offered to encourage this form of large parcel development; and that examples of such development be assembled for policymaker consideration.
- 3) That other tools and techniques suitable for restoring and conserving ecosystem services and habitat be further investigated and examples provided to policy makers for consideration.
- 4) That local governments, which have not already done so, develop a comprehensive Goal 5 natural resources inventory both within the current UGBs and in the growth areas.
- 5) That local governments, which have not already done so, develop a comprehensive stormwater management plan,