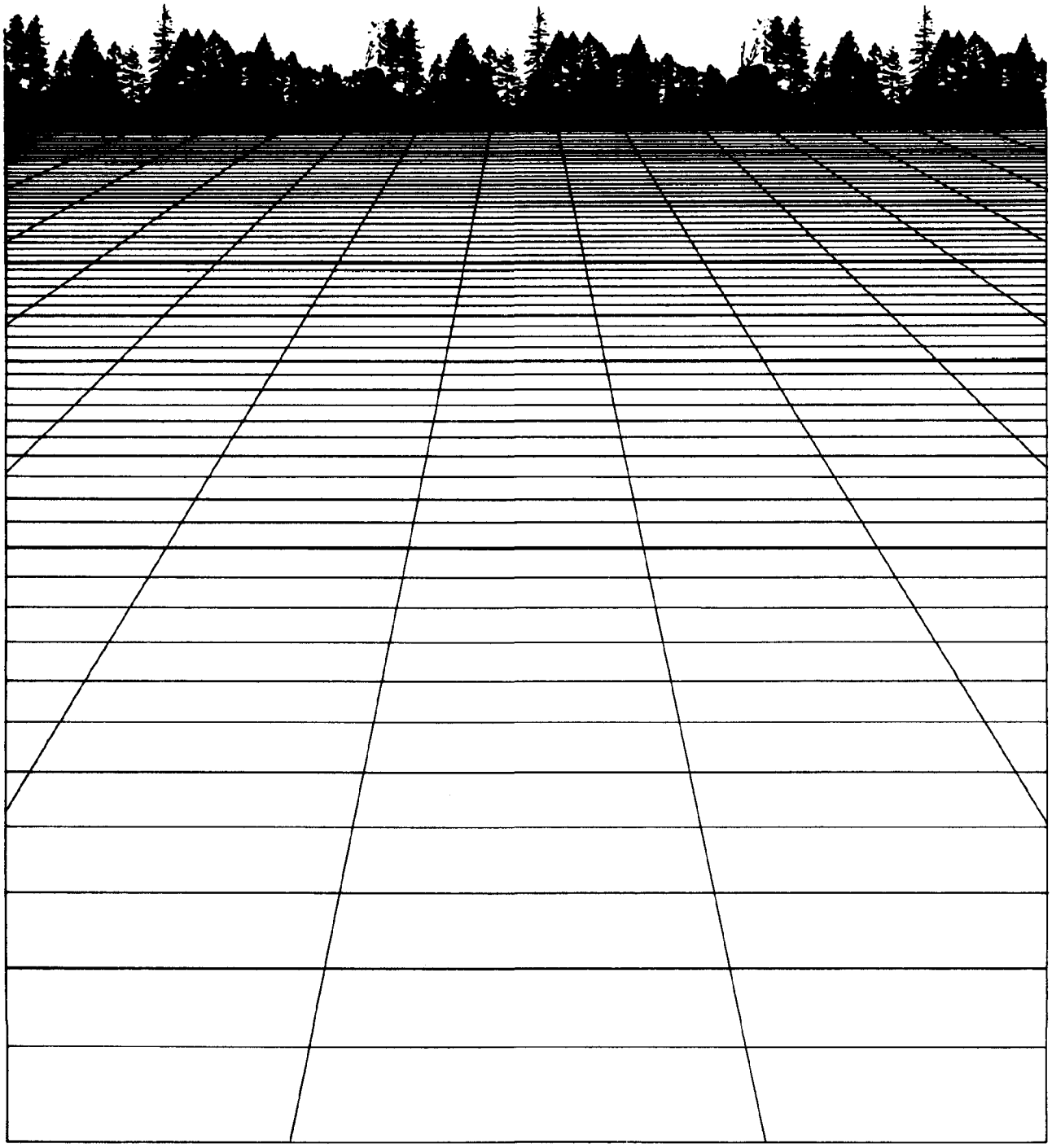
COMPREHENSIVE PLAN MONITORING:

Guidelines and Resources for
Oregon Communities



Prepared for the Oregon Department of Land Conservation and Development by Richard L. Ragatz Associates, Inc.

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COMPREHENSIVE PLAN MONITORING

Guidelines and Resources For Oregon Communities

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I. INTRODUCTION

The planning process in Oregon has evolved from the promulgation of goals and guidelines at the state level to a network of acknowledged municipal and county comprehensive plans. With completion of the plan preparation and acknowledgment process Oregon's communities will move into a new phase of planning activity which emphasizes applying the comprehensive plan structure to local development planning and policy decision-making. An additional emerging concern is with adapting the acknowledged plan to changing local and regional conditions and to changing community preferences so as to maintain the viability and usefulness of the plan as a guide to the development process.

This handbook has been prepared to assist local jurisdictions in assuming the new responsibilities of monitoring the performance of their comprehensive plan and developing efficient procedures for plan updating and other adaptation as an integral part of plan implementation. The emphasis throughout is on monitoring from the perspective of local jurisdictions which seek to make the most productive use of their comprehensive planning process. Examples of primary local plan monitoring concerns include ascertaining whether locally adopted plan goals are being achieved, whether implementation policies are adequately effective, and what plan updating is necessary given new conditions in the community. The Land Conservation and Development Commission, in sponsoring this document, seeks to help these communities capitalize on the unique comprehensive planning system which Oregon has developed, and to assure that this system will be adapted as necessary to maintain its currency and usefulness.

Monitoring in a Comprehensive Planning Process

Monitoring is a process by which information is gathered during the implementation of a comprehensive plan so as to judge the effectiveness and desirability of plan policies. Monitoring activity is fundamental to comprehensive planning as an ongoing process: monitoring information provides the basis for redirecting plan goals and policies and maintaining plan relevance under changing conditions. Once a comprehensive plan has been acknowledged planners must be able to evaluate the results of their policies and recommendations. They also must be able to recognize when plan changes are required to reflect economic, resource, demographic and other trends in their community. Failure to monitor plan implementation leads to plan obsolescence and to abandonment of the plan as a policy document for local decision-making.

A plan monitoring system, adopted as one component of plan implementation, helps address several specific implementation needs:

1) Measure progress in achieving program and policy objectives;
2) Identify necessary plan updates and other changes in response to changing community and regional conditions;
3) Provide information necessary for plan adaptation and updating;
4) Offer guidance for making specific policy and project decisions at the local level;
5) Assess plan compliance with state goals and guidelines.

A monitoring system provides the information with which progress towards plan objectives can be assessed, and also supports specific recommendations for plan changes. Without some form of monitoring system in place the planner is often forced to collect new data, such as inventory or community conditions data, in order to develop recommendations.

Monitoring primarily involves collecting and analyzing pertinent data in light of plan implementation needs. "Data," as used in this handbook, refers to quantitative measurement of phenomena and relationships of interest to the planner and decision-maker. In the following sections "data items" refer to a variety of specific measurements. "Information" is a more general term relating to data application for monitoring and other needs.

> Information is the result of aggregation, manipulation, permutation, or any other set of statistical, mathematical, or algorithmic change designed to reach some desired level of understanding. Information is what we get when we use data to arrive at succinct and salient knowledge needed to solve a problem or to show patterns or directions. (Catanese, 1979: 92)

A unique and important role of the planner involves translating and applying information to the complex decision-making situations faced by local government.

> The most highly developed level of knowledge is intelligence, which is the ability of our system to seize the essential factors from complex information and data. It is this ability that provides the decision makers with what they need to know. (Catanese, 1979: 92)

With regard to monitoring, planners must strive to interpret the plan implementation process and make detailed and well documented policy and project approval recommendations. It is towards this end that a monitoring data collection and analysis system should be developed at the local level.

Desirable Monitoring System Characteristics

The context created by the Oregon comprehensive planning process, and the character of Oregon municipal and county governments, suggests certain

desirable characteristics for local plan monitoring systems.

1) Flexibility.

Shifting conditions and concerns at the local and regional level dictate flexibility. Local jurisdictions should adopt monitoring approaches which are adaptable to new issues and needs and variable in scope and complexity so as to allow expansion and contraction as available resources vary.

2) Long Range Investment.

To the greatest extent possible jurisdictions should develop monitoring data and analysis systems which can be sustained and expanded in the future and which represent an investment in community planning intelligence. Investments at the onset--such as in data bases with future as well as present applications--contribute to higher quality and more cost-effective planning in the years ahead.

3) Data Reliability.

Planners and decision makers must have reasonable confidence in the information on which planning recommendations are based. Planning staff should first emphasize the collection and maintenance of the most reliable and useful information data, expanding the data collection to additional areas as time and resources allow.

4) Local Technical Expertise.

The collection, analysis and interpretation of planning data requires technical expertise, the more so if computer-based approaches are used. Local planning staffs should strive to expand their knowledge and experience as necessary, and to avoid undue dependence on outside assistance. Although in some circumstances a certain amount of consultation may be useful, adopting monitoring systems which necessitate ongoing dependence on such assistance may hinder the ability to maintain and use the system in the future.

5) Minimum Cost.

Cost is an important concern, particularly since many of monitoring's benefits are long-term. Planning staff can argue best for financial support of those monitoring approaches which are cost effective and compatible with other on-going planning activities.

6) Compatibility with State Planning Process.

Overall compliance with state-mandated goals and guidelines is to be maintained at the local level. In addition, in the years ahead acknowledgment will need to be maintained. Monitoring conducted at the local level should aid the jurisdiction in addressing state goals and maintaining acknowledgment status.

These factors guided the development of the monitoring approach which is presented in the chapters which follow.

Designing a Local Plan Monitoring System

In light of the above factors the authors have prepared guidelines and suggestions which allow a wide variety of local jurisdictions to enhance their monitoring capability within the constraints imposed by their resource limitations and with their particular monitoring needs in mind. Careful attention has been paid to maintaining local level design flexibility. A wide variety of data sources are described from which jurisdictions may choose, and published and readily available administrative record sources are stressed whenever possible so that costs can be minimized. The state goals and guidelines are used to structure the monitoring system design so as to facilitate coordination with eventual plan re-acknowledgment. Jurisdictions are shown a step-by-step process by which they can identify their highest priority monitoring needs and develop a system for collecting and analyzing the necessary data. In addition, suggestions are included for increased use of existing data sources which currently are not widely utilized, in particular computerized assessor files available at the local level.

The handbook discussion is aimed at local planning and management officials and their consultants who have at least a minimal familiarity with comprehensive plan preparation and implementation and the use of basic planning data. It is assumed that officials in smaller communities who have limited planning experience can locate plan monitoring assistance from county or COG planning staffs, or perhaps from consultants. In certain cases it may be appropriate for county or COG staff to systematically provide monitoring assistance to all smaller jurisdictions within their boundaries, and this handbook is intended to serve as a resource for such cooperative efforts.

Handbook Contents

Following this introduction, Chapter II discusses the role of monitoring in a comprehensive planning process, in particular how monitoring contributes to plan implementation and updating. The following three chapters address specific aspects of monitoring system design. Chapter III outlines data needs of monitoring with respect to local plan objectives. Chapter IV reviews the sources with which these data needs can be met. Chapter V explains how a monitoring system can be developed from the information in Chapters III and IV along with application of available published data, data gathered from local administrative records, and other data as necessary. Following this, Chapter VI provides examples of monitoring system development and application using the municipality of Newport and Lincoln County for illustration. This chapter opens with a user's guide which reviews the entire process of monitoring system development and how this handbook can be best used as a resource. Finally, Chapter VII discusses approaches to mechanizing certain aspects of a monitoring system, in particular the application of tax assessment data from local sources.

Two appendices provide additional monitoring system detail. Appendix A reviews basic planning data system principles and reviews examples of planning data systems in Oregon in light of their monitoring capabilities. Appendix B discusses the application of assessor's data to plan monitoring and discusses the research conducted in order to estimate the accuracy of these data for monitoring use. An annotated bibliography and glossary of agency abbreviations used in this handbook are also included.

II. THE ROLE OF MONITORING IN A COMPREHENSIVE PLANNING PROCESS

Monitoring is an activity which a community undertakes in order to implement its plans and policies in the most constructive and beneficial manner. Monitoring information gathered by the implementing body provides the intelligence by which the plan can be evaluated from the local perspective, applied most appropriately in a variety of policy development and project approval decision-making situations, and adapted to changing local, regional and national conditions. Without monitoring information on local conditions and patterns of change a community is unable to fully understand its own situation and context and to make the periodic policy and plan alterations which are necessary.

In visualizing the role and value of monitoring activity it is useful to consider a comprehensive plan as a form of community investment. Extensive effort goes into gathering the appropriate data, conducting the necessary analysis, and deciding on the proper priorities among policies and other plan elements. As time consuming and demanding as this process is, however, its real benefits emerge only when these priorities and policies begin to guide development in ways which meet plan goals and objectives. Plan monitoring allows assessment of the extent to which goals and objectives are being met and leads to suggestions for necessary adaptation of plan implementation policies and measures. Without such monitoring and the updating and adaptation which flow from it, a plan is an inflexible document of little use which all too often becomes ignored in the process of decision-making. Monitoring and plan updating therefore protects a community's investment in its plan and planning process, building on the plan as a resource in the process of guiding community development in desirable ways.

The value of initiating and maintaining a monitoring system for a particular jurisdiction relates to:

1) the complexity of the planning problems it faces and its ability in the past to effectively address these problems;

2) the rate of change occurring in the community;

3) the value of the community's resources, particularly those upon which its local economy is based; and

4) the variety and specificity of its community development objectives.

Communities facing complex, rapidly changing situations, which rely economically on valuable resources, and which have developed relatively specific development objectives will benefit most rapidly from plan monitoring. Many of the larger counties and municipalities in Oregon can be described in the above terms, as well as certain smaller jurisdictions. Those communities facing fewer and/or slower changes will still benefit from monitoring as a component of their plan implementation process, but will find that a relatively simple system may fit their needs adequately.

Monitoring in an Ongoing Comprehensive Planning Process

Monitoring is the component of a comprehensive planning process which involves ongoing collection of a variety of important information. This information also supports several other plan components. The role of monitoring and the collection of information upon which it relies is illustrated in figure 2-1. It shows that while a monitoring process generally falls between plan implementation and plan updating, the collection of monitoring information supports plan preparation and updating components as well as monitoring and evaluation itself.

The emphasis of a monitoring "system" is thus the systematic collection of data which will be useful for plan evaluation and updating. Figure 2-2 shows the primary ways which these data are analyzed for monitoring purposes, and the most common applications to which monitoring information is put.

Data Inputs

Monitoring is above all concerned with data needs and sources: the inputs to a monitoring process. A particularly important concern is describing the present and past conditions in a community or region. Such measurement is in terms of quantities and/or capacities, or of qualities. Quantities and capacities are amounts, such as of agricultural land, housing supply, the available capacity in a public facility, employment, or some other community characteristic. These aspects of a community's condition tend to be relatively easy to visualize and describe. Describing quality tends to be more difficult, however. Quality aspects include the quality of the housing supply, the productivity of agricultural land resources, the extent to which public facilities and services provide satisfactory services, and other factors which are sometimes fairly subjective and difficult to quantify.

Information on a community's conditions tends to be most useful in establishing trends and tracking a community over a relatively long period of time. These data relate to the community itself, describing physical, economic or social attributes which are used to represent the community for planning purposes.

Another primary monitoring concern, and a second type of information, relates to the shorter-term dynamics of a community, in particular to the political and other decision-making which serves to guide community development. Such decisions include elected body decisions on annexations,

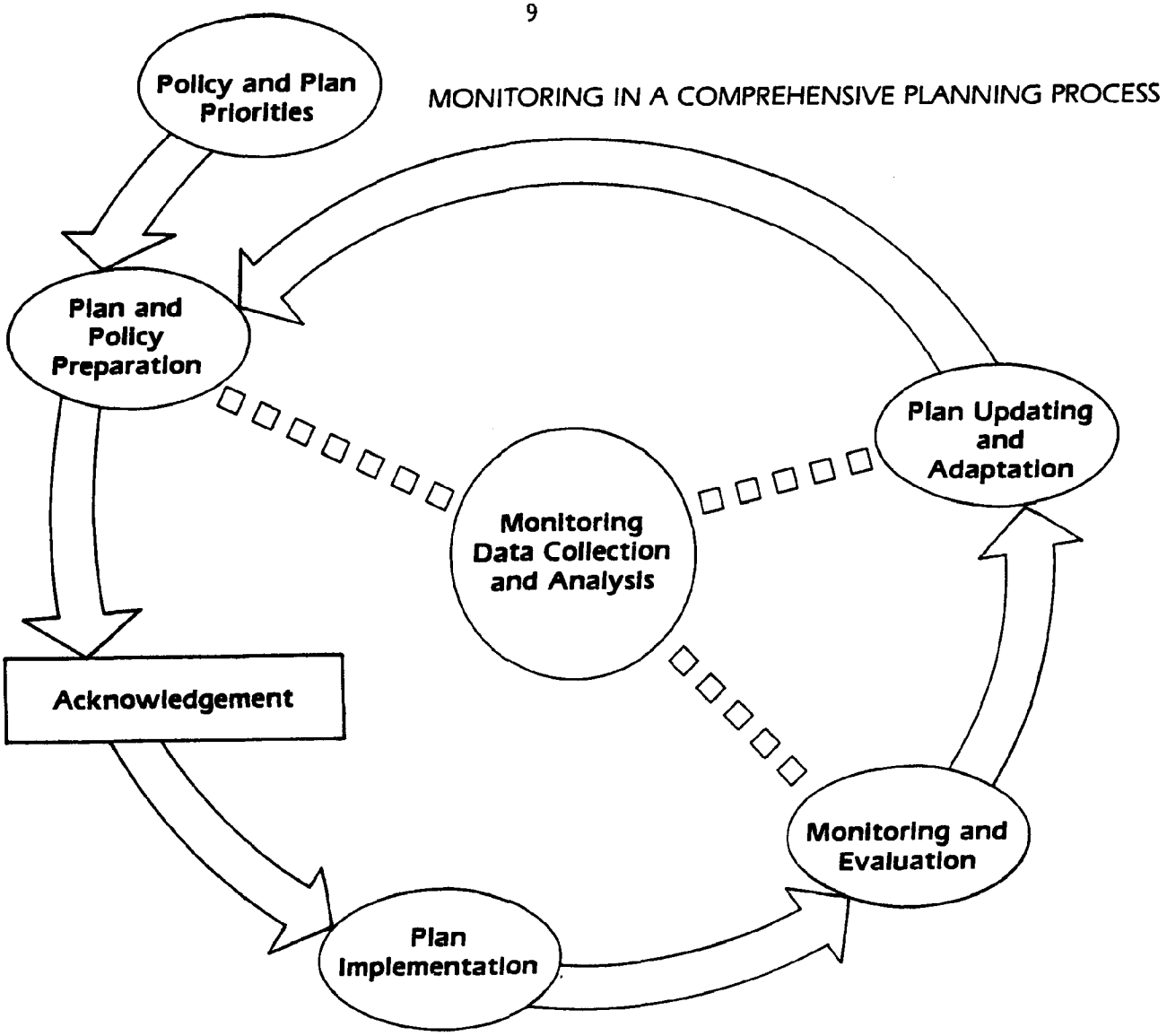

FIGURE II-1

changes, variances, partitions and other approvals which in turn affect the quantities and qualities of community features, resources and facilities. Rural land partition approvals, for example, affect both the quantities of lands in agricultural use as well as the productivity (quality) of these lands. State goals and guidelines in many cases are specifically concerned with the consistency between a plan goal or objective and the decisions made within a community which relate to that goal. Certain goals, such as 13 (Energy) and 15 (Willamette River Greenway) are phrased such that maintaining this consistency constitutes the goal itself.

At the local level, however, the benefit of monitoring these shorter-term dynamics is in providing very useful indications of trends which may over time affect community conditions. Thus a community which monitors

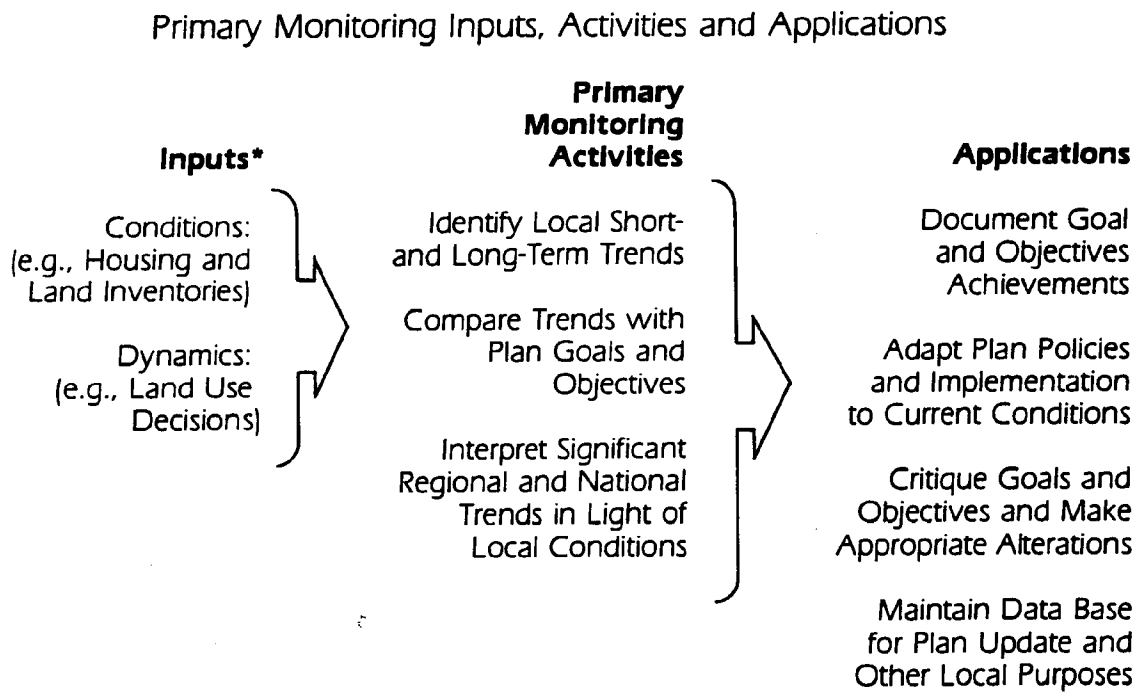

FIGURE II-2

variances and zone changes might find an emerging pattern of housing density which is in conflict with plan objectives but which would not become visible for several years if only densities themselves were measured and tracked. Furthermore, maintaining information on and analyzing these dynamics allows a community to understand the components of change: how a community evolves from one condition to another. Such information is very useful for planning and policy purposes.

Information on regional and national conditions and dynamics may also be very important in certain monitoring situations. Examples include regional or national economic conditions, state or federal policies and activities, resource market trends, or population migration trends. Shorter-term dynamics in particular, such as decisions relating to public facilities

or other funding, resource management policies, or proposals for specific developments, may have important local impacts.

Primary Monitoring Activities

Several activities form the core of a monitoring process. The first and most important is identifying short and long-term trends in community conditions which relate to plan goals and objectives. Examples include watching changing patterns in the housing inventory and its quality, or keeping track of available capacity in important public facilities. This activity makes use of information on community conditions in particular for longer-term trend analysis, and also on information regarding community dynamics for identifying shorter-term trends which may be important.

Second, this trend information is compared to plan goals and objectives in order to ascertain the extent to which these objectives are being met. For example, are local trends in the agricultural land inventory and in productivity consistent with an agricultural land preservation goal?

A third activity involves interpreting information on regional and national trends in light of local conditions and the implementation of the comprehensive plan. Will changing national timber, agricultural, or tourism markets affect the need for housing in the community? Are changes in national public facilities funding policies and priorities going to affect the need or ability to pay for local facilities? Regional or national trends may explain why certain plan goals and objectives are not being met even though local policy appears to be well chosen and appropriate. Or, such broader trends may suggest a review of objectives and perhaps the choice of new targets or policies. Overall, tracking important conditions and events outside the community recognizes that comprehensive planning cannot be done in isolation; the plan must reflect regional and national realities as well as the local situation in order to be useful for guiding public policy.

Monitoring Applications

The results of monitoring relate directly to plan implementation and adaptation. The primary applications within an ongoing comprehensive planning process are as follows:

1) Documenting plan objective achievements. Without some form of monitoring a community is unable to assess its own planning performance.

2) Adapt plan policies and implementation procedures to current community conditions. Monitoring output indicates whether implementation strategies are adequate, and whether targets, policies or other local plan components should be altered. For example, monitoring may show that available land for residential development is being developed faster than

anticipated, suggesting new annexation, zoning or other changes to maintain the desired inventory level.

3) Critique plan goals and objectives. Monitoring may show that a restatement of objectives may lead to more desirable patterns of community development. Monitoring output provides documentation for discussions of such alterations in a comprehensive plan.

4) Maintain a data base supporting plan updating. Comprehensive plan updating requires a variety of information on community conditions. A community which monitors its plan on a systematic basis will have the necessary updating material when it needs it and can avoid special studies of community conditions in all but areas of specialized need. This information base is also very useful for preparing grant proposals, annual and other reports, and other important documents, and in addition can support private sector marketing analysis and development activity.

Establishing a plan monitoring process--identifying informational inputs, establishing monitoring activities and applying the output to plan implementation and updating--may take a variety of forms depending on a jurisdiction's needs and resources, but in any event will serve to capitalize on the local investment in the comprehensive plan. The more that monitoring and the associated updating takes place, the more the community will maintain confidence in the plan as an appropriate and useful guide to community development.

Monitoring and Plan Goal Achievement

Given the possibility for conflict among the state-wide goals and among the associated objectives chosen at the local level, it should be clear that monitoring for plan objective achievement does not necessarily imply that all goals and objectives should be "satisfied." A monitoring system simply allows a jurisdiction to ascertain the extent to which chosen objectives are being satisfied. Such knowledge facilitates local decision-making regarding the relative priorities among goals and objectives and by suggesting appropriate policy or implementation action which might best reflect local preferences.

Oregon comprehensive planning legislation allows jurisdictions to make decisions which in fact work against certain goal compliance; for example, annexations of rural resource lands needed for urban expansion. Monitoring plays an important role in such a situation by assessing the extent to which an objective is being compromised. Such information is useful for reviewing and discussing the goals and objectives themselves, and for identifying the tradeoffs which are being made in order to foster achievement of other plan goals.

Monitoring in Jurisdictions of Different Type and Size

Although the value of comprehensive plan monitoring may be similar within the various municipalities and counties in Oregon, the forms such

monitoring would take may vary considerably. Cities generally will emphasize housing, public facilities and certain other goals, whereas counties will be relatively more concerned with resources-related goals such as forestry and agriculture. Coastal jurisdictions have a large set of concerns not shared by non-coastal jurisdictions. And certain other jurisdictions, because of their particular situation, may have planning and monitoring concerns which are unique in the state.

The scope of monitoring activity will also vary across jurisdictions. Smaller jurisdictions with limited resources should seek simple approaches within their means. Larger jurisdictions can pursue more complex--and generally more costly--approaches. All jurisdictions can potentially benefit from cooperative arrangements, however, either among departments within the county or municipality or with other units of government. Smaller jurisdictions in particular can cooperate together or with their county government. Such cooperation in planning activities is common throughout Oregon, and both of the largest planning data systems in the state are sponsored through municipal and county cooperation.

III. MONITORING DATA NEEDS

The first step a jurisdiction should take in establishing a monitoring system is to determine what data it needs to monitor the implementation of its comprehensive plan. The data items selected will vary among jurisdictions due to differences in their size, type and function, in their plan objectives and in their available resources. Jurisdictions may also elect to begin monitoring particular high priority objectives first, following with other objectives as circumstances and resources allow.

This chapter discusses the data needs associated with monitoring a wide variety of comprehensive plan objectives, and refers to the sources for these data. Chapter IV, Sources of Monitoring Data, discusses each of these sources in greater detail.

In order to select useful monitoring data a jurisdiction must first identify which objectives it wishes to monitor. The data collected and maintained should relate directly to these objectives. In the following section of this chapter data items are listed and described as to use, limitations, and relative importance in monitoring the objectives associated with each state-wide planning goal. Since each local jurisdiction has chosen and phrased its objectives in a unique way, the objectives used here for each state-wide goal area are chosen to represent how plan objectives will most likely appear in most adopted local plans. Although in some cases the thrust of local plan objectives may deviate somewhat from those used here, the data items identified should serve under most circumstances.

One or more data items are identified for monitoring with respect to each plan objective. Individual jurisdictions can use the selection of data items included here when making choices about what is most important to include in their own monitoring system. It is expected that in many cases not all data items need to be included. Also, additional data items may be useful if plan objectives are significantly different than those used in this chapter, or if further additional monitoring emphasis is placed on a particular goal area.

Finally, it is assumed that jurisdictions which are developing and initiating monitoring systems have completed the basic inventories upon which the comprehensive plan is based, in particular the inventories of housing, resource land, vacant land and public facilities conditions. These inventories constitute the basic descriptions of a community's conditions and serve as a baseline for monitoring future changes. If jurisdictions have not completed one or more of these inventories--for example, if their plan acknowledgment was conditional upon inventory completion--the community should proceed to fill this gap as a first step in developing a monitoring capability.

The following sections are organized by state planning goal, beginning with Goal 3. Each section opens with a general discussion of the goal and the primary considerations related to monitoring it at the local level. This is followed by a tabular listing of the primary objectives associated with the goal and individual components under each objective with which the objective can be monitored. For each component one or more data items are listed, the means by which these data can be applied for monitoring purposes and the most accessible data sources. Each data item is numbered for reference in later chapters of this handbook. In addition, acronyms are assigned to each source agency which minimize confusion between state and federal agencies and which are used uniformly throughout the handbook.

A final paragraph in each section reviews the priorities among data items which appear appropriate for most jurisdictions.

Three goals are not included in these sections: (1) Citizen Involvement, (2) Land Use Planning, and (19) Ocean Resources. Both Goals 1 and 2 are important from a state perspective but at the local level relate to ongoing aspects of government which do not merit monitoring as part of the comprehensive planning process (although their evaluation as components of local government operations may certainly be appropriate). Goal 19 relates to resources which are not within the domain of local government and therefore need not be a concern of comprehensive plan monitoring.

3. AGRICULTURAL LANDS

The State views land used for agriculture as an important physical, economic, social and aesthetic resource. The intent of State-wide Planning Goal 3 is to protect this resource and in particular maintain the agricultural economy of the State. In order to fulfill the State's goal "to preserve and maintain agricultural lands," local governments are required to inventory those lands and to preserve as much of the land as possible by zoning it for exclusive farm use (EFU). Once zoned, the land is to be protected from actions which would reduce its agricultural production, such as undesirable parcelization and the conversion of adjacent lands to incompatible uses.

Given the State's objective concerning agricultural lands, it is expected that acknowledged county comprehensive plans will contain an agricultural plan element with objectives to keep lands classified in EFU zones in farm use and to avoid land use actions or developments which would significantly reduce the agricultural productivity of those lands. To determine whether or not plan policies and land-use regulations are working to achieve these objectives, the county government can monitor changes in conditions as indicated by the data items described in the following Table.

Priorities

Of the three data items described in the following Table, the most important in terms of availability and amount of useful information provided is number of acres of land in EFU zones. These data are more easily identified than changes in quantity and value of production, given available data sources. The amount of land in EFU zones and the use of that land is also the most direct and significant factor in agricultural production.

3. AGRICULTURAL LANDS

Component	Data Item	Applications and Limitations	Data Sources
		Objective: KEEP EFU LANDS IN FARM USE AND MAINTAIN THEIR PRODUCTIVITY*	
Retain EFU zoned land.	Number of acres added to or subtracted from EFU zones. (3-1)	Jurisdictions can use the data to maintain a current inventory of amount of land included in EFU zones. Developments and land use actions resulting in conversions of EFU land to non-farm use or addition of land to EFU zones can be recorded. Also the number of acres of land in farm use identified in the comprehensive plan can be compared on an annual basis with the results of assessor's verification of land eligible for special farm-use tax deferred status. This latter comparison will not necessarily cover all EFU land since permitted non-farm uses are not eligible for tax deferral.	Local planning records --building permits --conditional uses --zone changes --land divisions --plan amendments --capital improvements State and federal agency actions --land acquisitions --solid waste disposal permits (ODEQ) --surface mining permits (DOGAMI) --dike repair and bank protection permits (ODSL, COE) Assessor's records
Maintain productivity from EFU land.	Value and quantity of production from EFU-zoned land. (3-2)	Changes in quantity and type of production can be monitored by comparing data in the comprehensive plan with data from identified sources. However, several factors unrelated to the comprehensive plan such as weather, availability of water for irrigation and land owner decisions may affect production. These factors should be considered when measuring the effectiveness of the plan.	U.S. Census of Agriculture County Extension Office's Annual Report (USDA) Assessor's records Aerial photography

AGRICULTURAL LANDS (Continued)

Component	Data Item	Applications and Limitations	Data Sources
	Development and land use actions approved on EFU-zoned land and on property adjacent to EFU-zoned land. (3-3)	Jurisdictions also can monitor the type and extent of development and activities permitted in EFU zones and allowed on land lying adjacent to EFU-zoned property so as to estimate the impact on agricultural production from the EFU land. Estimates of negative impacts accumulated over time may be used to evaluate plan policies and implementation measures.	Local planning records --(listed above) State and federal agency actions --(listed above) Interviews --Extension agents --Conservation Service personnel --farm owners --local food processors

*This objective refers only to EFU-zoned land because of the State's emphasis on placing agricultural land in that zone. Counties are likely to have agricultural land in other zones as well and for that reason may wish to broaden this objective and the monitoring system to include those lands.

4. FOREST LANDS

The intent of Goal 4 is the retention of the State's forest land base for the production of wood fiber and the protection of other forest land values such as fish and wildlife habitat, open space, visual and auditory buffering of conflicting land uses, protection of watersheds and soil from erosion, recreational opportunities, and livestock grazing.

For counties, the emphasis is on protection of the commercial forest land base as an economic resource although other forest uses are to be protected as well. Most counties have policies limiting non-forest uses, encouraging increased productivity and long-term management on forest lands, and establishing parcel size standards, as well as policies recognizing the importance of other forest uses. Lands must be mapped by cubic foot site class, and, based on this mapping, most jurisdictions have categorized their forest lands according to productivity. Frequently different forest zoning classifications are attached to forest land based on its productivity, existing parcel sizes, or management limitations due to conflicting uses.

For cities, the emphasis is often on non-commercial uses of forest lands; the scenic, fish, and wildlife values provided; the visual/auditory buffers; and recreational resources although commercial values are recognized for lands within the urban growth boundary. Cities may be motivated to protect their municipal water sources on forest lands outside their jurisdiction. Consequently, the monitoring objectives often differ between cities and counties, although Goal requirements are identical. There is considerable overlap between Goal 5 and Goal 4, especially in the realm of non-commercial forest uses. Monitoring under Goal 5 (Natural Resources), Goal 8 (Recreational Needs), and Goal 6 (Air, Land and Water Quality) will, in most cases, result in adequate monitoring for non-commercial forest uses.

Therefore, the overall objective regarding forest lands is to maintain forest lands in forest uses and avoid actions which adversely affect forest land productivity. The data needs necessary to monitor for this objective and its various components are outlined in the following Table.

Priorities

The priority attached to each of these suggested data items will depend on: (1) the policies which the jurisdiction has adopted regarding forest lands; and (2) the importance of the forest land base to the jurisdiction's economy. Most jurisdictions will examine only the first three data items listed to keep their inventory updated and then rely on the period publications of the Department of Forestry and federal agencies to evaluate the general success of plan policies encouraging production. Jurisdictions with heavy dependence on the timber industry should monitor those factors which relate to the long-term economic impacts of changes in the forest land base.

4. FOREST LANDS

Component	Data Item	Applications and Limitations	Data Sources
	Objective: MAINTAIN FOREST LANDS IN FOREST USES AND AVOID ACTIONS WHICH ADVERSELY AFFECT FOREST LANDS PRODUCTIVITY		
Forest land in forest uses	Number of acres added or subtracted from each forest zone type by year. (4-1)	Permits jurisdiction to keep an undated inventory of forest land in different zones and to plot the location of development pressures.	Local planning records --zone changes --plan amendments
		Will permit jurisdiction to monitor its supply of commercial forest land by cubic foot site class and to determine what quality of commercial land is being lost to other uses or placed in less restrictive zones. This may have long-term economic implications to timber dependent jurisdictions. Major limitations would be lack of good cubic foot class mapping.	Local planning records --zone changes --plan amendments Referrals from state and federal agencies --solid waste disposal permits (ODEQ) --surface mining permits (DOGAMI) --dam construction (Army Corps of Engineers) --energy transmission lines (ODOE, BPA)
	Number of acres of public forest lands devoted to various forest uses. (4-2)	If a jurisdiction's wood products industry is dependent on public lands for timber, monitoring of public lands allocations will permit the jurisdiction to estimate economic impacts and plan accordingly. These can be monitored through referrals by state and federal agencies and through review of Environmental Impact Statements.	U.S. Forest Service planning documents and Environmental Impact Statements Bureau of Land Management Environmental Impact Statements
Actions which may adversely affect productivity	Average parcel size on private forest lands (by ownership class where possible). (4-3)	For counties with computerized systems the average parcel size on forest land can be computed periodically (annually) and compared with measures of quality or productivity to evaluate the effect of parcel size on productivity.	Local planning records, tax assessor files

FOREST LANDS (continued)

Component	Data Item	Applications and Limitations	Data Sources
	Number of building permits by type approved on forest lands (by geographical region) and associated measures of incompatability or productivity. (4-4)	Jurisdictions can monitor the impact of development they permit on forest lands on its long-term productivity to evaluate the appropriateness of plan policies and implementing measures. For instance, residential development and forest fires by cause or complaints concerning timber related activities can be monitored simultaneously to determine what affect, if any, the development has. This should be measured annually over a period of five to ten years to evaluate trends.	Local building permit files Local complaints Department of Forestry data on fires by cause (ODOF Annual Report)
Management of timber resources.	Measures of commercial timber production or theoretical productive capacity of the jurisdiction's commercial forest land. (4-5)	If a good baseline inventory by cubic foot site class exists, an estimate of long-term productive capacity can be made and annual adjustments made based on additions or substractions from the forest land base. For jurisdictions with high dependency on the timber industry, the employment, revenue and income impacts of the changes in productivity can be measured annually. Productivity measures are generalized and do not account for unanticipated factors such as insect or disease damage.	Monitoring of local land use actions and referrals from state and federal agencies (see above) Department of Forestry publication: "Estimating the Economic Consequences of Forest Land Lost to Alternative Uses" (ODOF)
	Number of acres in forest deferral by year (and by geographical region). (4-6)	This is an indicator of how well a jurisdiction's policies encouraging long-term management and productivity of private forest land are working. To qualify for deferral, owner must meet minimum acreage and stocking requirements, or have a forest management plan which commits him to do so. Jurisdiction must control for that acreage lost because previously deferred property does not meet new statutory requirements.	Local tax assessor records

FOREST LANDS (Continued)

Component	Data Item	Applications and Limitations	Data Sources
	Volume of timber harvested by year by ownership class. (4-7)	Jurisdictions may have policies encouraging a non-declining even-flow sustained yield management of forest lands. Monitoring harvest data would permit evaluation. The major limitation is lack of expertise at the local level to accurately evaluate if the policy is being met. Only county data is available.	Department of Forestry's "Oregon Timber Harvest Report" (ODOF)
	Volume of growing stock and saw timber on commerical forest land by ownership class. (4-8)	Facilitates evaluation of plan policies encouraging increased productivity on forest lands. Definition of commercial forest land in source material may differ from local jurisdiction's, but data will indicate long-term trends. Only regional estimates are available.	U.S. Forest Service; Pacific Northwest Forest and Range Experiment Station Department of Forestry; "Oregon Timber Supply Assessment" (ODOF)

5. OPEN SPACES, SCENIC AND HISTORIC AREAS AND NATURAL RESOURCES

The ultimate objective of Goal 5 is to conserve and protect resources identified in the Goal for the use and enjoyment of future generations. Local governments are required to consider the economic, social, environmental, and energy (ESEE) consequences of competing needs and uses for inventoried resources and make decisions in their plans regarding permitted uses in these areas. Local governments, based on the analysis of ESEE consequences, can either protect the specific Goal 5 resource from all potentially conflicting uses, decide that it is not worthy of protection and allow conflicting uses to occur, or balance the two by permitting some potentially conflicting uses under certain clear and objective standards.

It is assumed that baseline inventories are completed, the ESEE consequences of competing uses have been analyzed where those uses can be anticipated, and a decision has been made as to whether or not to protect the inventoried resource. The assumptions and data on which that decision was based can be readily identified so that changes in needs and the availability of resources can be monitored. The following Table identified a number of data items useful in monitoring natural resources.

Priorities

Most jurisdictions should concentrate on monitoring resources located on private lands where a protection decision has been made to determine the success of that decision in conserving the resource. Sites on public lands are beyond the direct control of local governments but where the majority of high-quality sites are on public lands, some monitoring should be required. Realistically, jurisdictions should develop good baseline inventories prior to initiating an overall monitoring system for Goal 5.

5. OPEN SPACES, SCENIC AND HISTORIC AREAS AND NATURAL RESOURCES

Component	Data Item	Applications and Limitations	Data Sources
	Objective: CONSERVE AND PROTECT THE RESOURCES IDENTIFIED IN THE GOAL FOR THE USE AND ENJOYMENT OF FUTURE GENERATIONS		
Development which could impair the quality or useability of designated Goal 5 resources.	Record of development occuring on or immediately adjacent to designated and inventoried Goal 5 sites by type of resource, status of site, and type of development. (5-1)	For designated sites, the tracking of development with simultaneous measures of resource quality will allow the jurisdiction to determine if the original protection decision should be re-evaluated. For non-protected sites, monitoring of development decisions will permit a current inventory of resource quality and an estimate of the effect of various types of development on resource quality.	Local planning records --building permit files --land division files --sanitation permits State or federal permits --forest practices permits (ODOF) --hydropower development permits and licenses (FERC, ODWR) --fill and removal permits (ODSL) --transmission facilities (EFSC) --sanitation permits (ODEQ)
	Objective: MAINTAIN A CURRENT INVENTORY OF GOAL 5 RESOURCES		
Open space.	Acres added or subtracted from the open space inventory. (5-2)	The definition of what constitutes needed or desirable open space varies by jurisdiction. Often this is synonomous with other Goal 5 categories (i.e., wetlands, wildlife habitats) or designated farm and forest lands. As development removes open space or will potentially remove it, acreage should be removed from the inventory.	Local planning records --plan amendments --zone changes --building permits --land divisions
Mineral and aggregate resources.	Changes in the supply of or demand for mineral and aggregate resources by type. (5-3)	Monitoring both supply and demand and the location of demand will permit the jurisdiction to determine if the supply zoned for use is adequate and may prompt increased protection of known resources, especially aggregate resources. Demand can vary considerably from year to year, and geographical relationships between supply and demand are critical. Data on supply is very limited.	Department of Geology and Mineral Industries --exemptions and permits issued for extraction --magazine Oregon Geology --Special Paper 5 Federal, state and local capital improvement plans

OPEN SPACES, SCENIC AND HISTORICAL AREAS AND NATURAL RESOURCES (Continued)

Component	Data Item	Applications and Limitations	Data Sources
			--public works departments --Oregon Department of Transportation --Federal Highway Administration --Army Corps of Engineers (dam construction)
Fish and wildlife habitats and areas.	Changes in the number of acres or stream miles in various habitat types and associated inventories of animals supported. (5-4)	Allows for a current inventory of habitat while simultaneously measuring the "quality" of the habitat; the number of animals or species it can support. Emphasis will probably be placed on big game habitat and numbers and special habitat types where best inventories are maintained by ODFW.	Local planning records --building permits --zone changes --plan amendments --conditional use permits --land divisions State or federal permits --Fill and Removal Permits (ODSL) --Army Corps permits --Forest Practices Permits (ODOF) ODFW local offices
Natural areas	Changes in number of acres in or proposed for natural area status. (5-5)	Besides maintaining a current inventory, this allows jurisdiction to determine the relative quality and quantity of similar types of natural areas within its jurisdiction. This data may modify protection decisions concerning currently inventoried or designated sites.	Oregon Nature Conservancy U.S. Forest Service National Forest Offices Bureau of Land Management District Offices Native Plant Society local chapters Audubon Society local chapters
Outstanding scenic views and sites.	Changes in status or quality of scenic areas. (5-6)	This category is highly subjective and most jurisdictions rely on state or federal designations or programs to define scenic areas, although some have specific development standards for scenic areas. If state or federal designa-	Oregon Department of Transportation --scenic highway designations U.S. Forest Service or

OPEN SPACES, SCENIC AND HISTORICAL AREAS AND NATURAL RESOURCES (Continued)

Component	Data Item	Applications and Limitations	Data Sources
		tions change, these may have an impact on the local protection decision or mechanism.	Bureau of Land Management --landscape quality ratings
Water areas, wetlands and watersheds.	Changes in the number of acres of inventoried wetlands by type. (5-7)	Additions can come from identification of new wetland areas while subtractions can come by virtue of land use decisions which result in filling, drainage or degredation. An inventory by type indicates the relative scarcity of each and may influence decisions concerning protection.	U.S. Department of Interior --ongoing national wetland inventory Local planning records --permits for drainage projects
	Changes in groundwater resource quantity by critical groundwater area. (5-8)	Allows local governments to assess the cumulative impacts of land use decisions on groundwater availability.	Fill and Removal permits (ODSL) State Water Resources Department and U.S. Geological Survey --well logs --minimum stream flows Local watermasters
Wilderness areas.	Additions (or subtractions) from the wilderness system. (5-9)	Actual and potential additions or subtractions permits maintenance of a current inventory and long-term recreational planning.	Rare II and other wilderness planning documents. (USFS)
Historic areas, sites and structures.	Additions or deletions to the National Inventory or to the State Inventory. (5-10)	Sites on the National Inventory must meet established standards and therefore represent the best inventory of quality sites. Those on the State Inventory do not have standards although data on the site are available.	Oregon Department of Transportation, Parks Division Local historical societies
Cultural areas.	Changes in the status of archeological sites or addition or deletion of inventoried sites. (5-11)	New archeological finds are made occasionally and sites may be deleted as they are excavated or destroyed. Excavation will also yield information on the quality of a site which will impact the protection decision.	State Archeologist, University of Oregon Museum of Natural History

OPEN SPACES, SCENIC AND HISTORICAL AREAS AND NATURAL RESOURCES (Continued)

Component	Data Item	Applications and Limitations	Data Sources
Potential and approved Oregon recreation trails.	Changes in status of trails or additions to the proposed system. (5-12)	Maintain a current inventory and aid in decisions concerning land use regulations for protection.	Oregon Department of Transportation, Parks Division
Potential and approved wild and scenic waterways and state scenic waterways.	Changes in status of rivers or additions to the state or federal systems. (5-13)	Maintain a current inventory and aid in decisions concerning land use designations.	Oregon Department of Transportation, Parks Division

6. AIR, WATER AND LAND RESOURCES

Maintaining the quality of air, water and land resources is a long-standing State objective and the prime function of the Department of Environmental Quality (DEQ). DEQ administers the State's programs for controlling waste and process discharges that might degrade resource quality. The programs consist of State and federal statutes, rules and standards for environmental quality, and permit systems to assure that the standards are achieved and maintained. State-wide Planning Goal 6 emphasizes DEQ's programs and requires support of them through local comprehensive plans and land use regulations.

The clear objective stated within Goal 6 and the objective which acknowledged comprehensive plans should contain is to avoid actions which would violate, or threaten to violate, applicable state or federal environmental quality statutes, rules and standards. In order to find out if the comprehensive plan and its implementing regulations are serving to achieve this objective, local jurisdictions can use the data described in the following Table.

Priorities

Since DEQ administers the programs to maintain resource quality and monitors changes in quality, local government effort should be directed primarily at ensuring that developments having waste and process discharges satisfy state permit requirements. However, local jurisdictions also can monitor changes in resource quality in their own areas by obtaining available data from DEQ and other sources.

6. AIR, WATER AND LAND RESOURCES

Component	Data Item	Applications and Limitations	Data Sources
		Objective: AVOID ACTIONS WHICH WOULD VIOLATE ENVIRONMENTAL QUALITY STATUTES, RULES AND STANDARDS*	
Changes in resource quality.	Changes in resource quality variables. (6-1)	Jurisdictions can monitor indicators of resource quality over time to identify direction and degree of change. For water quality--monitor turbidity, temperature, B.O.D., D.O., suspended sediments and P.H. For air quality--monitor particulate matter (PM) and carbon monoxide (CO). Results of this effort may be used to indicate a need to improve state standards.	ODEQ Annual Reports on Air Quality and Solid Waste and Status Report on Water Quality, 1981 Unpublished data generated by ODEQ monitoring efforts Water quality data from gauging stations (Water Resources Division, USGS)
ODEQ permit requirements	Type and location of developments and activities requiring an ODEQ permit. (6-2)	Local governments can maintain an active file on developments and activities that create a waste or process discharge to verify whether or not they receive the appropriate permit approval from DEQ and to identify potential/estimated impact on resource quality.	Local planning records --building permits --capital improvement projects ODEQ permit notification sign-off forms and permit records

*The State Implementation Plan for air quality and the State-wide Water Quality Management Plan, the details of which are outlined in Handbook For Environmental Quality Elements of Land Use Plans (Salem: ODEQ 1978), identify standards with which land use actions should conform.

7. NATURAL DISASTERS AND HAZARDS

The State's objective in Goal 7 is to prohibit development from occurring in known areas of natural disaster and hazard unless appropriate safeguards are established to protect life and property. Local governments are required to inventory areas of natural disaster and hazard. Also, it is left to local governments to determine whether or not safeguards are adequate or appropriate. Oftentimes, safeguards are established in the form of development standards which are derived from Department of Geology and Mineral Industries publications and the National Flood Insurance Program's requirements.

With an inventory of known areas of natural disasters and hazards and a degree of uncertainty whether or not safeguards are adequate or appropriate, acknowledged comprehensive plans are likely to have an objective to prohibit any development subject to damage or loss of life within known hazard areas unless it complies with all reasonable safeguards. To discover if the plan and land use regulations are achieving this objective, it is necessary for local governments to monitor the number and types of development allowed in hazardous areas and to estimate the effect of the applied safeguards.

Priorities

Establishing the appropriateness and adequacy of safeguards for different types of development subject to different types of natural disasters and hazards requires technical expertise and considerable experience. This task is best assigned to federal and State agencies rather than to local governments. Thus, in establishing a monitoring system, it is more important that local jurisdictions assemble information that indicates the extent to which developments are allowed in known hazardous areas, the conditions applied and the identification of previously uninventoried hazardous areas.

7. NATURAL DISASTERS AND HAZARDS

Component	Data Item	Applications and Limitations	Data Sources
Objective: PROHIBIT DEVELOPMENT SUBJECT TO DAMAGE OR LOSS OF LIFE WITHIN KNOWN HAZARD AREAS UNLESS IT COMPLIES WITH SAFEGUARDS			
Known hazard areas.	Location, nature and extent of natural disasters or hazards. (7-1)	To determine over time whether or not applied safeguards are effective in reducing or preventing property damage and loss of life, local governments can monitor and record data concerning type of hazard, extent of damage and injury and type of safeguard, if any, in effect at time of the natural event. Also, jurisdictions may update inventory information when hazards or disasters occur.	Media Interviews and reports --geologists and representatives of DOGAMI, ODOT, COE and universities
Reasonable safeguards.	Type and location of developments and type of safeguards required. (7-2)	Jurisdictions can update and improve their inventories of known hazard areas and can expand their knowledge of appropriate safeguards by maintaining a file on developments and required safeguards by type and location of known hazard. When local governments require site investigations to determine development feasibility, the data obtained can be added to the inventory and used to update plans and ordinances.	Local planning records --building permits --capital improvement projects --land divisions --conditional use permits --zone changes State and federal actions --facility plans/projects --permits/licenses State and federal publications --DOGAMI Bulletins/ periodical --HUD National Flood Insurance Program --COE Geology and Emergency Services Branches studies and reports on dams

8. RECREATIONAL NEEDS

The objective of Goal 8 is to meet the current and future demand for recreational "facilities areas and opportunities" by residents of and visitors to Oregon. This demand is to be met in coordination with private enterprise, in "appropriate proportions," and in a way consistent with the ability of the resource to accommodate the use. Local jurisdictions should monitor both factors of supply and demand for the various recreational facilities and areas defined in the Goal to determine if demand is increasing or decreasing for the various recreational needs, if use is consistent with the carrying capacity of the resource, or if new recreational supplies are necessary. Some jurisdictions rely heavily on tourism as an economic development option and as a consequence are concerned with monitoring the economic costs and benefits of recreational facilities.

Policies vary considerably from jurisdiction to jurisdiction so data items included in this section may not apply in every jurisdiction. It is assumed that local governments have defined the meaning of terms such as "appropriate proportions" and "consistent with the ability of the resource to accommodate the use" so that the success of implementing mechanisms in achieving these objectives can be measured. The overall objective of Goal 8 is to maintain an appropriate balance between the demand for and the supply of recreational resources.

The data items appropriate for monitoring this objective relate to either the demand for or supply of recreational resources and are outlined in the following Table.

Priorities

The priorities will vary according to whether or not the jurisdiction is a city or a county, the reliance on state and federal lands for recreational opportunities and the natural attributes of the jurisdiction. The degree of reliance on tourism as an economic development option will also affect priorities attached to various data items. It is expected that most jurisdictions will concentrate on monitoring public recreational facilities over which they exercise more direct control in development (local parks and recreation facilities) rather than on private facilities or state or federal lands.

8. RECREATIONAL NEEDS

Component	Data Item	Applications and Limitations	Data Sources
	Objective: MAINTAIN AN APPROPRIATE BALANCE BETWEEN THE DEMAND FOR AND THE SUPPLY OF RECREATIONAL RESOURCES		
Demand Use of recreational facilities	Visitation at parks and campgrounds by type of visitation and public versus private facilities. (8-1)	Use to identify trends in demand for various facilities by examining day use versus overnight use and types of camping facilities sought. Examine seasonality of use and peak use to determine infrastructure needs. Origin data will assist in identification of economic impacts and separates local demand from tourist demand.	Oregon Department of Transportation, Parks Division U.S. Forest Service Recreational Information Management Data Bureau of Land Management Army Corps of Engineers Private camping facilities operators Local parks departments
	Visitation at tourist attractions and special use facilities. (8-2)	Most museums or walk-through facilities maintain guest registers which provide data on origin of visitors as well as visitor volume. Counts are also maintained at both public and private facilities which charge admission, such as golf courses, swimming pools, or health and racquet facilities. A high level of demand should be taken into account in consideration of approvals for new facilities and in land use allocations.	Museums, public and private Historical and cultural attractions which charge admission Public and private recreational facilities charging admission
	Boating use by type and by water body. (8-3)	Can indicate areas of excess demand or conflicting recreational activities and the types of developed facilities needed. May also highlight areas where use is light which are suitable for further development.	State Marine Board
	Number of hunter or angler days per year. (8-4)	Shows heavily fished or hunted areas which may receive overuse. May indicate need to develop access of other areas or restrict access to some overused areas.	Oregon Department of Fish and Wildlife, Annual Reports

RECREATIONAL NEEDS (Continued)

Component	Data Item	Applications and Limitations	Data Sources
	Occupancy rates by season, at transient accommodations. (8-5)	Useful for determining if the supply of motel and hotel rooms is adequate to meet peak seasonal demand for different quality accommodations and for estimating the economic impacts of tourism. The data should be collected for different price categories and service levels to be of utmost value. Data are generally proprietary and may be difficult to collect except in aggregate form.	Room tax receipts[1] Hotel/Motel owners association Convention and Visitors Bureaus Chambers of Commerce
Supply of various recreational areas, facilities and opportunities.	Changes in the supply of park land and associated recreational facilities by type.[2] (8-6)	This permits jurisdiction to maintain a current inventory of facilities and to assess public expenditures for new facilities based on what is in demand and what is currently supplied.	Department of Transportation Parks Division U.S. Forest Service National Forest Planning documents and inventories Bureau of Land Management Planning documents and inventories Local parks and recreation departments Private camping facility operators Army Corps of Engineers
	Changes in the supply of boat mooring/launching facilities by type and area. (8-7)	This can be compared with data on boat usage to determine if it will be necessary to develop or allow development of added moorage facilities at given locations. This should include both public and private facilities. Primary limitation may be the lack of a baseline inventory which to update.	Local planning records --building permits Federal or state permits --Army Corps 404 or Section 10 permits --Division of State Lands leases

RECREATIONAL NEEDS (Continued)

Component	Data Item	Applications and Limitations	Data Sources
	Changes in the number of hotel and motel accommodations by size of facility and price range and service level. (8-8)	For jurisdictions concerned with tourism as an economic development option knowledge of the supply of transient accommodations is necessary to market the area for different uses such as conventions or conferences. Local governments are often involved in providing support facilities and can develop land use policy which encourages development. Monitoring the supply helps to determine if such policy is needed or, where existing, effective. The data are also essential in ensuring the accuracy of demand estimates made using room tax receipts.	Local planning records --building permits
Quality measures.	Measures of expressed satisfaction. (8-9)	Surveys of satisfaction levels can aid in identifying conflicting uses and point toward either development of other facilities or modification of policy.	Satisfaction surveys --State Parks Division (ODOT) --Local parks and recreation departments
Recreational facilities in appropriate proportions consistent with capacity of the resource.	Indicators of abuse or overuse of facilities. (8-10)	These are means of rating the quality of the recreational resource over time in response to demand. Would include indices such as overfishing, erosion damage, soil compaction on trails, destruction of vegetation, etc. These factors may be indicative of the need for expanding facilities or in identifying the appropriate level of use for existing facilities.	Federal, state and local agencies responsible for maintenance and administration.

[1]Room tax revenues can be used to estimate both volume changes in visitation and seasonal changes in occupancy if the data are collected monthly and changes in both the tax rate over time and increases in the supply of rooms are controlled for. These taxes are collected locally although the agency responsible for collection will vary by jurisdiction.

[2]This data should be assembled by category using quantitative indicators which can be compared with demand figures. Examples include number of RV sites (serviced and unserviced) by ownership class (public and private). Counties and many larger cities will also want to examine the geographical location of facilities to ensure accessibility and relationship to demanded locations. Other examples include miles of recreational trails, number of picnic sites, number of campsites, etc.

9. LOCAL ECONOMY

The health of the local economy is a primary concern for most jurisdictions. Areas with "underutilized human and natural resource capabilities" in particular are identified by the State for economic development emphasis. Such areas are characterized by lagging industrial and service sectors and high unemployment, and often are heavily specialized in industries with stable or shrinking markets.

The means by which local or regional government influences economic activities generally are indirect. Most initiative for business development or expansion lies outside the public sector. Government assists primarily by assuring that necessary resources, in particular land and public facilities, are available and do not hinder private sector initiatives. Under certain conditions, some jurisdictions take additional steps, including providing financing, employee training, or other direct support, or by assuring that local government decisions regarding land use controls, permits, etc., are as supportive of desirable development as possible.

This section focuses primarily on monitoring local and regional economic conditions and forecasts and on developable land availability. Other sections which often relate to local economic conditions and which should be read in conjunction with this section include Public Facilities and Services and the sections on Agricultural, Forest and Natural Resources.

Priorities

Maintaining a developable commercial and industrial lands inventory, plus estimates of employment trends, is most important for most jurisdictions. These data items provide the primary documentation of local conditions upon which plan policy and implementation can be based. The other information included here is also very important, however, in particular for monitoring short-term development dynamics.

9. LOCAL ECONOMY

Component	Data Item	Applications and Limitations	Data Sources
		Objective: MAINTAIN THE HEALTH OF THE LOCAL ECONOMY	
Local economic activity.	Employment by industry. (9-1)	Employment totals show the level of economic activity. Employment distribution among types of firms and changes in this distribution show sectors of growth and decline. Employment increases or desirable changes in employment distribution among sectors can indicate whether or not land resource availability is hindering development. Employment growth rates and other trends for leading sectors indicate future land needs in terms of quantity, location and other characteristics. These needs can be compared to the available land inventory. It is important to compare local employment trends with regional or national trends since outside forces may dictate local conditions, rather than local factors such as land availability.	Department of Human Resources (ODHR) U.S. Census Bureau Bonneville Power Administration Department of Economic Development (ODED)
Local economic diversification.	Employment distribution by sector. (9-2)	Diversification is measured by the spread of employment across economic sectors. A useful approach is to track the distribution of employment by SIC category, looking for significant changes over time. Average firm size distributions can also be monitored to assess whether employment in small or intermediate size firms is increasing.	Department of Human Resources (ODHR) U.S. Census Bureau --County Business Patterns
		Objective: ASSURE THAT ADEQUATE LAND RESOURCES ARE AVAILABLE FOR DESIRED COMMERCIAL AND INDUSTRIAL DEVELOPMENT	
Land development activity.	Amount and location of recent land development. (9-3)	The rate at which land is coming under commercial and industrial use, and its location, indicate whether policies regarding the direction of development are being met and where additional lands may be needed in the future. It is also useful to track converted land characteristics including parcel sizes, soils, and transportation access.	Local planning records --building permits --conditional use permits --demolition permits

LOCAL ECONOMY (Continued)

Component	Data Item	Applications and Limitations	Data Sources
Local development initiatives.	Amount, location and type of potential new commercial or industrial development. (9-4)	Any significant new development trends or potential activity may generate new or different land demands. Examples include industrial attraction activities and development initatives by large landholders. Information sources are scarce and largely consist of informal contacts with a variety of people and organizations.	Local planning records --PUD, subdivision, variance, other requests Local news media Contact with landowners and developers Chambers of Commerce Port Authorities and other development agencies
Developable land resources.	Amount and location of developable commercial and industrial land. (9-5)	An up-to-date inventory of developable lands is fundamental to monitoring this objective. The inventory should include all available sites by location, parcel characteristics, services availability, zone and plan district, and any other variables which are useful for describing parcel characteristics. Each community should judge whether the available land inventory is adequate given the nature and dynamics of its local and regional economy. Developing and maintaining this inventory is discussed in the chapter which follows.	Local planning records Department of Economic Development (ODED)

10. HOUSING

The intent of State-wide Goal 10 and the two administrative rules which implement it (OAR 660-07-000, OAR 660-08-000) is to provide for the housing needs of all citizens of the State. To ensure that housing needs continue to be met and that housing is affordable, local governments should monitor the indicators of both housing supply and housing demand in the planning area. This will require monitoring changing housing needs (changes in income levels or distribution, household size, age structure, etc.), and changes in the housing stock and in the buildable lands inventory. Through periodic comparison of housing needs with the allocation of land devoted to various housing types and densities, the jurisdiction will be able to determine if changes are necessary in zoning allocations or density standards, or if modification to the supply of buildable lands is necessary through plan amendment or annexation. In this latter objective, there is considerable overlap with Goal 14, the urbanization goal.

Local governments may have other, more specific objectives relating to Goal 10. The data needed to monitor supply and demand factors are also useful when preparing a Housing Assistance Plan or Housing Market Analysis to be used to secure housing assistance from State or Federal agencies.

Since processing time for development applications is related to housing costs, local governments may also choose to monitor approval time for various types of residential development to determine if changes in the approval standards are warranted.

Although Goal 10 applies to both cities and counties, the emphasis is on cities, since cities are charged with planning for the majority of growth. The overall objective of Goal 10 policies should be to provide affordable housing for all residents of the jurisdiction.

It is assumed that the urban growth boundary at the time of plan adoption included sufficient land allocated to residential development of various types and densities to meet projected housing needs for the planning period, and that zoning allocations, in terms of both housing type and maximum allowable density, are sufficient to meet identified housing needs for the immediate future. Also, where appropriate, these allocations should be coordinated with regional needs as required by ORS 660-07-000.

The following Table summarizes data needs for monitoring both housing supply and demand.

Priorities

Provision of adequate and affordable housing is a fundamental goal of each city in Oregon and all of the data listed is essential in monitoring the community's demand for housing and its ability to meet that demand in an affordable way. The vast majority of data is available either through local records or through contacting state or federal agencies for estimates. Due to limitations of measurement, housing condition data is of a lower priority than other items.

10. HOUSING

Component	Data Item	Applications and Limitations	Data Sources
	Objective: PROVIDE AFFORDABLE HOUSING FOR ALL RESIDENTS OF THE JURISDICTION		
SUPPLY			
Supply of buildable land and housing stock of all types and cost ranges	Number of housing units added to or subtracted from the total housing supply by housing type and size of unit. (10-1)	Data allows monitoring of housing supply to determine if needed housing types are being supplied when compared with data on demand characteristics. The buildable lands inventory can be updated by removing built upon acreage from the inventory as building permits receive final approval. If development is mapped, the suitability of land in the inventory can be assessed.	Local planning records --building permit files
	Number of acres zoned or planned for residential development by type and maximum densities. (10-2)	To track the allocation of acreage to various housing types and changes in overall densities through monitoring of land use actions. Changes in allocations may mean that housing types will have to be accommodated elsewhere or that the original assumptions on which allocations were made will have to be modified.	Local planning records --plan amendments --annexations --zone changes --conditional use permits
	Residential vacancy rates by tenure and housing type. (10-3)	An annual monitoring of vacancy rates will allow jurisdictions to tell if the housing supply is keeping pace with demand. Vacancy rate data is limited in many jurisdictions.	Department of Housing and Urban Development (area office) State Housing Division Portland General Electric Pacific Gas and Electric
	Housing costs by type. (10-4)	Annual estimates of rent levels and sales costs by type of housing is compared with resident income distribution to determine the affordability of the housing stock. Estimates should be made monthly to separate seasonal fluctuations from annual changes.	Classified ads in local newspapers State Housing Division Ben Franklin Savings and Loan report

HOUSING (Continued)

Component	Data Item	Applications and Limitations	Data Sources
	Condition of housing stock by geographical area. (10-5)	Will assist in determining the replacement rate for housing and the areas in need of varying degrees of rehabilitation. Difficult to measure accurately and objectively except at most basic level (i.e., units with inadequate or non-existent heat, plumbing, hot water, etc.). Care should be taken to understand full limitations of measures. Assessors data on percent good can be consolidated into categories by geographical area and number of units summarized by category.	Assessor files on "percent good" Census of Housing (USDC)
Consistency of cumulative decisions with planned densities.	Differences between maximum allowable densities and actual densities occurring at buildout. (10-6)	Involves monitoring land use actions and building permits to determine if densities approved and built upon are less than maximum allowable densities on which urban growth boundary and residential allocations were based. Large discrepancy may indicate ineffective plan policies or implementing measures or lack of demand for higher density housing.	Local planning records --subdivision files --partition files --building permit files
DEMAND			
Changes in demand for housing.	Changes in average household size trends. (10-7)	Changes in long-term trends in average household size will necessitate re-evaluation of land allocations to residential uses and densities. A decline in average household size beyond that projected by the plan may indicate a need for more dwelling units than allocated.	Portland State University Center for Population Research and Census
	Average household income and income distribution. (10-8)	If household income is increasing more slowly than housing costs or if substantial changes are occurring in the distribution of household income, re-allocation of housing types, changes in density or other measures to insure affordable housing will be required. Data are limited and based on assumptions which must be critically evaluated.	State Housing Division economist for Oregon Department of Revenue data. Department of Housing and Urban Development, area office.

HOUSING (Continued)

Component	Data Item	Applications and Limitations	Data Sources
	Numbers of "special" households, i.e., handicapped, low income, and elderly. (10-9)	These population subgroups have special housing needs which the Plan should account for. Changes in numbers of these groups over time may necessitate special programs or implementing measures. The 1980 Census data is a good source but will diminish considerably in value over time. Low income household data are most easily gathered through tax records, but are only available by county.	State Housing Division Oregon Department of Revenue Local social service agencies
OTHER			
Standards regarding approval of housing development.	Residential application processing time by type of housing unit and land use action. (10-10)	Monitoring the time from receipt of application to final approval for various types of land use actions will show where it is necessary to reduce approval time through clearer and more objective approval criteria. Can be summarized annually in matrix form examining land use actions according to the types of residential development under consideration (i.e., multi-family, mobile home, single family).	Local planning records --zone changes --conditional use permits --planned unit development --subdivisions/partitions --plan amendments --annexations

11. PUBLIC FACILITIES AND SERVICES

Providing public facilities and services is one of the most important and costly functions of local government. The State goal in this area focuses on providing these facilities and services efficiently. Facilities development should be tied to a Capital Improvement Planning process, and facilities and services should be located and scheduled so as to avoid fostering undesirable development in rural areas. The coordination of facilities development is also stressed so as to avoid providing one or a few services until all necessary services can be provided at once. Facilities and service should also relate to the location, type and rate of planned growth as stipulated in the comprehensive plan.

Local jurisdictions commonly have relatively good control over facilities and services planning, and can coordinate future expansion with planned residential, commercial and industrial development. The facilities and services rubric encompasses a variety of activities, however, making generalizations about objectives and measurements difficult. Moreover, certain facilities, notably sewers and water supply, are generally of higher priority both for local government comprehensive planning and with respect to plan review at the state level. For these reasons, the objectives below are stated fairly generally.

It is assumed that while additional measures can be used for many service areas, monitoring in such detail is generally the responsibility of the public works, service, and other functional departments. If such detail is desired for comrehensive plan monitoring purposes, these departments may be asked to provide the necessary data.

Priorities

Highest priority should be placed on monitoring available capacities in the facilities and service areas which are most important given local conditions. Wastewater and schools are particularly important for municipalities or counties undergoing urbanization. Local conditions may also dictate monitoring other conditions and capacities, such as water supply and quality for locations with limited supplies. Monitoring development approvals for consistency with available capacities is also important in areas experiencing development pressures. All communities should monitor service extensions sufficiently to ascertain the level of coordination among service agencies.

11. PUBLIC FACILITIES AND SERVICES

Component	Data Item	Applications and Limitations	Data Sources
	Objective: PLAN FOR AND MAINTAIN ADEQUATE LEVELS OF SERVICE FOR URBAN, RURAL AND URBANIZING LANDS		
Wastewater collection and treatment.	Available treatment capacity. (11-1)	Used in combination with average household and other demand and population estimates to forecast facilities needs.	Local agency records Department of Environmental Quality (ODEQ)
	Number and percent households unserved. (11-2)	Represents potential unmet need within the community, depending on circumstances.	Local agency records
	Development approvals by type and location. (11-3)	Assure that the quantity, location and general pattern of approvals is consistent with current and planned service capacity.	Local planning records
	Frequency of overload. (11-4)	Overloads signify insufficient capacity and/or storm water intrusion into the sanitary collection system.	Local agency records
Water supply.	Available source, treatment and pumping capacities. (11-5)	Used in combination with average unit demand and population estimates to forecast facilities needs; attention should be paid to long-range supply availability.	Local agency records
	Water quality ratings. (11-6)	Assure that quality trends do not suggest future supply problems.	See Goal 6 discussion
	Development approvals by location. (11-7)	Assure that the quantity, location and pattern of approval is consistent with quality and service capacities.	Local planning records
Solid waste.	Available landfill capacity. (11-8)	Used in combination with average unit demand and population estimates to forecast future needs.	Local agency records Department of Environmental Quality (ODEQ)
Storm drainage.	Developed and developable land in 100-year floodplain. (11-9)	Track the quantity, type and location of floodplain development, ascertain potential future flooding problems.	Local planning records U.S. Army Corps of Engineers

PUBLIC FACILITIES AND SERVICES (Continued)

Component	Data Item	Applications and Limitations	Data Sources
Health.	Selected disease incidence data. (11-10)	Assess periodically to identify any emerging community health problems.	State Health Division (OHD)
	Hospital/clinic beds per capita. (11-11)	Compared with appropriate standards; used with population estimates to estimate future facilities needs.	State Health Planning and Development Agency
Police.	Service staff per capita. (11-12)	Compare to other locations and to appropriate standards.	Local agency records
Fire protection.	Fire insurance rating. (11-13)	Choose planning actions to maintain or improve rating, such as improvements to water supply.	Local agency records
Schools.	Current and proposed facilities capacity and staff by location. (11-14)	Assure that development trends are consistent with available capacities or that school system resources are adequate for capacity increases.	Local school district records Department of Education (ODOED)

Note: Recreation: See Goal 8 section.
Energy: See Goal 13 section.
Communication, Government, Planning Services: Insufficient monitoring importance to include here.

Objective: COORDINATE PUBLIC FACILITY AND SERVICE DEVELOPMENT ON URBANIZING LANDS: AVOID CREATING SUBSTANTIAL UNUSED CAPACITY FOR ONE OR A FEW SERVICES

Service capacities.	Current and planned capacities by service type and location. (11-15)	This objective relates to restricting services development in outlying areas until all services can be provided in a coordinated manner. Situations where available capacities attract development to undesirable locations should also be avoided. Monitoring here involves summarizing all available service capacities by location and tracking proposals for service extensions; coordination is lacking when just particular services are extended into unserved areas.	Sources above as applicable

12. TRANSPORTATION

Transportation involves a variety of land, air and water modes for moving people and goods, all of which are addressed by the state transportation goal. This goal stipulates providing and encouraging "a safe, convenient and economic transportation system." Individual jurisdictions can adopt a variety of objectives relating to this goal, focusing on particular transportation modes, the needs of particular population groups, and the relationship of transportation to land use and economic development dynamics. Jurisdictions may also choose the extent to which transportation development objectives emphasize reacting to the transportation demand generated by land development, or on the other hand limiting, encouraging or otherwise guiding land development through transportation policy. Here it is assumed that transportation facilities are planned in anticipation of development, but not generally used as a major growth management tool.

Three primary transportation objectives are identified. The first encompasses the overall objectives of transportation planning in most situations; the remaining two focus on more specific aspects.

Priorities

Jurisdictions should at least monitor traffic conditions, including flows and safety. In addition, they may choose to monitor other transportation objectives, such as any relating to the transportation needs of special population groups like the elderly or handicapped, or of developing transportation systems which rely on modes other than the automobile, such as public transit, bicycles or pedestrian access. Parking may also be an important consideration.

12. TRANSPORTATION

Component	Data Item	Applications and Limitations	Sources
	Objective: PROVIDE A CONVENIENT, EFFICIENT TRANSPORTATION SYSTEM WITHOUT EXCESSIVE UNUSED CAPACITY		
Automobile and truck traffic.	Traffic counts by vehicle type. (12-1)	Data collected should include both averages and peak volumes. Peak volume trends indicate when capacities may be reached. Comparison of trends between arterials shows distribution of growth and new transportation demand. Some state highway and intersection data are available for selected locations.	Flow and peak data from --local traffic departments --ODOT averages, peaks by vehicle classification for state highways
	Approvals affecting traffic demand or hindering future capacity expansion. (12-2)	Assess whether development approvals will generate demand for which capacity is or will be inadequate. Identify approvals which may hinder future opportunities for system expansion.	Local planning records
Bicycle traffic.	Bicycle traffic counts. (12-3)	Assess extent of growth in bicycle traffic, by location. Growth trends show success in providing adequate access and in shifting transportation emphasis from automobiles. Data may be very limited and/or unreliable.	Local traffic records, ODOT Reports
	Approvals affecting bicycle access or use. (12-4)	Identify approvals which may hinder future opportunities for bicycle access and/or for bicycle system expansion.	Local Planning records
Aircraft traffic.	Aircraft operations counts. (12-5)	Trends in overall growth and in mix of air traffic between general and commerical aviation indicate when capacities might be reached and whether changes or improvements in facilities are necessary.	ODOT Aeronautics Division
	Approvals affecting air traffic access or impacts. (12-6)	Approvals may affect opportunities for future facility expansion or allow incompatible use in adjacent areas.	Local planning records. ODOT Aeronautics Division air photo series

TRANSPORTATION (Continued)

Component	Data Item	Applications and Limitations	Sources
Pedestrian traffic.	Approvals affecting pedestrian access. (12-7)	Approvals which hinder pedestrian access such as omitting sidewalks, creating handicap and other barriers, or unnecessarily fostering automobile use can be identified.	Local planning and traffic records
		Objective: MAINTAIN AND ENHANCE TRAFFIC SAFETY	
Traffic safety.	Traffic accidents; traffic fatalities. (12-8)	Traffic accident and fatality trends by location allow identifying conditions which are deteriorating and/or which need improvement. Data may be relatively good, but not always available in readily usable form.	Local traffic records. ODOT Motor Vehicle Division summaries.
	Approvals affecting pedestrian and traffic safety. (12-9)	Approvals can be identified which decrease safety by increasing speeds or flows, create undesirable adjacency of pedestrians and autos, or affect intersection flows.	Local planning records
		Objective: MAINTAIN AND IMPROVE TRANSPORTATION ACCESS OF THE HANDICAPPED AND THE TRANSPORTATION DISADVANTAGED	
Transportation access.	Approvals affecting access. (12-10)	Development approvals may hinder access by placing barriers or by not removing existing barriers. Public and private actions may also fail to use available opportunities for improving access.	Local planning records

13. ENERGY CONSERVATION

The stated objective of Goal 13 is to maximize the conservation of all forms of energy through management and control of land and uses of the land. The state Department of Energy (DOE) provides suggestions on how local comprehensive plans and land-use regulations may work to accomplish that objective. Practically speaking, it is difficult to attribute changes in rates of energy use directly to land-use actions since most such effects are long-term and many intervening factors are operating. However, local governments can promote energy conservation by avoiding land-use policies and actions which would impede the conservation of energy and by requiring consideration of energy use when making land-use decisions. Also, cities and counties can adopt DOE suggestions into their planning efforts.

An example of local efforts to encourage energy conservation is the City of Woodburn's "solar access program" and "energy conservation housing program." The solar access ordinance is directed at existing development and sets forth standards to protect solar access. In order for a property to benefit from the protection provided by the ordinance, the structure must first meet weatherization and insulation criteria included in the ordinance. Once those criteria are met, the City will implement the ordinance to protect the property from infringement into its solar access. The energy conservation housing program provides density bonuses to new housing developments that go beyond the Building Code requirements for weatherization and insulation.

The local planning objective should be to promote energy conservation in the development and use of land. In order to discover whether or not the plan policies and land-use regulations are achieving this objective, it is desirable to review implementation decisions to determine how energy use was considered and if obvious and unreasonable impediments to energy conservation were permitted. The following Table describes data needs and sources for this effort.

Priorities

Until methods are developed to more closely relate energy use to specific land use actions, local jurisdictions should give priority to monitoring: (1) how energy conservation issues are handled in the land-use decisions; (2) the extent to which energy conservation techniques included in plan policies and implementation measures are applied; and (3) the degree to which residents of the jurisdiction make use of and are satisfied with the energy conservation programs provided by government agencies, utility companies and energy suppliers.

13. ENERGY CONSERVATION

Component	Data Item	Applications and Limitations	Sources
		Objective: MANAGE AND CONTROL LAND USE SO AS TO ENHANCE ENERGY CONSERVATION	
Energy use	Energy use per capita or per household (13-1)	Local governments may wish to monitor change in rate of energy use within their jurisdictions. Use data available from public utilities and private fuel distributors for geographic areas and for specific commercial, industrial and public facilities can be compared over time and evaluated against fluctuations in population, number of housing units and economic development within the jurisdiction. Also, local use rates can be compared with statewide data. The rate of energy use might be related to actions to conserve energy (discussed below).	Annual Report (ODOE) Unpublished data --utilities --natural gas companies --heating fuel distributors --gasoline distributors
Energy conservation	Measures taken to promote energy conservation (13-2)	Local governments can monitor land use decisions to find out if energy conservation issues raised in staff findings, agency comments or public testimony were considered in making the decision and to identify what actions were taken to promote energy conservation. For example, actions might include orientation of subdivisions, density bonuses, housing types and sizes, solar access requirements, and recycling as part of waste disposal. Also, jurisdictions may wish to record efforts made at conserving energy that are divorced from land use decisions such as: number of building permits issued for retrofitting for alternate energy sources; use of energy audits and weatherization programs provided by utilities and others; commercial and industrial use of energy tax credits for alternate energy sources, waste heat recovery, conservation and recycling equipment.	Local planning records --building permits --conditional uses --variances --zone changes --land divisions --capital improvement projects Unpublished data --utilities and fuel distributor records on energy audits and loans for weatherization --ODOE records on energy tax credits

14. URBANIZATION

The objective of Goal 14 is "to provide for an orderly and efficient transition from rural to urban land use." The mechanism to achieve this objective is the urban growth boundary (UGB). Cities or metropolitan areas are required to establish a boundary within which the urban-level industrial, commercial and residential growth projected for the planning period will be accommodated. In establishing this UGB, local governments are required to consider seven broad factors listed in the Goal. Consideration of these factors requires the city to make certain assumptions, based on factual data, concerning the need for various types of development to accommodate a population of the characteristics projected. Land must then be allocated to the various types of development and plans must be made to supply this land with needed public services.

Land which is supplied with these urban services and is either within an incorporated city or is land adjacent and developed at urban density is termed "urban" land. Land which is not yet developed at urban densities and is outside an incorporated city but which is needed for urban expansion and can be supplied with urban services is termed "urbanizable." The Goal requires that conversion of urbanizable land to urban through annexation and/or the provision of urban level services must be based on the consideration of four factors. Jurisdictions have policies regarding annexations and service extensions which take into account these factors. How the city or metropolitan area addresses these four factors can be termed their growth management program. Growth management is aimed at encouraging development to occur first within urban areas. Development within the urbanizable area is to occur "logically" and in such a way as to note preclude efficient provision of urban services and urban level development in the future. The growth management policies and implementing strategies vary between jurisdictions. Some cities and counties have plan policies encouraging development to occur first within the urban area and encouraging "orderly development" or urbanizable land but have no implementing strategy. Others implement such policies with use of a large minimum lot size (5 to 10 acres) in the urbanizable area, a requirement that development which does occur be "pre-platted" and arranged in such a way as to anticipate future urban services and densities or, finally, through outright prohibition of development without urban level services. The thrust of the monitoring effort will therefore vary with the policies or strategies employed.

Cities and counties will also want to determine if changes in the original assumptions regarding population growth, the characteristics of that population, or industrial and commercial locational needs have occurred which would necessitate a modification of the UGB. Secondly, cities should monitor whether or not urban services are being provided according to plan policies so as to ensure a sufficient supply of serviced land to ensure choices in the market place. In most cases, monitoring for Goals 9 (Economy), 10 (Housing) and 11 (Public Facilities) will provide the necessary data for monitoring these later two aspects but special effort should be made to monitor the success of the growth management program.

Priorities

The top priority for a city is monitoring of land use actions within the urbanizable area to ensure that they allow adequate flexibility in providing urban services and will not result in land use patterns which will preclude economic service provision and urban densities.

14. URBANIZATION

Component	Data Item	Applications and Limitations	Data Sources
	Objective: PROHIBIT DEVELOPMENT OF URBANIZABLE LAND WHICH WILL PRECLUDE OR LIMIT PLANNED URBAN DENSITIES AND EFFICIENT PROVISION OF URBAN SERVICES		
Growth management provisions.	Development approved by type and geographical area in the urban growth boundary. (14-1)	Cities and counties which share responsibility for urban growth management should track development approvals in the urbanizable area over time to ensure that the intent of plan policies are met. This data can be compared with various measures of cost or effectiveness to permit evaluation of the success of growth management strategies. Measures might include relative cost of service provision, planned densities versus density at buildout or incidents of forced annexation due to septic failures. This monitoring will allow jurisdictions to determine if the terms of the joint management agreement are being met.	Local planning records
	Objective: ENCOURAGE DEVELOPMENT OF URBAN AREAS PRIOR TO CONVERSION OF URBANIZABLE LAND		
	Development approved by type in the urban growth boundary and available urbanizable land by zoning type and characteristics within city limits. (14-2)	Cities may chose to monitor development approved in the urbanizable area to determine why it is occurring there rather than on available land which is already serviced. This may lead to a more vigorous servicing or annexation program or a re-evaluation of growth management strategies.	Local planning records and land inventories

15. WILLAMETTE RIVER GREENWAY

The Willamette River Greenway Statute (ORS 390.010 to 390.220 and ORS 390.310 to 390.368) set legislative policy to establish and maintain a natural scenic, historic and recreational greenway along the Willamette River. The statute also directed the Oregon Department of Transportation (ODOT), in cooperation with local units of government, to prepare a plan for development and management of the Greenway. State-wide Planning Goal 15 provided the parameters within which the ODOT plan and the Greenway portions of local plans and ordinances were to be formulated.

The objective of the Greenway Plan is to protect the natural, scenic, historical, agricultural, economic and recreational qualities of lands lying within the designated Willamette River Greenway boundaries. Particular emphasis is given to providing the maximum possible landscaping, open space and vegetation adjacent to the River and providing necessary access to and along the River.

Acknowledged comprehensive plans are considered to be in compliance with the ODOT Greenway Plan and the Greenway Statute. Local governments have the task of ensuring that developments and changes in use or level of activity within the Greenway boundaries in their jurisdiction are consistent with their acknowledged plans and thereby consistent with the Greenway Plan. ODOT has overall responsibility to investigate and determine whether or not the quality of Greenway resources is being maintained through implementation of acknowledged plans. Local governments may assist ODOT by investigating changes in quality within their jurisdictions. However, the prime objective of local government should be to avoid development or use of land or water areas within the designated Willamette River Greenway that is inconsistent with the ODOT Greenway Plan or Greenway Statute.

Priorities

Because ODOT has lead responsibility and legislative mandate to maintain the quality of the Greenway resources, local governments should concentrate their efforts towards monitoring developments in the Greenway for consistency with the ODOT Greenway Plan. Data for this effort is more readily available than the data needed to monitor qualitative changes.

15. WILLAMETTE RIVER GREENWAY

Component	Data Item	Applications and Limitations	Data Sources
Objective: AVOID DEVELOPMENT OR USE OF LAND OR WATER AREAS WITHIN THE DESIGNATED WILLAMETTE RIVER GREENWAY THAT IS INCONSISTENT WITH THE ODOT GREENWAY PLAN OR THE GREENWAY STATUTE			
	Type and location of development, activities and land use actions. (15-1)	Local governments can maintain information concerning the type of developments and activities permitted and land use actions approved within the portion of the Greeway within their jurisdictions. That information can be compared with the requirements of the ODOT Greenway Plan and the Greenway Statute to identify possible conflicts. Also, requests for boundary changes can be recorded to identify pressures on the Greenway.	Local planning records --building permits --capital improvement projects --land divisions --zone changes --conditional use permits State and federal actions --facility plans --permits/licenses
Maintain resource quality.	Changes in quality of Greenway resources. (15-2)	Although monitoring resource quality changes is mostly the responsibility of ODOT, local governments may measure quality variables such as changes in amount of riparian vegetation, need for additional public access, variations in set-back distances, proliferation of docks, amount of existing wood lots, type uses in urban areas (water-dependent/water related).	Inventory of riparian vegetation (ODFW) Interviews --agency representatives (ODFW, ODOT, ODOF) --property owners --boating and camping organizations

16. ESTUARINE RESOURCES

Goal 16 seeks to assure that the existing values of Oregon's estuaries not diminish in quality or quantity but instead be enhanced to ensure maintenance of diversity in environmental, economic and social benefits. Estuaries are unique in that they consist of a rare, productive environment and a means of access to the sea. Short-term uses and activities which would cause irreversible damage to the renewable resources are to be avoided.

Local governments now share with state and federal agencies the responsibility of maintaining the quality and quantity of estuarine values. Acknowledged comprehensive plans provide a mechanism to coordinate local, state and federal efforts towards estuarine resource management and to ensure consistency of those efforts with the State's Coastal Management Program. The Department of Land Conservation and Development (DLCD), through ORS 197.180, has the authority to coordinate technical assistance and information flow from state agencies to local governments. The data and assistance provided by resource agencies will improve coastal governments ability to manage estuarine resources through their acknowledged comrehensive plans.

Coastal units of government having one or more estuaries within their jurisdictions are likely to have estuarine plan elements containing four primary objectives. The first two encompass the overall goal of protecting the estuarine ecosystem while maintaining the social and economic benefits. Those objectives consist of several components as identified in the following Table. The second two objectives focus on more specific issues of dock proliferation and restoration of estuarine benefits.

To discover whether or not plan policies and land use regulations are working to achieve these objectives, coastal counties and cities need to monitor changes in the use of estuarine resources and the impacts of those changes on resource quality and quantity. The application and sources of data needed to accomplish this monitoring task are described in the Table.

Priorities

Much of the data needed to adequately monitor changes in estuarine resource quantity and quality is not readily available to local governments. Most coastal jurisdictions lack the technical expertise to measure changes in natural biological productivity or determine the impacts of permitted development and activities. The representatives of resource agencies, marine extension agents and university personnel that can provide technical assistance are few in number and not always available. Consequently, coastal governments have to rely on the federal and state permit processes to generate data by which they can track changes in the estuarine resources instead of conducting the recommended field inspections and interviews.

16. ESTUARINE RESOURCES

Components	Data Item	Applications and Limitations	Sources
Objective: AVOID DEGRADATION OR DESTRUCTION OF ESTUARINE NATURAL BIOLOGICAL PRODUCTIVITY, HABITAT DIVERSITY, UNIQUE FEATURES AND WATER QUALITY			
Maintain diversity and unique features through estuarine management units and permissible uses	Number of acres of land and water added to or subtracted from each management unit (16-1)	Coastal jurisdictions can keep a current record of the amount of estuarine area assigned to each management unit by comparing field measurements, mapping or aerial photography with plan inventory data. Technical assistance from resource agencies may be necessary.	Field inspections Interviews, mapping, aerial photography from ODSL, COE, ODFW and universities
	Type, extent of development and activity by management unit (16-2)	Coastal governments can identify amount of area added to/removed from management units by review of land use actions, mitigation and restoration efforts, fills, removals, placement of structures, aquaculture and so on. Also allowed developments can be compared with the established priority of permissible uses to determine effectiveness of the acknowledged plan and ordinances.	Local planning records --zone changes --plan amendments State and federal actions --Fill and Removal Permits (ODSL) --Section 10 and 404 Permits (COE) --aquaculture (ODFW, USDA) --investigations of permit violations (ODSL, COE) --lease of submerged and submersible lands (ODSL) --houseboats (OMB) --facility construction plans
Maintain diversity of natural habitat	Amount and type of habitat area added to or subtracted from the estuary (16-3)	Estuarine habitats can be examined periodically and compared to ODFW habitat classification inventories and the plan inventory at time of acknowledgment. Technical assistance from resource agencies may be necessary.	Field inspections Interviews and technical assistance from ODFW, NMFS, USFWS, OSU, U of O, Marine Extension Agents

ESTUARINE RESOURCES (continued)

Components	Data Item	Applications and Limitations	Sources
	Developments and activities by type, area, location and impact (16-4)	Jurisdictions can record projected and actual impact of permitted development and activity on habitat area and type as indicated by impact assessments and project monitoring, agency comments and hearing testimony. Projected and actual impacts are not always available and agency impact reviews must be requested and are sometimes difficult to obtain.	Local planning records --building permits --conditional use permits --variances State and federal actions (as listed above) Interviews and formal impact reviews from ODFW, NMFS, USFWS, ODEQ, EPA Marine Extension Agents
Maintain natural productivity through impact assessment	Results of impact assessments with regard to productivity variables of water quality, species of flora and fauna, hydrologic characteristics, etc. (16-5)	Over time changes in natural productivity variables can be compared with data in plan inventories and possible trends and cumulative effects identified. The difficulty lies in lack of available expertise. A comprehensive review of all variables at one time would require a team of technically qualified people not now available to coastal governments.	Impact assessments provided by developers as part of local planning records Impact review and comments from state and federal agencies listed above
	Actions taken in response to impact assessments (16-6)	Coastal governments can monitor their ability to apply conditions to and require modifications of proposed developments and activities in response to identified impacts. This may indicate the need for revisions in policies and ordinances.	Local planning records
Maintain water quality and minimize man-induced sedimentation; maintain minimum stream flow	Current water quality measurements (temp., pH, salinity, turbidity, sediments, DO); shoaling; rate of flow (16-7)	Current water quality variables, shoaling and rates of stream flow can be compared with information contained within the plan inventory to identify direction and degree of change and possible trends.	Field inspections Status of Water Quality, 1981, ODEQ Data files (ODEQ, EPA) Stream flow records (ODWR)

ESTUARINE RESOURCES (continued)

Components	Data Item	Applications and Limitations	Sources
	Type, location and extent of developments and activities creating discharges, sedimentation or reduced stream flow (16-8)	Coastal governments should record data on developments creating waste discharges into the estuary as well as data on water appropriations, erosion control efforts, forest practices and farming practices which could affect rate of flow or sedimentation.	Local planning records State and federal actions --Appropriation of water (ODWR) --Forest Practices Licenses (ODOF) --Waste Discharge Permits (ODEQ) Interviews with --Extension Service and Conservation Service Personnel --District biologists (ODFW)
Provide for mitigation of effects of dredge and fill in inter-tidal or tidal areas	Status of mitigation sites (16-9)	Jurisdictions can keep a record of additions or deletions to suitable sites for mitigation to establish whether or not these sites are being protected for future use.	Field investigations Interviews with ODFW
	Migitation actions related to fills and dredging in intertidal or tidal waters (16-10)	The type of action taken, waivers of the mitigation requirement and mitigation approvals can be recorded to identify problems in applying the requirement for mitigation.	Local planning records Fill and Removal Permits (ODSL) Section 10 and 404 Permits (COE) Interviews with ODSL and COE
Provide for disposal of dredged material	Status of disposal sites (16-11)	The status of designated sites can be reviewed periodically to identify total area, remaining capacity and loss or addition of suitable sites and whether or not the sites are being adequately protected (see Goal 17).	Field inspection Interviews with local Port Districts and COE

ESTUARINE RESOURCES (continued)

Components	Data Item	Applications and Limitations	Sources
	Location and amount of dredging and material disposal (16-12)	Coastal governments can monitor the amount and location of dredging and disposal operations to ensure that the disposal program is functioning adequately and that adequate disposal area exists for the identified need.	State and federal dredging approvals and disposal operations (ODSL, COE, local Port Districts)
Objective: MAINTAIN EXISTING NAVIGATIONAL CAPABILITY AND AREAS IDENTIFIED AND NEEDED FOR WATER-DEPENDENT USES			
Maintain navigational capability	Depth, width of channels, turning basins, bar crossings and status of authorized navigation structures (16-13)	Coastal jurisdictions can compare current depth and width with authorized size of channels and status of navigation structures with authorized development in order to evaluate current navigational capability.	Unpublished data --results of periodic inspections by COE available on request
	Efforts to improve or maintain navigational capability (16-14)	The effect and frequency of efforts to improve navigational capability (dredging, construction, etc.) may be recorded to identify the work and cost of retaining that benefit.	Unpublished data/interview with local port districts and Corps of Engineers
Protect areas suited and needed for water-dependent development	Number of acres added to or subtracted from water-dependent areas (16-15)	Coastal governments can maintain a current inventory of the areas suited and available for water-dependent uses. Changes in the amount of area and the condition or suitability or areas would be noted.	Field inspections Interviews with local port districts
	Type, size and location of developments and land use actions affecting areas designated for water-dependent development (16-16)	Use of water-dependent areas can be recorded so as to identify conflicts due to use by non-water-dependent developments and to maintain a current inventory of designated areas.	Local planning records, State and Federal actions

ESTUARINE RESOURCES (continued)

Components	Data Item	Applications and Limitations	Sources
	Objective: DISCOURAGE THE PROLIFERATION OF INDIVIDUAL SINGLE-PURPOSE DOCKS AND PIERS		
	Size, use and location of docks and piers (16-17)	Jurisdictions can collect data concerning new docks and piers to determine whether or not there is a movement to community use, multi-purpose facilities; to smaller docks or to alternative facilities such as dryland storage, buoys and ramps.	Local planning records State and federal actions --submerged and submersible leases (ODSL) --permits issued by ODSL, COE
	Objective: RESTORE ESTUARINE ENVIRONMENTAL, ECONOMIC AND SOCIAL VALUES; DIVERSITY AND BENEFITS		
Restoration sites	Status of inventoried sites for restoration (16-18)	Sites inventoried for restoration in the comprehensive plan can be checked periodically to determine whether they remain suitable and are in fact not preempted by uses that would make them ineligible for restoration.	Field inspections Interviews with ODFW
	Amount, type and location of restoration actions (16-19)	Coastal governments can review any restoration actions to determine if the action is consistent with plan objectives; has a beneficial impact on the estuarine ecosystem by expanding and improving resource quality.	Local planning records Interviews with ODFW

17. COASTAL SHORELANDS

Coastal shorelands include designated land area adjacent to estuaries (to head of tide), the ocean and coastal lakes. Although the amount of coastal shorelands is limited, these lands have very high environmental, economic and social values. The state's objective for coastal shorelands--to avoid any degradation or destruction of the resources and benefits of all coastal shorelands--in effect encompasses the objectives for open spaces, scenic and historic areas and natural resources (Goal 5); air, water and land resources quality (Goal 6) and estuarine resources (Goal 16). The resource values addressed in those objectives are particularly important within coastal shoreland areas. As with estuarine resources, the state's desire is that existing values of coastal shorelands not diminish in quality or quantity. Nor does the state want values of adjacent coastal waters to diminish due to use of shorelands.

Coastal cities and counties are required by statewide Planning Goal 17 to identify coastal shorelands and establish policies and permitted uses consistent with state standards set forth in Goal 17. In general, the standards require that local governments limit uses of shorelands to those that are consistent with the resources and the use of adjacent waters and with the geologic and hydrologic hazards associated with the shorelands.

Because of the varied concerns related to shoreland resources, coastal acknowledged comprehensive plans should contain at a minimum the five objectives identified in the following Table. Monitoring data items described in the Table will allow coastal governments to determine whether or not these planning objectives are being met.

Priorities

In deciding whether or not the acknowledged comprehensive plan and implementing measures are achieving the shoreland resource objectives, coastal governments should give first priority to monitoring changes in the use of shoreland areas as indicated by local, state and federal permits, capital improvement/facility plans and local land use actions. Although this data is most accessible and easiest to use, it will not be complete. Whenever possible, it should be supplemented by periodic inspections of the coastal shorelands resources, with the technical assistance of local, state and federal agency representatives, to identify changes in quality and quantity using the plan inventory as an initial reference.

17. COASTAL SHORELANDS

Components	Data Item	Applications and Limitations	Sources
Objective: AVOID REDUCTION OF NATURAL VALUES OF MAJOR MARSHES, SIGNIFICANT HABITAT, HEADLANDS, AESTHETIC RESOURCES AND HISTORICAL/ARCHAELOGICAL SITES			
Protect natural values	Quantity and quality of resource type (17-1)	Coastal cities and counties periodically can examine the resources identified in the objective and make quantitative and qualitative comparisons with the characteristics of those resources as inventoried at time of plan acknowledgment. Technical assistance likely will be needed.	Field inspections Interviews with ODOT, ODFW, private organizations
	Type, size and location of developments and land use actions allowed in "natural" shorelands (17-2)	New uses and activities and land use actions affecting "natural" shorelands can be examined to determine whether or not they reduce the existing area or resource values and whether or not they are consistent with the priority of uses established in the plan.	Local planning records --Building Permits --Conditional Use Permits --zone changes --plan amendments --capital improvements State and federal actions --Fill and Removal Permits (ODSL) --Section 10 and 404 Permits (COE) --Ocean Shore Improvement Permits (ODOT) --facility plans
Objective: AVOID COMMITTING SHORELAND AREAS ESPECIALLY SUITED FOR WATER-DEPENDENT USES, DREDGED MATERIAL DISPOSAL OR MITIGATION TO OTHER USES			
Protect water-dependent areas and sites	Amount of area and current suitability of area and sites (17-3)	Coastal jurisdictions periodically can reinventory areas and sites designated for water-dependent uses. Data concerning area or front-footage, current use, and current suitability for water-dependent uses can be collected and compared with similar data in the acknowledged comprehensive plan.	Field inspections Interviews with local port district, land owners, COE

COASTAL SHORELANDS (continued)

Components	Data Item	Applications and Limitations	Sources
	Type, size and location of developments and activities allowed on and adjacent to water-dependent sites (17-4)	Developments and activities allowed on and adjacent to water-dependent sites can be examined as to the degree they commit the site to other uses or conflict with its preferred (priority) uses. Also, a record can be maintained as to consumption of designated water-dependent areas.	Local planning records (as identified above) State and federal actions (as identified above)
Protect dredged material disposal sites	Amount of area and current suitability of sites (17-5)	Jurisdictions can monitor changes in designated sites either from natural or manmade causes and identify current availability and suitability.	Field inspections Interviews with local port district, ODFW, COE
	Type, size and location of developments and activities (17-6)	Uses and activities permitted on or adjacent to designated disposal sites can be examined to determine if they interfere with the intended use, reduce suitability or consume site.	Local planning records State and federal actions
Protect mitigation sites	Amount of area and current suitability of designated sites (17-7)	Periodically re-inventory sites to identify any natural or man-caused changes that affect size, availability or suitability.	Field inspections Interviews with ODFW
	Type, size and location of developments and activities (17-8)	Examine developments and activities permitted on or adjacent to mitigation sites to identify possible conflicts with intended use of sites.	Local planning records State and federal actions Interviews with ODFW
	Objective: PROVIDE FOR APPROPRIATE USE OF RURAL SHORELANDS		
Maintain priority of uses	Type, location and extent of developments and activities permitted on rural shorelands (17-9)	Coastal counties can compare developments and activities allowed on shorelands in rural areas with the overall priority of uses established for those areas in the acknowledged comprehensive plan.	Local planning records State and federal actions

COASTAL SHORELANDS (continued)

Components	Data Item	Applications and Limitations	Sources
	Objective: MAINTAIN, RESTORE AND ENHANCE RIPARIAN VEGETATION		
Maintain existing riparian vegetation	Amount and condition of riparian vegetation; measures of sedimentation and water quality (17-10)	Coastal governments periodically can investigate the type, quantity, location and condition of riparian vegetation and compare results with data in the plan inventory. Also, changes in water quality or levels of sedimentation can be identified as clues to possible loss of riparian vegetation.	Field inspections Unpublished results of periodic inspections by ODFW and ODOT Data files (ODEQ) Water Resources for Oregon USGS Interviews with ODFW, ODOT, ODEQ, ODOF
	Location, type, extent of developments and activities affecting riparian vegetation (17-11)	Developments and activities allowed in areas of riparian vegetation can be monitored to identify potential impact on the vegetation, and measures taken to minimize impact. Followup inspections can be made to determine actual effects of permitted developments.	Local planning records State and federal actions Interviews with ODOT and ODFW Field inspections
Restore and enhance riparian vegetation	Actions taken to improve vegetative cover (17-12)	Coastal jurisdictions can record any actions taken by private or public bodies to improve riparian vegetation and identify the results of those actions.	Field inspections Capital improvement projects State and federal facility improvements

COASTAL SHORELANDS (continued)

Components	Data Item	Applications and Limitations	Sources
	Objective: MINIMIZE HAZARD TO LIFE AND PROPERTY IN THE USE OF SHORELANDS		
Manage floodplain areas	Location, nature and extent of flooding (17-13)	Coastal governments can keep a record of flooding experienced in shoreland areas and identify the effect of the flooding on existing uses and development. That information can be used to improve on plan inventory, policies and implementation measures.	Field inspections Interviews with ODOT, DOGAMI, COE, land owners
	Type, location and size of developments and activities permitted in floodplain areas (17-14)	Developments and activities allowed in known floodplain areas of shorelands and the safeguards required can be recorded and compared to the priority of uses established for flood areas in the acknowledged plan.	Local planning records State and federal actions
Encourage non-structural solutions to flooding and erosion	Type, location and extent of developments and structures built to control flooding and erosion (17-15)	The placement of structures such as jetties, bulkheads and seawalls and use of fill for erosion and flood control can be recorded and impacts on water currents, erosion and accretion patterns noted.	Local capital improvements State and federal actions Building Permits Field inspections Interviews with COE, ODOT, land owners

18. BEACHES AND DUNES

The state's planning objectives concerning the beaches and coastal dune areas are directed toward protecting their natural aesthetic and recreational values and controlling development to protect human life and property. Goal 18 encompasses much of the direction provided in Goals for Open Spaces, Scenic and Historic Areas and Natural Resources, Recreational Needs and Natural Disasters and Hazards. The state's interest is that existing values of beach and dune areas not diminish and the use of these areas not exceed their natural limitations nor increase the hazard to human life and property.

Coastal comprehensive plans must include an inventory of beach and dune areas as well as policies and permitted uses for those areas that are based on their capabilities and limitations and the need to protect their ecological, recreational, aesthetic, water resource and economic values. Therefore, acknowledged coastal comprehensive plans should contain two overall objectives regarding beach and dune areas: to avoid degradation or destruction of the resources and benefits of coastal beach and dune areas and to reduce hazard to life and property from natural or man-induced actions associated with beaches and dunes. These two objectives consist of several components as described in the following Table.

Priorities

The monitoring approach suggested for beaches and dunes is similar to that offered for other plan elements in that it combines both a study of short-term use dynamics on the resource lands and a more comprehensive identification of the changes in the resource conditions of the beach and dune areas. The first of these is easiest because the data is more accessible, although the regulatory process will not cover all changes that occur. Consequently, it is important that local planning officials, with the assistance of state and federal agencies, attempt to monitor change in resource conditions through periodic field investigation.

18. BEACHES AND DUNES

Components	Data Item	Applications and Limitations	Sources
Objective:	AVOID DEGRADATION OR DESTRUCTION OF THE RESOURCES AND BENEFITS OF COASTAL BEACH AND DUNE AREAS		
Maintain resource benefits	Current physical, vegetative, groundwater, and habitat characteristics (18-1)	In general, in order to identify changes due to natural causes or to developments and activities not required to have permits or that are established illegally, it is desirable for coastal governments to investigate and compare the current resource characteristics with those inventoried at time of plan acknowledgement.	Field inspections Inverviews and use of unpublished data --"zone line" and beach front erosion investigations and reports (ODOT) --status of groundwater supplies (ODWR) --offshore sand movement (COE) --status of habitat (ODFW)
Minimize erosion	Location and extent of vegetative damage and erosion (18-2)	Erosion of beach and dune areas is often due to destruction of stabilizing vegetation from development, moisture loss or the construction of shore structures. Coastal jurisdictions can identify occurrences of significant erosion and vegetative damage and relate those to developments.	(same sources as listed above)
Protect groundwater from excessive drawdown	Measures of groundwater quality and quantity (18-3)	Coastal governments can monitor changes in groundwater resources to identify resulting loss of vegetation, loss of quality or intrusion of salt water due to excessive drawdown.	Interviews and unpublished data --water consumers --local water district records --records of groundwater supplies from observation wells and special tests in problem areas (ODWR)

BEACHES AND DUNES (continued)

Components	Data Item	Applications and Limitations	Sources
Control construction of beach front structures	Location and extent of beach front structures (18-4)	Coastal jurisdictions can investigate beach front structures authorized by ODOT and estimate negative impacts on visual qualities and public access.	Field inspections Ocean shore improvement permits (ODOT)
Limit breaching of foredunes	Location and extent of breached foredunes (18-5)	Intentional breaching of foredunes is to be limited to emergency situations or when necessary to replenish sand supplies for recreational purposes. Man-caused breaches should be identified as to rationale and potential impact on wildlife habitat, forest areas and other environmental resources.	Field inspections Interviews with --land owners --representatives of ODFW and ODOT Unpublished data --"zone line" and beach front erosion investigations/reports (ODOT)
Regulate uses	Type, extent and location of developments and land use actions approved for beach and dune areas (18-6)	Coastal governments can maintain a file of all developments and activities permitted on beach and dune areas including required findings, site investigation reports on feasibility and potential impacts and conditions attached to approval. This information can be compared with data listed above to estimate the effectiveness of plan policies and implementing measures.	Local planning records --building permits --conditional use permits --zone changes --land divisions --capital improvements State and Federal actions --Ocean Shore Improvement Permit (ODOT) --Subsurface Sewage Disposal Permit (ODEQ) --Appropriation of Groundwater Permit (ODWR) --Fill and Removal Permit (ODSL) --Section 10 and 404 Permits (COE) --facility plans

BEACHES AND DUNES (continued)

Components	Data Item	Applications and Limitations	Sources
	Objective: REDUCE HAZARD TO LIFE AND PROPERTY FROM NATURAL OR MAN INDUCED ACTIONS ASSOCIATED WITH BEACHES AND DUNES		
Prohibit development in hazardous areas	Type, extent and location of developments and activities approved for beach and dune areas (18-7)	Coastal jurisdictions can collect data on developments and activities allowed in beach and dune areas to discover if residential developments and commercial and industrial buildings have occurred on active foredunes, on other foredunes that are conditionally stable and subject to ocean undercutting or wave overtopping, or on deflation plains subject to ocean flooding.	Local planning records State and Federal actions --Ocean Shore Improvement Permits (ODOT) --Subsurface Sewage Disposal Permits (ODEQ) --Fill and Removal Permits (ODSL) --Sections 10 and 404 Permits (COE) --facility plans
Control construction of beach front structures	Location and extent of beach front structures (18-8)	Beach front structures can be examined to estimate impacts on adjacent property and beach erosion. Results can be used to update criteria for allowing structures.	Field inspections Ocean Shore Improvement Permits (ODOT)
Limit breaching of foredunes	Location and extent of breached foredunes (18-9)	Man-caused breaching of foredunes can be identified and evaluated as to damage to property from sand deposition or erosion.	Field inspections Interviews with --land owners --representatives of ODOT Unpublished data on "zone line" and beach front erosion investigations and reports (ODOT)

IV. SOURCES OF MONITORING DATA

This chapter consists largely of data source descriptions which augment the data needs presented in Chapter III. Source descriptions are organized by agency and level of government, beginning with local government and followed by state and federal agencies. For each agency, published and other readily available data are described first, such as periodic reports, followed by other data sources such as those associated with permit application files, planning documents, or other material maintained by the agency which can be made available for plan monitoring purposes.

Each source is described briefly and an evaluation made of its limitations, currency and other constraints on access and use. Readers should also be aware that the form and content of the data sources discussed here may change over time and should be checked with the source agency as appropriate.

Certain sources referenced in Chapter III are not discussed in this chapter. Where a data source is specific to monitoring only one minor aspect of a single goal the source discussion was restricted only to Chapter III.

In addition, a variety of informal, irregular or other background information which is useful for plan monitoring is also not included in this chapter's listings. Examples include:

1) Interviews with agency representatives, university personnel, extension service personnel, and other individuals who are knowledgeable about community conditions or dynamics.

2) Land use decisions records, including findings of fact and testimony.

3) University and other research, such as that on resource management, social conditions, marketing, economic development, and other pertinent local and regional topics.

4) Environmental impact reviews and assessments on proposed projects and actions which may contain valuable information.

5) Media reports, particularly on community dynamics which relate to plan monitoring issues.

Each locality is assumed to know best how to identify, access and use these sources. Monitoring and plan updating will benefit from gathering pertinent information from such sources as it becomes available, such as by maintaining a library and a clipping file.

LOCAL GOVERNMENT SOURCES

A variety of data describing local conditions and trends are available in most jurisdictions from planning and operational agencies. This section describes these data sources as they typically appear in most municipalities or counties. Additional discussion of these sources as a component of a monitoring system is included in the following chapter.

BUILDING (DEVELOPMENT) PERMITS

Building permits or development permits are normally processed by the county or city building department with review by planning personnel. Consequently there generally is easy access to this permit information. Form varies among jurisdictions, but all contain data on type of development or activity, location by address and by subdivision and lot number; size of structure and parcel and indication of special areas of concern that may require application of development standards (e.g., hazard areas and shorelands) may also be included. Although permit files typically are fairly current, actual completion time for proposed structures and activities will vary. The most obvious limitation is simply that issuance of a permit does not necessarily mean the structure will actually be built. To resolve this permits should be counted after final approval is granted. The State Housing Division maintains a record of all permits by type and a record of value for all jurisdictions in the State. This can be used for the sake of comparison.

LAND DIVISIONS

This source of data includes subdivisions and major and minor partitions. Since applications for land divisions are processed by planning or other local personnel such as tax assessor or county clerk, the information contained therein is readily available. Applications will contain data on location, size (area) of development, number of lots created, type of use intended, access and so on. Also, the record and findings-of-fact associated with the decision-making procedure will contain important information concerning possible impacts of the development and requirements for approval.

Although land divisions indicate change in use of land and development activity, the actual placement of roads, utilities and structures may be delayed for an indefinite period of time. The possible delay should be taken into account when using the data source. Also, whereas the land division action and data related to it are current, the completion of the development and the full impact of it may occur a significant time afterwards.

CONDITIONAL USE

Since applications for conditional uses are processed by local planning officials, accessibility to the information on the application is excellent. The form of the application will vary among jurisdictions but typically will contain data on location, property ownership, and a description of the

proposed use. In addition to the information provided with the application, the findings-of-fact and the record associated with the decision-making process may contain information related to changes to be monitored. As with building permits, actual development resulting from conditional use approval may be delayed or may not occur at all.

ZONE CHANGE

Data from zone change applicatins and records and findings-of-fact established at public hearings by the decision-making body are readily available to planning officials. The form of the information will vary among local government but will contain the pertinent facts to support a change in the zoning map. In many cases a change in zone will require a plan amendment.

ANNEXATIONS

This land use action is processed by planning officials and will provide considerable data concerning need, use suitability, and impact on land resources. The annexation must be examined as to whether or not the comprehensive plan controls. If not, all goals must be applied. Annexations may result in plan amendments. Data from annexation actions indicate change in the use potential of the land resource and a change in the land base inventory.

PLAN AMENDMENT

Plan amendments not associated with zone changes or annexations will provide new data on changing conditions. All information related to amendments is processed by planning personnel, so it is readily accessible.

PUBLIC CAPITAL IMPROVEMENT PROJECT PLANS AND PROGRAMS (CIP)

Capital improvements information is contained in CIP documents within many jurisdictions. These plans include data on the type, location, size, completion schedule and other characteristics of public works projects. The CIP may also include needs analysis and impact studies which may be useful for monitoring purposes. Although the intent of Goal 11 (Public Facilities and Services) is to integrate comprehensive planning and capital improvement programming, many CIP plans are as yet not directly connected with the comprehensive planning process.

STATE AGENCY SOURCES

DEPARTMENT OF AGRICULTURE (ODOA)

Aquaculture Program
635 Capital Street NE
Salem, Oregon 97310 378-3137

LICENSE AND PERMIT FILES

Food Processing License for Aquaculture

Aquaculture operations processing fish for food must obtain a food processing license, comply with state law and submit to periodic inspections by department personnel. Processing operations requirements and a listing of current licensed businesses are available from the department on request.

DEPARTMENT OF ECONOMIC DEVELOPMENT (ODED)

155 Cottage NE
Salem, Oregon 97310 373-1200 or 373-1241

PERIODIC REPORTS

County Indicators

An annual compilation of county-level data, including population, income, labor force, sales, assessed values, building starts, and other material. This is a very useful compilation, although it is more aggregated than the Data Books discussed below. It is currently available.

Economic Development Clearinghouse Data Books

A volume is prepared for each county including a variety of detailed data such as that in the County Indicators publication, but also more detailed income and payroll data by SIC category, sales by type of firm, bank deposits, construction activity, school enrollments, farm, forest, tourism and other income, and other material. The Data Book is intended to serve as a primary data source for each county.

The intent of DED has been to distribute these data books each year, but budget limitations have suspended publication for several years. The department is presently planning to publish a current version for each county by mid or late 1983.

Directory of Manufacturers

A bi-annual publication listing of a sample of manufacturing firms by SIC category for each jurisdiction in the State. Employment for each firm

is also included. This source can be used to track the growth or decline of firms within important manufacturing categories.

DATA FILES

Industrial Land Inventory

The department is currently preparing a computer-based statewide inventory of developable industrial and commercial land parcels. Individual parcels are included at the initiative of local government, private sector and other entities. The file contains location, size, land physical characteristics, services availability, and transportation access data which is obtained using a standardized questionnaire, plus an address and telephone number for the owner or listing agent. The file currently is intended to be used by DED staff, but ultimately may be made available directly to the public. Because the inclusion of parcels is voluntary the system currently does not include all developable parcels available in any particular area. However, the inventory may be useful for assessing local interest in promoting land development.

DEPARTMENT OF EDUCATION (ODOED)

700 Pringle Parkway SE
Salem, Oregon 97310 378-3569

PERIODIC REPORTS

School Enrollments

Primary and secondary school enrollments as of 30 June of each year are maintained by the department aggregated by county. These are generally available upon request by mid-fall of each year. More detailed data are available from local school districts, but only for schools within each district.

DEPARTMENT OF ENERGY (ODOE)

111 Labor and Industries Building
Salem, Oregon 97310 378-4040

PERIODIC REPORTS

Annual Report

The department publishes an annual report (6th Annual Report, January, 1982) which contains statewide energy use by residential, commercial, industrial and transportation sectors; forecasts of energy supplies and demand and statewide policy considerations for energy use and conservation.

Site Certificates

The energy Facility Siting Council, staffed by DOE, is responsible for issuing energy facility site certificates and site certificates for disposal sites for low level radioactive wastes. The Council designates areas suitable or unsuitable for use as sites for energy producing or storage facilities and for disposal of low level radioactive wastes. Information concerning the suitability of areas for these uses is available from the department on request.

OTHER DATA

The department has information concerning energy audits, weatherization programs, energy tax credits, energy-efficient building codes, comprehensive energy-related land use and model zoning ordinances, and suggested methods for energy conservation through land use controls. This information can be obtained by request.

DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ)

522 S.W. Fifth Avenue
P.O. Box 1760
Portland, Oregon 97207 229-5696

PERIODIC REPORTS

Municipal Sewage Treatment Facility Monitoring Reports

Monthly Performance data and an estimate of the population served are supplied to DEQ from each of the 350 domestic waste treatment facilities in the state having permits. These data are available upon request.

Municipal Waste Water Treatment Works Construction Grants Program

Annually, DEQ prepares a statewide priority list of sewerage project needs which may be eligible for federal grant funding. Provides information identifying project needs, their priority, a schedule for funding and estimated eligible project costs.

Annual Report on Air Quality

Includes quality measurements and trends for air resource in all local jurisdictions in the state.

Annual Report on Solid Waste and Hazardous Waste

Includes record of waste discharges, trends, and recycling as well as location and status of disposal sites for all regions of state.

Water Quality in Oregon, 1980

A review of water quality through state, to be published biannually.

PERMIT AND LICENSE FILES

Before the department will issue any permit it requires the applicant to obtain a "sign-off" from the appropriate local planning agency. DEQ provides permit applications and land use compatibility forms for this purpose. However, local planning agencies do not automatically receive information concerning the action taken on permit applications. If they wish to know whether or not the permit was issued and the conditions imposed, they must request that information from the department. Specific permits are as follows:

- Air Contaminant Discharge Permit
- Sewage Disposal Systems and Variances, Subsurface, Alternative and Experimental On Site Permits: For sewage treatment facilities; include the design capacity and an estimate of the population served, as well as other descriptive information.
- Solid Waste Disposal Permits; Hazardous Waste Storage Treatment and Disposal Licenses: Includes location, estimated population served, types of materials accepted. DEQ will also conduct an estimate of remaining capacity, upon request. Files on each facility include documentation of any complaints which have occurred and the associated inspections and enforcement actions.
- National Pollution Discharge Elimination System Permit and Water Pollution Control Permit (Water)
- Indirect Source Construction Permit (Air)

DATA FILES

Computerized reports on water quality derived from monitoring at DEQ sampling stations are available on request. All estuarine areas have sampling stations.

DEPARTMENT OF FISH AND WILDLIFE (ODFW)

P.O. Box 3503
Portland, Oregon 97208 229-5678

PERIODIC REPORTS

Annual Reports, Wildlife Division and Fish Division

These reports contain data useful to local governments including inventories of various game species and rare threatened or endangered species, estimates of numbers of hunters for each game species by county and estimates of number of anglers by stream system.

DATA FILES

The ODFW maintains inventories of all game species and other species classified as rare, threatened, endangered or "species of special concern." The frequency of the counts depends on the species involved but in all cases annual inventories or estimates are made by management unit. Although the management units are not contiguous with county boundaries, ODFW personnel may be able to aid in guesses as to animal populations within specific areas of the county. Fish censuses are maintained by stream system and for lakes. This data may be obtained by contacting the district ODFW office or offices responsible for the city or county in question.

DEPARTMENT OF FORESTRY (ODOF)

2600 State Street
Salem, Oregon 97310 378-2562

PERIODIC REPORTS

Annual Report

This report provides data on the State's forest lands on a county basis including State forest land acreage, accomplishments of the State Service Forestry Program, and number of fires and acres burned by cause.

Oregon Timber Harvest Report

This annual report includes volume of timber harvested by county and by ownership class. The report is generally published from six to nine months following the year in question.

Forestry for Oregon - 1980 Timber Supply Assessment

This includes an assessment of the long-term timber harvest outlook for Oregon by region. Region boundaries are not necessarily contiguous with county boundaries. It is anticipated that the assessment will be published and revised on a periodic basis although no systematic schedule has been established.

PERMIT FILES

The Department of Forestry assists owners and operators in providing notification for all operations (includes timber harvest, use of chemicals, slash disposal and forest road construction and maintenance) occurring on state or private lands. This is simply a notification to the Department that an operation is going to occur. This allows the Department to make spot inspections to ensure that Forest Practices Act (FPA) rules are being complied with. Where environmentally sensitive areas are involved the Forest Practices Officer will specify recommendations for harvesting to ensure that the intent of the FPA is met. Recommendations are not binding

although environmental damage can result in citations and repair orders issued by the Department. Notifications are relayed to County Assessors. Number of notifications issued, by type and FPA enforcement actions taken, are summarized by district (not county) in the Department's Annual Report.

DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES (DOGAMI)

1069 State Office Building
Portland, Oregon 97201 229-5580

PERIODIC REPORTS

Oregon Geology

This monthly subscription magazine includes abstracts and references to recent studies, research and other current information concerning geology and hazards in Oregon. It also includes data on permits issued for oil and gas exploration, and mineral and aggregate extraction but on a statewide basis only.

Annual Production Figures

The figures for minerals and aggregate for the state's fourteen market areas (some of which are counties) are available from the Albany office of DOGAMI. These can be used in conjunction with "Special Paper 5" to predict long-term demand for mineral and aggregate resources in the market area. County data is also available on the location, type of permit or exemption and commodity mined for all permitted or exempted sites upon request.

Special Paper 5

This is a publication outlining an empirically derived model to predict long-term aggregate demand. It is not considered highly by DOGAMI officials and the empirical basis means that it is insensitive to changing conditions. However, no alternative projection models are available.

PERMITS AND LICENSE FILES

DOGAMI issues a number of permits or exemptions which are applicable to monitoring the comprehensive plan. In all cases the local government is sent copies of the permit applications and applicants are informed that state approval does not signify approval from the local government. The DOGAMI permits relate to the technical aspects of extraction and environmental protection but not to land use issues regarding compatibility of land uses, need, etc. Permits issued are:

- Geothermal Well Permit: Issued for the exploration and tapping of geothermal resources. In many jurisdictions where geothermal resources are prevalent a local geothermal permit or equivalent is also required.

- New Oil or Gas Well Permit: Issued for oil or gas exploration. Although local governments areinformed of location, geological information on the application is proprietary. Production figures are a matter of public record if the drilling is successful.
- Permits and Exemptions Regarding Mineral and Aggregate Extraction: For extraction beyond 5,000 cubic yards a year or one acre affected annually a state permit is required (Surface Mining Permit). The department ensures that the extraction does not cause environmental hazards and that the site is rehabilitated. Periodic inspections are made of permitted and exempted sites to ensure compliance but actions taken in enforcement of these permits (after initial notivication) may not be supplied to local governments. Local planning directors are routinely sent inspection reports and notification of permit applications and renewals.

STATE HEALTH DIVISION

Center for Health Statistics
Box 116
Portland, Oregon 97297 229-5897

PERIODIC REPORTS

State Vital Statistics

An annual report containing a wide variety of health and other statistics, including birth, death, and disease incidence data. Reporting is by county and statewide.

PERMIT AND LICENSE FILES

The Division approves and licenses privately owned community water supply systems and sewer systems. It also reviews recreational vehicle park plans and issues permits for sanitation systems for recreation parks, organization camps, and traveler's accommodations and other tourist facilities.

STATE HEALTH PLANNING AND DEVELOPMENT AGENCY

3886 Beverly Street NE, Suite 19
Salem, Oregon 97303 378-4684

DATA FILES

Hospital Utilization Data

The agency maintains utilization data for each hospital in the state, showing visits by type of facility or service. Data for several hospitals

can be aggregated to represent municipal or county areas, although many users of hospitals are not residents of the community in which the hospital is located. These data are available upon request.

STATE HOUSING DIVISION

Labor and Industries Building
Salem, Oregon 97310 373-1629

The State Housing Division is the state's central source for housing data as well as being the agency responsible for financing low income and elderly housing projects through the issuance of tax exempt bonds. The State Housing Division will provide technical assistance with local housing planning and maintains a library of useful data. They also produce several reports of their own.

PERIODIC REPORTS

Building Permit Report

This is a monthly publication which provides data on the number of residential building permits issued within the state for new construction by type of unit. The data are provided for all Oregon counties and all cities with populations over 500. The report also includes special sections on mobile homes and condominium conversions, again by county and city.

These data are supplied to the Division by local governments and accuracy may vary by location. They provide a useful source of comparison of building activity between jurisdictions.

INFORMATION ON FILE

Census Data

The Division maintains a complete file of published census data as well as unpublished data on tape which is valuable for housing planning. These data are described in the U.S. Department of Commerce section. The Division will aid in use and interpretation of these data.

Vacancy Rate Data

The Division maintains all data on residential vacancy rates in Oregon gathered from the following sources:

- Pacific Power and Light and Portland General Electric Company: Both of these utilities maintain data on vacancies within the areas they service, broken down by cities and their respective "surrounding areas." Maps are available for determining how these match with official jurisdictional boundaries. The data

are not published but are provided to the Division as a computer printout. There is no set time period for providing this but it is generally done annually.

- HUD Rent and Vacancy Survey: This is an annual survey of rent levels and vacancy rates for selected "representative" areas within the state. Considerable emphasis is placed on the Portland Metropolitan area and its divisions. For the balance of the state only one specific representative area is surveyed within several geographical regions. For instance, in coastal Oregon only the Coos Bay area is surveyed. Data are assumed to be generalizable to the entire coastal region.
- Federal Home Loan Bank of Seattle: An annual vacancy survey in conjunction with the Postal Service. In Oregon they survey the Portland area, the Eugene-Springfield area, the Salem area and the Bend area. The survey is not restricted only to the mentioned cities. For instance, in the Eugene-Springfield area the cities of Cottage Grove and Creswell are also surveyed.

Income Data

The Division maintains data on income levels within Oregon jurisdictions which are available from other sources and will aid in use and interpretation. These data sources include:

- HUD "Estimated Median Family Incomes": This is an annual report based on regional economic data. It is available only at the county level and the most recent year for which estimates are available is 1981. This most recent report is actually a forecast made based on 1980 100 percent census counts. Adjustments are now being made based on 1980 census income data.
- Personal Income by Major Sources: An annual publication of the Bureau of Economic Analysis (U.S. Department of Commerce) which provides data on per capita income on a county level. It is valuable because it breaks down total county income by industry and source. It is generally published 18 months after the year in question.
- Analysis of Income: An annual publication of the State Department of Revenue. This publication provides a distribution of the number of personal tax returns by gross income category down to the county level. The publication also provides data on HARP recipients--both owners and renters. The number of households in various income categories up to $17,500 annually are broken down according to tenure. These data are provided on a county basis as well. There is about a one year lag between the end of the tax year and the report publication.

DEPARTMENT OF HUMAN RESOURCES (Employment Division) (ODHR)

875 Union Street NE
Salem, Oregon 97311 378-8657

Much of the Employment Division's material is available in published reports. These are distributed at no cost, and agencies can request to be included in the Division's mailing list. The reports below, plus others, are listed in the Labor Market Information Directory, available free from the Division.

PERIODIC REPORTS

Oregon Covered Employment and Payrolls

An annual report based on employment and payroll reports submitted by most employers. It provides monthly and total annual payroll, by county, for industries grouped according to 2-digit Standard Industrial Classifications. Also included are statewide monthly employment and quarterly payroll for industries grouped at the 4-digit SIC level. This is the best published source of such detailed employment and payroll data. Coverage is somewhat limited, since railroad workers, self-employed persons, agricultural workers on small farms, certain domestic workers and workers in a variety of other specific categories are excluded. Also excluded are those gaining employment in "invisible" occupations, such as illegal production or trade activities. These may be substantial in certain Oregon locations. Specific inclusions are explained in the report's introduction. Employment Division staff estimate that overall between 90 percent and 95 percent of all workers are included.

Data are reported by place of employment, which may be different than the place of residence of some workers. Also, in some cases employment is counted at a firm's primary address when employees actually work in other locations, such as branch offices. Corrections for this latter situation can be made using data file printouts if a jurisdiction wishes.

Annual Economic Reports

Published annually for the state and for sub-state labor market areas. The latter include SMSA's, larger counties, and other areas consisting of county groups. Report content varies somewhat, with more detail included for more populated areas.

Data include:

- Employment and unemployment summaries by industry group for recent years, with interpretations.
- Short term employment forecasts for all resident employment and for covered employees, by industry group.

- Monthly resident labor force, employment and unemployment figures, for the most recent four years, for residents of the area. This includes all employees.
- Monthly non-agricultural employment by industry group, for the four most recent years. This includes covered employees only.
- Monthly agricultural employment for the past 10 years.
- Economic base analysis including estimates of economic specialization using location quotients, for selected past years and selected industry groups.
- Summary of population characteristics, historic and current, for the area and the state.
- Characteristics of the unemployed, including recent trends, by industry group.
- Personal income totals for the past five years, showing among other things proprietor's income and transfer payments.
- Other data including average manufacturing and other sector employee earnings, area-wide median personal incomes, consumer price index trends, and reprints of 1980 population reports for the state, counties, subcounty area, and incorporated places.

It is important to note that resident labor force and employment total figures are by place of residence of the workers and include all persons in the labor force. The non-agricultural employment figures, however, are for covered workers only and are by location of the firm where employment occurs. Both figures are very useful, but care should be exercised in maintaining consistency when comparisons are made.

The statewide report includes summaries of counties as well as state totals.

Labor Trends

Published monthly statewide as Oregon Labor Trends, and for labor market areas as Local Office Labor Trends. Includes employment and recent employment changes by industry group, a similar analysis of unemployment, and a summary of hours worked and average wages by industry group. Interpretation is also included.

DATA FILES

Covered Employment

Local government units can request printed or computer tape copies of covered non-agricultural employment figures which include considerable detail. A listing of individual firms, including the number of employees by month and the quarterly payroll, can be prepared, organized by 4-digit SIC category and/or ZIP code. This is confidential data and is available only upon request to the division and with agreements as to subsequent data use and reporting. Data cannot be reported in cases where three or fewer

firms are included in a category, or where one firm has a large proportion of total employment or payroll. These data allow disaggregation of employment (and payroll) to local sub-county geographic areas, either by using ZIP code areas or by manually grouping firms to other areas based on the address in the listing.

Accuracy of this disaggregation is somewhat limited because address and ZIP code listings do not always accurately represent the true address of the firm or the location where all listed employees actually work. But for planning purposes within sub-county areas this is the best source of employment data by type of firm.

Requesting agencies are generally charged for the computer time necessary to produce these data. Requests can generally be processed within two weeks.

DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT (DLCD)

1175 Court Street NE
Salem, Oregon 97310 378-4926

COASTAL ZONE CERTIFICATION FILE

DLCD administers the Federal Consistency Certification process. Applicants for federal permits must file a certification that the proposed development or activity is consistent with Oregon's Coastal Management Program. The program consists of acknowledged local comprehensive plans, the statewide planning goals where acknowledged plans don't exist and a network of other state agency authorities. Local governments make findings-of-fact concerning the consistency of proposed federally permitted actions with their acknowledged plans and forward them to DLCD. DLCD uses these findings as the basis for its concurrence or objection to the issuance of the federal permit in question. Local governments receive copies of the DLCD response. This process guarantees local jurisdictions an opportunity to review federal land use related actions.

MARINE BOARD (OMB)

3000 Market Street NE
Salem, Oregon 97310 378-8587

PERIODIC REPORTS

The Board conducts a survey of boating use every three years which reports data on boating use for all significant water bodies in the state. Information on type of boating activity, size of boat, origin of boaters and type of moorage is provided by water body and by county. The next survey will be released in 1983.

LICENSE FILES

The Marine Board licenses floating homes and boat houses. Applications for registration and plate include information on the location, size and living spaces of the units. This information will be provided to local governments if requested.

OREGON DATA CENTER (ODC)

(4 Locations) 229-5700 (Portland)
686-7500 (Eugene) or
1-800-452-7813

The Oregon Data Center is a consortium of four state agencies: the Intergovernmental Relations Division, the Center for Population Research and Census at Portland State University, the Bureau of Governmental Research and Service at the University of Oregon and the Oregon State Library. Each agency acts as a depository for census data.

The Center has copies of all printed reports and tape files from the 1980 U.S. Census of Population and Housing for the State of Oregon. In addition, the State Library has reports for all other states available on loan. Affiliate data centers will have the Oregon printed reports, and some affiliates also will have tape files covering the areas they serve.

The Oregon Data Center is prepared to respond to inquiries and offer consultation on the use and inerpretation of data in the reports and tape files. All or portions of the tape files can be copied for users who plan to do their own tape processing. The Data Center also offers tape data retrieval and analysis services to user specifications. Oregon census maps can be obtained through the Data Center. The Data Center publishes a number of technical bulletins on various applications of census data.

CENTER FOR POPULATION RESEARCH AND CENSUS (OCPRC)

Portland State University
724 S.W. Harrison
Portland, Oregon 97207 229-3922

PERIODIC REPORTS

The Center prepares annual estimates of current state, county and municipal population, forecasts of population at these levels, and maintains population data for past periods. Estimates of current city and county population are made using models based on school enrollments, voter registrations, income tax returns, and other data. Age breakdowns are available at the county level upon request. Sex breakdowns are available for some locations.

County-level population forecasts are prepared using cohort-survival and migration estimation techniques. The projection model will be based in the future on county-level vital statistics--rather than statewide--and should be more accurate than in the past. It will also be adjusted annually using comparisons with current population estimates. No age and sex breakdowns are currently available for forecasts, but may be sometime during 1983.

DIVISION OF STATE LANDS (ODSL)

1445 State Street
Salem, Oregon 97310 378-3805

PERIODIC REPORTS

The Division prepares weekly and biennial reports that identify how many Removal-Fill Permits were issued and denied. The Division also has information on permit violations discovered during periodic permit compliance inspections and investigations of reported violations. Local governments can obtain this information from the Division.

PERMIT FILES

The Division of State Lands circulates all applications for Removal-Fill Permits to the appropriate local governments for their review and comment. The Division of State Lands issues, denies, or conditions the permit on the basis of recommendations of reviewing parties including local government in addition to their own review of standards set out in the Removal-Fill Law. If local government requests denial of a permit, the Division will deny, provided appropriate rationale has been set out. Information on the permits can be obtained from the Waterway Permits Specialist.

DEPARTMENT OF TRANSPORTATION (ODOT)

Transportation Building
Salem, Oregon 97310 378-6388

The department maintains a variety of information within its various divisions. Traffic and other highway data are available from each of the five Regional Traffic Engineering offices; the closest location can be ascertained with a call to the Salem office. The department also provides technical assistance to smaller jurisdictions, upon request.

PERIODIC REPORTS

Annual Traffic Volume Tables

This is a large report containing a variety of data from the state's 110 permanent traffic recorder locations. It includes monthly average

daily traffic counts for the year, for each location, averages for the past 10 years, and maximum daily and hourly volumes. Also included are average daily traffic counts for just weekdays, and a breakdown for each location of vehicles by classification (i.e., car, truck). This is a basic collection of traffic data which is available for inspection in each regional office. A copy can also be purchased directly from the Salem office.

These data are relatively reliable since they are collected using fixed counters and standardized techniques. They are particularly good for identifying trends in traffic flows. Local jurisdiction may not find a counter in a suitable location for their purposes, however, and may need to gather data at the local level.

Monthly Traffic Volume Trends

A monthly report available upon request which includes traffic volume counts for permanent counters located at about 110 locations on a variety of primary and secondary state roads. Counts include all vehicles; trucks cannot be separated.

Intersection Traffic Counts

Traffic counts by trained observers at specific locations, including turning movements, volumes and vehicle type breakdowns. Available for inspection upon request.

Bicycle Traffic Counts

Data from 25 bicycle traffic count locations in metro areas. Provides monthly average daily traffic counts.

Oregon Traffic Accidents Summary

Annual report from the Motor Vehicle Division which lists accident data for counties and for municipalities over 10,000 population. More detailed data--for example, data by milepost or other sub-county location--is best obtained from local traffic departments. This report also includes statewide and other regional summaries which are useful for making comparisons.

Airport Operations Forecasts

The Aeronautics division counts aircraft operations at each public use airport in the state. Counts for past years, combined with forecasts for future periods, are included in this periodic report. Selected airports are monitored using acoustic counters; for the remainder the division relies on fixed base operator and other estimates. The data for smaller facilities is not always reliable. The most recent operations data for any public use airport is available upon request.

State Park User Statistics

The Division of Parks and Recreation publishes data on the number of visitors to each state park by month and by type of visit. Data is also

available by in-state and out-of-state visitors. The annual publication also provides historic comparisons.

Periodic Visitors Survey

Every five years the Parks Division conducts a visitors survey to determine satisfaction with the state parks and to gain an impression of user preferences. The last survey was conducted in 1980.

State Parks Plan

Every two years the State Parks Plan is updated to show new and proposed acquisitions and programs. In addition to information on state parks the publication also reports on the status of state recreation trails and proposed wild and scenic rivers.

The Travel Information Center

The Center publishes a number of statistics regarding visitation to the state. However, all of the data is reported on either a statewide or a regional basis. County divisions are not used. The publications include:

- Information Center Counts and Comparisons: Visitor counts by month and year at the state's six visitor information centers;
- Oregon Travel Barometer Report: A quarterly comparison with the previous year's quarter of visitation at 33 attractions in the state;
- Travel Expenditure Survey: An annual publication on visitor expenditures by region;
- The Out of State Travel Revenue Report: A comparative study of the total expenditures by out of state visitors by year, mode of transportation and reason for trip;
- Tourist Interview Survey: An estimate of length of stay, destination of tourists, type of lodging preference and expenditures which form the basis for the "Out of State Revenue Report";
- Travel Advertising Study: Annual study designed to measure the effectiveness of the Travel Information Center's tourist promotions.

Summary of Beach Permits Processed

An annual report that identifies the locations and types of actions approved and disapproved during the past year.

PERMIT FILES

Ocean Shore Improvement Permit

This is administered by the Parks and Recreation Branch of the Department. Because of concurrent jurisdiction with the Division of State

Lands, permit procedure for Removal/Fill Permits is followed. Local governments receive notification and copies of the permit application with project plans. They also receive copies of approved permits and can obtain information on agency review comments by requesting it.

OTHER DATA

Small Cities Studies

Detailed transportation studies available for a variety of smaller communities in the state which include origin-destination and other data. Available upon request from the department.

Airport Encroachment Data

The Aeronautics division maintains a file of air photographs of each public use airport and the surroudning land areas. Each location is re-photographed every several years, allowing an analysis of urbanization and other activity on adjacent lands. This material is available upon request.

Facilities and Land Acquisition

The Parks and Recreation Branch acquires land and constructs facilities for parks and waysides. Acquisition and developments are guided by a Master Plan. Local governments are always notified in advance of actions to implement or change the Master Plan.

DEPARTMENT OF WATER RESOURCES (ODWR)

555 13th Street NE
Salem, Oregon 97310 378-3066

PERIODIC REPORTS

Well Water Levels; Stream Flow Reports

The department collects and maintains information on observation wells and streams throughout the state. Data for selected streams or well is available upon request.

PERMIT FILES

Permit to Appropriate Public Waters

The department administers these permit programs. The department is also responsible for setting minimum stream flows, and for issuing licenses and permits for hydropower sites. Notification is not necessarily provided to local governments unless requested. A local jurisdiction may request placement on a mailing list for copies of all applications applicable to its area.

FEDERAL AGENCY SOURCES

DEPARTMENT OF AGRICULTURE (Extension Service) (USDA)

County Extension Offices
(See local listings)

PERIODIC REPORTS

Annual Reports

This report is available from local County Extension Offices. It contains agricultural information for the county including tables and text describing type of crop, crop yield, estimated farm gate value and acres in production. The data is derived from only a sampling of commercial farms in the county, so it is subject to some degree of error.

U.S. ARMY CORPS OF ENGINEERS (COE)

Regulatory Functions Branch, Portland District
Box 2946
Portland, Oregon 97208 221-6996

PERMIT FILES

Section 10 (Alteration of Navigable Waters); Section 404 (Dredge or Fill Discharge)

Applicants for Corps of Engineers' Section 10 and Section 404 permits are advised that local land use approval for the proposed development or activity is required. The applicant also must file a certification of consistency with Oregon's Coastal Management Program and a water quality certification with DLCD and DEQ, respectively. Consequently, local governments see permit applications and play a part in the review process. However, local jurisdictions are not notified concerning action taken on the permits (issue, deny or place conditions) and the impact assessment comments made by other agencies (DEQ, EPA, ODFW, NMFS, USFWS). Local jurisdictions may request this information from the Corps of Engineers or the specific commenting agency.

The Regulatory Functions Branch compiles a list of permits issued on the coast during each quarter, and coastal cities and counties can obtain the list by request. The Environmental Inspections Section of this branch records permit violations in coastal waterways which is also available by request.

Facilities Inventory Records

The Corps through congressional appropriations constructs and maintains navigational structures such as jetties, groins, wing dams and breakwaters

for federally authorized waterways/navigation channels, and maintain information on the status of these facilities and on the current and authorized depth/width of navigation channels.

Facility Impact Studies

The Corps of Engineers evaluates potential impacts of its projects. Such studies may include the impact of jetty extension on off-shore sand movement, general environmental impacts of navigating projects, potential for earthquakes around dams or worst case flood inundation due to failure of a dam. This information can be useful to local governments in selected areas for evaluation of hazards and environmental impacts (Engineering Branch, Geology Branch, Emergency Services Branch, Environmental Section).

BONNEVILLE POWER ADMINISTRATION (BPA)

1002 NE Holladay
Portland, Oregon 97232 234-3361

PERIODIC REPORTS

Population, Household and Employment Projections

Last prepared in 1979, this report includes county level data and projections for Oregon and Washington. The next edition will be available during 1983. Employment is presented by 2-digit SIC category for manufacturing, and by 1-digit category otherwise. Data at the 4-digit level is available upon request.

The population analysis is conducted using cohort survival techniques and migration forecasts based on employment estimates. Age distributions are available for counties. These data are used by BPA for projecting power needs.

DEPARTMENT OF COMMERCE, BUREAU OF THE CENSUS (USDC)

1700 W. Lake Avenue, N.
Seattle, Washington 98109 (206) 442-7080

PERIODIC REPORTS

1980 U.S. Census of Population and Housing

These census documents are of particular value in monitoring activities for Goal 10 (Housing). These are listed below by both title and document number.

- Block Statistics (PHC80-1): The block statistics report show data for individual blocks on selected complete count housing

and population subjects. One report will be issued for each standard metropolitan statistical area (SMSA) and one for the rest of the state, including cities of 10,000 or more outside of SMSA's and contract block cities.

- Census Tracts (PHC80-2): One report released for each SMSA and one for the tracted non-SMSA counties in each state includes most of the complete count and sample population housing subjects.
- Summary Characteristics for Governmental Units (PHC80-3): One report for each state containing complete count and sample population and housing data for every SMSA, county and incorporated city.
- General Population Characteristics (PC80-1-B): Each report includes complete count data on age, sex, race, Spanish origin, marital status and household relationship for a state and its following components: SMSAs, counties, urbanized areas, census county divisions, places of 1,000 or more, and Indian reservations.
- General Social and Economic Characteristics (PC80-1-C): Each report focuses on population subjects, i.e., social, economic and demographic, collected on a sample basis for a state and its following components: SMSAs, counties, urbanized areas, places of 2,500 or more, and Indian reservations.
- General Housing Characteristics (HC80-1-A): One report for each state contains data on complete count housing subjects for SMSAs, urbanized areas, counties, census county divisions, places of 1,000 or more, and Indian reservations.
- Detailed Housing Characteristics (HC80-1-B): One report for each state contains data on housing topics collected on a sample basis for SMSAs, urbanized areas, counties, places of 2,500 or more, and Indian reservations.
- Metropolitan Housing Characteristics (HC80-2): One report is issued for each SMSA, presenting detailed and crosstabulated housing variables for the SMSA and its large cities. One report also will be issued for each state containing statewide data.

In addition to the above reports four summary tapes will be available which provide various crosstabulations on housing and population characteristics using both complete count and sample data. For an excellent summary of what these tapes contain and how 1980 Census data generally can be applied to Goal 10 requirements the local jurisdiction should consult the Oregon Data Center's Technical Bulletin 5, "Housing Data Handbook; A Guide to Using 1980 Census Data," September 1981.

Census of Agriculture, Oregon, State and County Data Vol. 1, Part 37

Contains information concerning acreage and amount of production of farms in commercial agricultural production. The data apply to farms less than 10 acres with at least $250 sales and to farms greater than 10 acres with at least $50 sales annually. The information is not limited to farms in EFU zones. Consequently, it may be necessary to adjust or interpret the

data. The data are obtained and published every five years. The 1978 data were released in June 1981. New information will be collected in 1983.

Census of Manufacturing, Wholesale Trade, Retail Trade, and Services

Includes data on employment and payroll, number of firms, firm size distribution, and other economic data for each category of firms, by county. Reports are published every five years. Firms are aggregated by Standard Industrial Classification (SIC) categories. The data include firms according to where their activity actually occurs, rather than by their corporate address, and so differ with the employment data derived from state employment records.

The data may be limited for smaller counties where some SIC categories are reported together, and the data for other categories omitted so as to protect confidential information. In addition, the data may be dated due to the long interval between censuses. These are some of the best quality data on county-level economic activity, however.

Annual Survey of Manufacturers

Conducted for the years not covered by the 5-year Census of Manufacturers, covering the state and SMSA's only. Includes employment, payroll, and other economic data by SIC category.

County Business Patterns

These annual reports, issued for each county, include employment, first quarter and annual payroll, and establishment size data by SIC category. Data are more current than for the 5-year census reports. Employment counts are made in mid-March of each year, which may affect the accuracy of counts for certain seasonal industries. These data are very useful for tracking annual variations in an area's economic base.

DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS (USDC)

1220 SW 3rd
Portland, Oregon 97204 221-3001

PERIODIC REPORTS

Local Area Personal Income

Income totals by year by county, broken down by type (e.g., wage, proprietor's) for about 12 categories of industry. Also separates out transfer payments (such as social security and other retirement income) allowing estimates of retirement income in the county. Current information is useful for establishing trends in income flow into the county.

U.S. FISH AND WILDLIFE SERVICE (USFWS)

500 NE Multnomah St.
Portland, Oregon 97232 231-6154

PERIODIC REPORTS

Section 10 and Section 404 Permit Comments

The Ecological Services Branch provides comments to the Corps of Engineers on permit proposals concerning the potential impact on fish and wildlife species and their habitat.

Inventory Reports

The agency has completed major inventories of the coastal region including "Ecological Characterization of Pacific Northwest Coastal Region" and "Ecological Inventory Maps of the Pacific Coast." Also, the "National Wetlands Inventory," a more detailed inventory of these resources, is completed for the coastal area of Oregon and in progress for other parts of the state. It is the intent of the agency to review the Wetlands inventory data periodically to determine what if any changes have occurred over a period of four to five years. In addition to the above inventories, USFWS is preparing a catalog of seabird colonies which it intends to update periodically; refuge managers keep counts of bird populations and the pesticide lab in Corvallis tracks heron rookeries in eastern Oregon.

FOREST SERVICE (USFS)

729 NE Oregon
Portland, Oregon 97232 231-6833

PERIODIC PLANNING DOCUMENTS

Forest Lands Inventory

On ten year intervals each national forest develops a plan for use of land within the national forest for timber harvest, recreation, scenic quality, scientific research, etc. A number of alternative plans are presented in a draft environmental impact statement (EIS) and public hearings or scoping sessions are held which result in a final EIS which embraces one alternative. Various land use allocations are made based on this EIS and estimates of timber volume, recreational use, etc. are also made. Local governments are notified and given the opportunity for input. The forest lands inventory includes a projection on an annual basis, of harvests and timber production for the next 300 years for the forest as a whole, but not on a county by county basis. Local governments should contact the national forest offices of national forest lands located within their boundaries.

Northwest Range Experiment Station Reports

This research arm of the Forest Service publishes one periodic report which may be of value to local governments. "Timber Resources of [Region of State]" is published every 3 to 5 years on a rotating basis. It provides data on classification of forest acres (commercial, productive, deferred, unproductive), ownership class and volume of growing stock and saw timber on commercial forest land by county.

GEOLOGICAL SURVEY, WATER RESOURCES DIVISION (USGS)

847 NE 19th Avenue
Suite 300
Portland, Oregon 97232 231-2021

PERIODIC REPORTS

Water Resources Data for Oregon

This is a Water Resources Division report including annual data on water quality for 85 gauging stations in the state. The type of data collected at each station varies but may include turbidity, temperature, pH, D.O. and suspended sediments. Also, the report contains information on stream flow including daily mean flow, average monthly flow, extreme flows and average discharge for period of record of the gauging station. There are 278 flow gauging stations. The report is sent to county governments every year.

BUREAU OF LAND MANAGEMENT (BLM)

729 NE Oregon
Portland, Oregon 97232 231-6273

PERIODIC REPORTS

BLM Facts

An annual statistical summary of land inventory and use data by BLM district or resource planning area. County level data are not available.

Periodic Inventory and Planning Reports

The Bureau of Land Management goes through a ten year inventory and planning cycle for the nine resource areas located in Oregon. This process is very similar to that undertaken by the Forest Service for the national forests.

V. BASIC MONITORING SYSTEM COMPONENTS AND PROCEDURES

Introduction

This chapter describes the components from which a basic comprehensive plan monitoring system can be developed. Because the needs of a jurisdiction will depend on whether it is a municipality or county and on its size, location, and level of resources available, the chapter is organized so as to offer a number of options to all jurisdictions regarding the data collection and analysis procedures which can be adopted.

The first section after this introduction outlines a set of data items which constitute a basic collection from which all jurisdictions can choose. This is followed by additional data items which cities, counties, and coastal jurisdictions can add to this basic list in order to reflect their particular needs. Taken together, the data items chosen from these lists form the basis for a monitoring system. These data items can be augmented by additional items as additional experience is gained with the monitoring activity, or as other needs dictate the alteration of the system.

The next section describes which of these data items can be found in collections of data which are available in published form. The emphasis is on identifying as many such sources for monitoring data as possible so as to minimize the need for data collection and analysis at the local level.

Certain monitoring needs cannot be met with published data. In these cases it is necessary to disaggregate or aggregate certain data to the local sub-area level, or to assemble administrative data in a systematic manner as part of a monitoring process. The use of local building and other permit data falls into this latter category. Options for manually collecting and managing these data are described in one section of this chapter, and an example is described.

The combination of the procedures and sources specified in the sections below allow jurisdictions to define and develop a basic monitoring system adapted to their particular circumstances. Although the use of data stored in computer files--such as area-wide employment data--is included, the techniques discussed are manual, not requiring the use of a computer in order to access, analyze, or apply the monitoring information. Chapter VII builds on this basic system design to outline the application of computers for monitoring purposes and explains the considerable savings in time and money which can result from a computerized approach to at least a portion of a jurisdiction's monitoring needs.

Defining a Basic Monitoring System

The first step in designing a local area comprehensive plan monitoring system is identifying the goal areas, and perhaps sub-goal issues and problems, which are most important and for which monitoring is desired. Certain of these goal areas will be common to all jurisdictions, such as those relating to local economic conditions and certain housing and resource items. Others will depend on whether a jurisdiction is predominately rural or urban, and on whether it is one of the coastal jurisdictions which face a unique plan monitoring situation.

The following Tables include the data items from which a basic system can be built. The first Table (Table V-1) includes the data items which can be included in a monitoring system for any jurisdiction. It shows the data items organized by goal area and includes references to subsequent sections of this chapter which show the source of each data item. The following three additional Tables (Table V-2, V-3, and V-4) show the additional data items from which urban, rural and coastal areas, respectively, should choose in order to match their particular circumstances. Each of these three Tables does not duplicate data items included in the first Table. Thus, a coastal county would choose items from the first Table, Table V-1, then additional items from Tables V-3 and V-4. Similarly, a non-coastal city would choose items from Tables V-1 and V-2. Counties with both urban and rural areas should scan both Tables V-2 and V-3 for relevant items.

The data items included in Table V-1 through V-4 are selected from those listed in Chapter III. The intent is to identify those data items which are important for monitoring purposes under the most common circumstances. If important plan objectives remain uncovered by the initial data items chosen, additional attention should be given to ways by which these can be monitored, either by using additional data items included in this study or by identifying other items which are not included here.

In summary, each jurisdiction should work through the following procedure:

1) Identify the most important data items from Table V-1.
2) Identify the additional data items from Table V-2 through V-4 depending on the jurisdiction's nature and location.
3) Scan the data items in Chapter III, identifying any additional items which are valuable given local circumstances.

The resulting preliminary list of data items should reflect the goal areas and important sub-goal issues and problems which influence planning within the jurisdiction. With this list the jurisdiction can then proceed to identify the sources of data and begin to assess the magnitude of the time and resources required to systematically gather the information which has been identified. Such resources include staff and budget. During this process of implementing a monitoring system design, a jurisdiction may choose to review again the initial list of data items, augmenting it or deleting items which no longer seem necessary or do not appear worth the time and effort to include. It is important, therefore, to avoid seeing

this initial data item list as unalterable, but rather to see it as a preliminary list which can be adapted as circumstances dictate.

Published Data Collections

Data from published and other collected sources are available for meeting certain plan monitoring data needs. This section outlines the primary sources for these data. Jurisdictions can attempt to meet as many of their monitoring data needs through the use of available data from these sources, reserving their own data collection and management activity for those data for which no other sources are available.

Table V-5 shows the primary published and other data collections which contain some of the data items which a jurisdiction may include in a basic monitoring system. Data items are listed by agency source; also included are the goal areas to which each data item relates, the schedule for publication or dissemination of each source, and the primary level of disaggregation of data which each source includes. The Table is a summary of information included in Chapter III, and is organized so that a jurisdiction can work from a list of data items to identify the primary sources in which the data can be found.

Table V-5 also shows the extent to which the data available from published and other sources can be used to cover the monitoring needs of more than one goal area. By scanning the third column, which shows the goal areas to which that data source is primarily relevant, those sources which cover multiple goal areas can be identified. Such sources are particularly valuable for a jurisdiction to have readily available.

Although all of the material included in Table V-5 is available in published or other form, local jurisdictions need to adopt an overall procedure by which they can gather, store, and make available the information which they need for monitoring purposes. The specific means of gathering the material will vary by source. Guidelines for gathering the information and for handling it at the local level include:

1) Establish a checklist of required materials; use this checklist to gather materials initially and to maintain a record of which materials are received and on file.
2) Establish a central location for maintaining the monitoring materials collection, or a system by which the location of the materials can be found. If a central location is not feasible the checklist of materials can include a reference to the location.
3) Designate one individual to be responsible for maintaining the collection of published materials.
4) For each publication adopt a specific means by which it is obtained. Ask to be placed on the source agency's mailing list, or periodically contact agencies with a request for the most recent material.

The primary objective with regard to published and other readily available material is to maintain a collection from which monitoring and other planning information can easily and quickly be extracted as desired. The more systematically these materials are collected and the more reliably they can be located and used, the better for monitoring purposes. Needless to say such a collection of materials will be useful for a variety of local planning purposes, including plan updating, providing source material for background research on permit and other approvals, and for preparing grant and other proposals.

Procedures may be established by each jurisdiction for the systematic selection, extraction, and transcription to internal tabulation forms of desired data items. Numeric and percentage comparisons with other jurisdictions, as well as numeric and percentage change by time interval should be computed and added to the tabulations for analysis of trends and comparisons with projection assumptions. Use of graphs and charts may facilitate analysis of some data.

Administrative Records as Sources of Monitoring Data

As can be seen from Table V-5 the availability of planning data that is summarized and published for many small area geographic units is almost nonexistent, except for census of population and housing data. However, a considerable amount of relevant data is contained in records routinely collected by various agencies for administrative purposes, as indicated in Table V-6. An adequate and economically feasible sub-area monitoring system must make maximum use of these sources.

The records in these files are individual "transaction" records, e.g., a permit for construction for a specific building on a specific site issued on a specific date, or the information relative to a specific parcel of land at a specific time. The information typically has not been summarized or aggregated to particular geographic areas. Moreover, no direct aggregations of the data can be made except to areas contained in the records--zip code areas, map numbers, tax code areas, meter areas--and the descriptive information in the records may be unreliable or inappropriate for planning purposes. For example, a "commercial" connection for a utility may be an apartment house, a "residential" property classification in real property records does not necessarily indicate that the property is in residential use, or a "barber shop" on a building permit is a descriptive classification that is too detailed for general planning analysis. Therefore in order to use the appropriate administrative records, if they can be obtained by planning agencies, some amount of classification and geographic conversions will probably be necessary.

The definition of geographic sub-area boundaries to which data will be aggregated or disaggregated is not an easy task, and may vary depending on the analytical needs and the sources of data. Urban growth boundaries, neighborhoods, school attendance areas, retail service areas, and transportation zones are examples of such area definitions commonly used by planners, and no single set of boundaries is likely to satisfy all needs completely. The sub-area boundaries for principal secondary sources of information are

defined primarily for administrative purposes, such as zip code areas, taxing districts, utility meter areas, mailing addresses, census enumeration districts, or voter precincts. Unless a very sophisticated and flexible geocode conversion system is developed by a local jurisdiction, compromises appear inevitable and local planners will probably use geographic sub-areas that have the most commonality or areas for which data are available.

In summary, the procedures which should be followed to extract useful data from administrative records are the following:

1) Collection of Data. Define data items, methods of records collection, timing, and recording procedures for information that must be assembled. Establish agreements with other agencies to provide access to or copies of administrative records (coordination of city and county reports and agreements is highly desirable). Establish internal procedures for transferring pertinent information from permits or approvals that are generated by planning agencies or routed to planning agencies for action to tabular forms for subsequent processing for monitoring purposes.

2) Coding and Classification. Raw data from observations or from administrative records must have some degree of interpretation and classification before it can be summarized for analysis. For example, generalized land use, housing type, or geographic area designations must be added to allow data aggregation. The association of geographic designations which are included in individual administrative records (such as addresses, map numbers, or zip codes) with larger geographic area designations may be done using a base map to which each record can be compared. Alternatively, addresses on administrative records can be aggregated using a geocoded address file, if one is available. Care should be taken when developing any coding and classification scheme to assure that the summarized data will exhibit sufficient detail for monitoring purposes.

3) Recording and Summarizing. Traditional forms of planning data recording and presentation can be used. Tabular summaries can be prepared using the geographic area designations and other codes which have been added to the individual records. Data can also be presented in map or graphic form, using a base map and colors, overlays or pins to represent monitoring data items. This form of summarizing makes quantification and evaluation by visual means possible, and is very useful as a supplement to tabular summaries. Cross classifications, such as representing land use changes by zoning category by geographic area, can be done using overlays.

The data and analysis associated with monitoring change for each given time period (e.g., each year) should be maintained as a specific file or map. The locational patterns at the beginning of the period, the changes during the period, and the patterns at the end of the period are important elements in the analysis of change.

An example illustrating in more detail how administrative data are applied is included in Chapter VI.

Data Collection Through Field Investigations or Interviews

Certain monitoring data needs cannot be met with any form of available data, either published or in the form of administrative records. In these cases it is necessary to periodically collect the necessary data and analyze and summarize it for monitoring purposes. This is a common form of planning data collection and analysis and need not be discussed in detail here. The general procedure is very similar to sections 2 and 3 outlined above for the use of administrative records.

An Example of a Manual Monitoring System

The simplest, most reliable and inexpensive manual system would rely primarily on available published sources, secondary administrative record sources that are routinely routed to the planning agency for action, data which agencies have a statutory mandate to provide, administrative records originated by the planning agency, and field inspections and interviews conducted by planning agency staff.

Published Sources

The principal publications that should be readily available are the decennial census of population and housing reports for Oregon, quinquennial censuses of business and agriculture, City/County Data Pool, Local Office Labor Trends, and Oregon Covered Employment and Payroll reports. Information for the planning agency jurisdiction, adjacent jurisdictions and other jurisdictions with comparable size and characteristics should be extracted from these publications and summarized in tabular and graphic form.

In addition, prints of 1980 Census of Population and Housing microfiche for Summary Tape Files 1A and 3A should be purchased or obtained from Oregon Data Center sources. These contain small area (enumeration district or block group) information that will not be published in any other form. Basic patterns of social and economic change and housing indicators for the local jurisdiction should be summarized and plotted on base maps containing census boundary definitions for enumeration districts and block groups.

Secondary Administrative Records

These sources are principally construction and development or use permits originated by various local, state, or federal agencies. As these are routed to the planning agency for plan compliance approval or for information purposes, the type of structure or use and the location should be copied from the permit to some systematic recording form. Since completion permits may not be routed to the planning agency and since the development may utilize only a portion of the geographic area designated, field inspections should be made perhaps six months following permit approval for verification of construction. The data should be coded to

enumeration district/block group (or other defined small analytical areas) and on an annual basis summarized, mapped, and evaluated in terms of plan goals and objectives. The information can then be used to update various components of the planning data base.

Statutory Mandated Sources

Approximately every two or three years, a county and the cities in the county should jointly request and pay for listings of number of employees, their SIC classification and address of firms for the entire county from the state Employment Division. By reference to street and address maps the various planning agencies can assign and code the employment data to small analytical areas within their jurisdiction. The data can then be summarized, mapped, graphed, and evaluated.

Planning Agency Originated Administrative Sources

Zone changes, variances, conditional use permits, land divisions, annexations, and plan amendments are normally originated and processed by the local planning agency. Some systematic procedures must be established to transfer the types and locations of these activities to a uniform summary recording form. The separate types of actions can be coded to small area designations, mapped, tabulated, summarized, and periodically evaluated in conjunction with other indicators of change described above. The information should also be used to update various planning data bases.

Field Inspections and Interviews

All of the above sources can be supplemented by systematic or periodic observations, and by maintaining communications with appropriate key persons in specific fields.

TABLE V-1

PRIMARY DATA ITEMS AND SOURCES: ALL JURISDICTIONS

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
3) Agricultural Lands	Development and land use actions approved on land adjacent to EFU-zoned land.	3-3		Local planning agency, ODEQ, DOGAMI, ODSL, COE	X
5) Open Space	Changes in the supply of or demand for mineral and aggregate resources by type.	5-3	DOGAMI	DOGAMI	
	Record of development occurring on or immediately adjacent to designated and inventoried Goal 5 sites by type of resource, status of site, and type of development	5-1		Local planning agency, ODOF, ODWR, ODSL, ODEQ, EFSC, FERC	
6) Air, Water and Land Resources Quality	Changes in resources quality variables.	6-1	ODWR ODEQ USGS		
	Type and location of development and activities requiring a DEQ permit.	6-2		Local planning agency, ODEQ	

TABLE V-1 (continued)

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
7) Natural Disasters and Hazards	Location, nature and extent of natural disasters or hazards	7-1			X
	Type and location of developments and type of safeguards required.	7-2		Local planning agency, DOGAMI, COE, HUD	
8) Recreation	Visitation at parks and campgrounds by type of visitation and public versus private facilities.	8-1	ODOT	Local agency, USFS, BLM, COE	
	Changes in the supply of park land and associated recreational facilities by type.	8-6	ODOT BLM USFS	Local agency, COE	
9) Local Economy	Employment by industry.	9-1	ODHR USDC BPA		
	Employment distribution by sector.	9-2	ODHR USDC		
	Amount and location of recent commercial and industrial land development.	9-3		Local planning agency	X
	Amount, location and type of potential new development.	9-4		Local planning agency	X

TABLE V-1 (continued)

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
9) Local Economy (cont.)	Amount and location of developable commercial and industrial land.	9-5	ODED	Local planning agency	
10) Housing	Number of housing units added to or subtracted from the total housing supply by housing type and size of unit.	10-1		Local planning agency	
	Number of acres zoned or planned for residential development by type and maximum densities.	10-2		Local planning agency	
	Residential vacancy rates by tenure and housing type.	10-3	OHD		X
	Housing costs by type.	10-4	OHD		X
	Differences between maximum allowable densities and actual densities occurring at buildout.	10-6		Local planning agency	
	Average household income and income distribution.	10-8	OHD		

TABLE V-1 (continued)

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
10) Housing (cont.)	Numbers of "special" households, e.g., handicapped, low income and elderly.	10-9	OHD		
	Residential application processing time by type of housing unit and land use action.	10-10		Local planning agency	
11) Public Facilities and Services	Water supply capacities.	11-5		Local agency	
	Water quality ratings.	11-6	ODEQ		
	Development approvals by type and location affecting facilities and service demands.	11-7		Local planning agency	
	Available landfill capacity.	11-8		Local agency, ODEQ	
12) Transportation	Traffic counts by vehicle type.	12-1	ODOT	Local traffic engineer	
	Approvals affecting traffic demand or hindering future capacity expansion.	12-2		Local planning agency	
	Aircraft operations counts.	12-5	ODOT		

TABLE V-1 (continued)

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
12) Transportation (cont.)	Approvals affecting air traffic access or impacts.	12-6		Local planning agency, ODOT	
	Traffic accidents; traffic fatalities	12-8	ODOT	Local traffic engineer	
13) Energy Conservation	Energy use per capita or per household.	13-1	ODOE	PUD, utility companies	
	Measures taken to promote energy conservation.	13-2	ODOE	Local planning agency, PUD, utility companies	X
14) Urbanization	Development approved by type and geographical area in the urban growth boundary.	14-1		Local planning agency	
	Development approved by type in the urban growth boundary and available urbanizable land by zoning type and characteristics within city limits.	14-2		Local planning agency	
15) Willamette River Greenway*	Type and location of development, activities and land use actions within Greenway Boundary.	15-1		Local planning agency	
	Changes in quality of Greenway resources.	15-2	ODEQ ODFW		X

*This goal area applies only to those jurisdictions that include area lying withing the designated Willamette River Greenway boundaries.

TABLE V-2

ADDITIONAL PRIMARY DATA ITEMS AND SOURCES: URBAN AREAS

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
11) Public Facilities and Services	Available wastewater treatment capacity.	11-1		Local agency, ODEQ	
	Development approvals by type and location.	11-3		Local planning agency	
	Developed and developable land in 100-year floodplain.	11-9		Local planning agency	
	Current and proposed school facilities capacity and staff by location.	11-14	ODOED, Local district		
12) Transportation	Bicycle traffic counts.	12-3	ODOT, Local agency	Local traffic engineer	
	Approvals affecting pedestrian access.	12-7		Local planning agency	
	Approvals affecting handicapped and transportation disadvantaged access.	12-9		Local planning agency	

TABLE V-3

ADDITIONAL DATA ITEMS AND SOURCES: RURAL AREAS

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
3) Agricultural Lands	Number of acres added to or subtracted from EFU zones.	3-1		Local planning agency, ODEQ, DOGAMI, ODSL, ODOE, Assessor records	
	Value and quality of production from EFU-zoned land.	3-2	USDA, USDC		X
	Development and land use actions approved on EFU-zoned lands.	3-3		Local planning agency, OEDQ, DOGAMI, ODSL, ODOE	X
3) Forest Lands	Number of acres added or subtracted from each forest zone by type.	4-1	ODOF	Local planning agency, ODEQ, ODOE, DOGAMI, BPA, COE	
	Number of building permits approved on forest lands.	4-4		Local planning agency	
	Average parcel size on private forest lands.	4-3		Assessor Records	
	Volume of timber harvested by year by ownership class.	4-7	ODOF		

TABLE V-3 (continued)
Rural Areas

Goal Areas	Data Item	Number	Availability: Published	Administrative Records	Field Observations/ Interviews
5) Resources	Changes in the number of acres or stream miles in various habitat types and associated inventories of animals supported.	5-4		Local planning agency, ODOF, ODSL, ODFW, COE	
	Changes in number of acres in or proposed for natural area status.	5-5		ODEQ, USFS, BLM, local interest groups	
	Changes in groundwater resource quality by critical groundwater area.	5-8		ODEQ, ODSL, ODWR, USGS, local watermasters	

TABLE V-4

ADDITIONAL DATA ITEMS AND SOURCES: COASTAL AREAS*

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
8) Recreation	Boating use by type and by water body.	8-3	OMB		
	Changes in the supply of boat mooring/launching facilities by type and area.	8-7	OMB	Local planning agency, ODSL, COE	
16) Estuarine Resources	Number of acres of land and water added to or subtracted from each estuarine management unit.	16-1		ODSL, COE, ODFW, universities	X
	Type, extent of development and activity by estuarine management unit.	16-2		Local planning agency, ODSL, USDA, OMB, ODFW, COE	
	Amount and type of habitat area added to or subtracted from the estuary.	16-3			X
	Development and activities by type, area, location and impact on habitats.	16-4		Local planning agency, ODSL, ODFW, OMB, COE	X

TABLE V-4 (Continued)

Goal Area	Data Item	Number	Availability: Published	Administrative Records	Field Observations/ Interviews
16) Estuarine Resources (cont.)	Results of impact assessments with regard to productivity variables of water quality, species of flora and fauna, hydrologic characteristics, etc.	16-5		Local planning agency, ODEQ, ODFW, ODWR, USGS	
	Actions taken in response to impact assessments.	16-6		Local planning agency	
	Current water quality measurements, shoaling and rate of flow.	16-7		ODEQ, ODWR, USGS	X
	Type, location and extent of developments and activities creating discharges, sedimentation or reduced stream flow.	16-8		Local planning agency, ODWR, ODOF, ODEQ	X
	Status of mitigation sites.	16-9			X
	Mitigation actions related to fills and dredging in intertidal or tidal waters.	16-10		Local planning agency, ODSL, COE	

TABLE V-4 (Continued)

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
16) Estuarine Resources (cont.)	Status of dredged material disposal sites.	16-11			X
	Location and amount of dredging and material disposal.	16-12		ODSL, COE, Port districts	
	Depth, width of channels, turning basins, bar crossings and status of authorized navigation structures.	16-13		OMB, COE	X
	Efforts to improve or maintain navigational capability.	16-14		Local planning agency, ODSL, COE	X
	Number of acres added to or subtracted from water-dependent areas.	16-15			X
	Type, size, and location of developments and land use actions affecting areas designated for water-dependent development.	16-16		Local planning agency, ODSL, ODOT, COE	
	Size, use, and location of docks and piers.	16-17		Local planning agency, ODOT, ODSL, COE	

TABLE V-4 (Continued)

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
16) Estuarine Resources (cont.)	Status of designated sites for restoration.	16-18			X
	Amount, type, and location of restoration actions.	16-19		Local planning agency	X
17) Coastal Shorelands	Quality and quantity of shoreland natural resources	17-1			X
	Type, size, and location of developments and land use actions allowed in "natural shorelands."	17-2		Local planning agency, ODSL, ODOT, COE	
	Amount of area and current suitability of water-dependent areas/sites.	17-3			X
	Type, size, and location of developments and activities allowed on and adjacent to water-dependent sites.	17-4		Local planning agency, ODSL, ODOT, COE	
	Amount of area and current suitability of dredged material disposal sites.	17-5			X

TABLE V-4 (Continued)

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
17) Coastal Shorelands (cont.)	Type, size, and location of developments and activities on or adjacent to disposal sites.	17-6		Local planning agency, ODSL, COE	
	Amount of area and current suitability of designated mitigation sites.	17-7			X
	Type, size, and location of developments and activities permitted on or adjacent to mitigation sites.	17-8		Local planning agency, ODSL, COE	X
	Type, location, and extent of developments and activities permitted on rural shorelands.	17-9		Local planning agency, ODSL, COE	
	Amount and condition of riparian vegetation; measures of sedimentation and water quality.	17-10		ODFW, ODOT, ODEQ, USGS	X
	Location, type, extent of developments and activities affecting riparian vegetation.	17-11		Local planning agency, ODSL, ODOT, COE	X

TABLE V-4 (Continued)

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
17) Coastal Shorelands (cont.)	Actions taken to improve riparian vegetative cover.	17-12		ODOT, local planning agency	X
	Location, nature, and extent of flooding in shoreland areas.	17-13			X
	Type, location, and size of developments and activities permitted in floodplain areas.	17-14		Local planning agency, ODSL, ODOT, COE	
	Type, location, and extent of developments and structures built to control flooding and erosion.	17-15		Local planning agency, ODSL, ODOT, COE	X
18) Beaches and Dunes	Current physical, vegetative, groundwater, and habitat characteristics.	18-1		ODWR, ODOT, ODFW, COE	X
	Location and extent of vegetative damage and erosion.	18-2		ODWR, ODOT, ODFW, COE	X
	Measures of groundwater quality and quantity.	18-3		ODWR	X

TABLE V-4 (Continued)

Goal Area	Data Item	Number	Availability: Published	Availability: Administrative Records	Availability: Field Observations/ Interviews
18) Beaches and Dunes (cont.)	Location and extent of beach front structures.	18-4		ODOT	X
	Location and extent of breached foredunes.	18-5		ODOT	X
	Type, extent, and location of developments and land use actions approved for beach and dune areas.	18-6		Local planning agency, ODWR, ODEQ, ODOT, ODSL, COE	

*Use of data need will depend on whether the jurisdiction includes the resource areas addressed (estuarine, coastal shorelands, beaches, and dunes).

TABLE V-5

PUBLISHED DATA SOURCES

Source Agency	Title	Goal Area(s)	Publication Interval	Geographic Coverage
	STATE AGENCIES			
Department of Economic Development (ODED)	County Indicators	9	Annual	County
	Economic Development Clearinghouse Data Books	9	Intended to be annual	County
	Directory of Manufacturers	9	Bi-annual	County, city
Department of Education (ODOED)	School Enrollments	11	Annual	County, district
Department of Energy (ODOE)	Annual Report	13	Annual	State
Department of Environmental Quality (ODEQ)	Air Quality Annual Report	5,6,11	Annual	State, local jurisdictions
	Water Quality in Oregon, 1981	5,6,11, 16	One-time	State, local jurisdictions
	Managing Solid Waste in Oregon	3,6,11	Annual	State, local jurisdictions
	Local Water Quality Reports	5,6,11, 16,17	Periodic	Sampling stations
	Municipal Wastewater Treatment Construction Grant Program	10,16, 17,18	Annual	State, local jurisdictions
Department of Fish and Wildlife (ODFW)	Annual Reports, Fish Division Wildlife Division	5,8,16, 17,18	Annual	State, county, watershed
Department of Forestry (ODOF)	Annual Report	4	Annual	County
	Oregon Timber Harvest Report	4, 9	Annual	County

TABLE V-5 (Continued)

Source Agency	Title	Goal Area(s)	Publication Interval	Geographic Coverage
		STATE AGENCIES		
Health Division	State Vital Statistics	11	Annual	County
Department of Geology and Mineral Industries (DOGAMI)	Annual Production Figures	5	Annual	Market areas (some counties)
	Oregon Geology	7	Monthly	State
Housing Division (OHD)	Building Permit Report	10	Monthly	County, cities over 500
	Vacancy Rate Data	10	Periodic (or on request)	City
	Household Income Data	10	Annual	County
Department of Human Resources (ODHR)	Oregon Covered Employment and Payrolls	9	Annual	County
	Annual Economic Reports	9	Annual	County
	Labor Trends	9	Monthly	State, county
Marine Board (OMB)	Boating Use Study	8,12 16	Every 3 years	County, water body
Center for Population Research and Census (CPRC)	Population Estimates and Forecasts	9,10, 11,12	Annual	County, city
Division of State Lands (ODSL)	Annual Report on Removal and Fill Permits	16,17,18	Annual	
Department of Transportation (ODOT)	Annual Traffic Volume Tables	11,12	Annual	Traffic counter location
	Small Cities Studies	11,12	Periodic	Local jurisdication

TABLE V-5 (Continued

Source Agency	Title	Goal Area(s)	Publication Interval	Geographic Coverage
		STATE AGENCIES		
Department of Transportation (ODOT) (Cont.)	Oregon Traffic Accidents Summary	12	Annual	County, cities over 10,000
	Airport Operations Forecasts	11,12	Periodic, upon request	Airport
	Airport Encroachment Data	11,12	Periodic	Airport
	Bicycle Traffic Counts	12	Annual	Traffic counter location
	State Parks User Statistics	8	Annual	Park
	State Parks Plan	5,8,17, 18	Biannual	State park
	Out of State Travel Revenue Report	9	Annual	State
	Summary of Beach Permits Issued	16,17,18	Annual	Permit location
		FEDERAL AGENCIES		
Department of Agriculture (Extension Service) (USDA)	Annual Report	3,9	Annual	County
Bonneville Power Administration (BPA)	Population, Household and Employment Projections	9,10, 11,12	Periodic	County
Bureau of Land Management (BLM)	BLM Facts	3,4,5, 8	Annual	BLM District
Department of Commerce (Bureau of the Census) (USDC)	Census of Population and Housing	9,10	Every 10 years	County, city, sub-county areas

TABLE V-5 (Continued)

Source Agency	Title	Goal Area(s)	Publication Interval	Geographic Coverage
		FEDERAL AGENCIES		
Department of Commerce (Bureau of the Census) (USDC) (continued)	Census of Agriculture	3,9	Every 5 years	County
	Census of Manufacturing, Wholesale Trade, Retail Trade, Service Industries	9	Every 5 years	County, cities
	Annual Survey of Manufacturers	9	Annual	County
	County Business Patterns	9	Annual	County
(Bureau of Economic Analysis)	Local Area Personal Income	9	Annual	County
Army Corps of Engineers (COE)	Section 10, Section 404 Permit Summaries	8,16, 17,18	Quarterly	Coast
	Facility Reports & studies	7,16, 17,18	Prior to construction	Site
Forest Service (USFS)	Forest Lands Inventory	4,8	Every 10 years	Forest
	Timber Resources	4	Every 3 to 5 years	County
Geological Survey (USGS)	Water Resources for Oregon	5,6,11, 16,17	Annual	Guaging station

TABLE V-6

ADMINISTRATIVE RECORD DATA SOURCES

Source Agency	Title	Goal Area(s)	Geographic Designation
		LOCAL	
County Assessment and Taxation	Real property records	3,4,10	Address/zip, Map/tax lot #, Subdiv. lot & block Tax code area
Planning Agency	Building (develment) permits	3,4,5,6,7,8, 9,10,13,14, 15,16,17,18	Address/zip, Map/tax lot #, Subdiv. lot & block
	Land divisions	3,5,7,10, 13,14,15,18	Mapped
	Conditional use permits and variances	3,5,7,9,10, 13,14,15,16, 17,18	Address/zip, map/tax lot #, Subdiv. lot & block
	Zone changes	3,4,5,7,9, 10,15,16, 17,18	Address/zip, map/tax lot #, Subdiv. lot & block
	Annexations	10,14	Mapped, Map/tax lot #'s
	Plan ammendments	3,4,5,9,10, 14,16,17,18	Mapped
	Capital Improvement Project Plans	3,6,7,9,13, 14,15,17,18	Mapped, Address/zip, Map/tax lot #'s
Public & Private Utility Districts	Customer records	9,13	Address/zip, meter area
Traffic Engineering	Accident reports	12	Intersection, Address
	Traffic counts	12	Street location

TABLE V-6 (Continued)

Source Agency	Title	Goal Area(s)	Geographic Designation
	STATE		
Department of Agriculture (ODA)	Food processing license	16	Address/zip
Department of Energy (ODOE)	Transmission line approvals	4,5	Mapped
	Energy tax credits	13	Address/zip
Department of Forestry (ODOF)	Forest Practices permits	4,5,6	Mapped
Department of Fish & Wildlife (ODFW)	Inventory of riparian vegetation	15 ,17	Mapped
Department of Geology and Mineral Industries (DOGAMI)	Surface mining permits	3,4,5	Map/Township/Range/Section
	Permit notification sign-off forms	6	Map/Township/Range/Section
Department of Environmental Quality (ODEQ)	Solid Waste Disposal permits	3,5,16,18	Mapped, Township/Range/Section description*
	Air contaminant discharge permits	6	Same
	Waste discharge permit	6,16	Same
	Subsurface sewage disposal permit	18	Same
Department of Transportation (ODOT)	Ocean shore improvement permits	17,18	Address/Tax lot #
	"Zone line" and beach front erosion investigation	18	Map location
Department of Human Resources Employment Division (ODHR)	Employment compensation records for firms	9	Firm address/zip

TABLE V-6 (Continued)

Source Agency	Title	Goal Area(s)	Geographic Designation
	STATE		
State Lands Division (ODSL)	Dike repair and bank protection permits	3,16,17,18	Township/Range/ Section/River mile
	Fill and removal permits	5,16,17,18	Township/Range/ Section/River mile
	Leases	8,16	Mapped, Township/ Range/Section/ River mile*
	Investigations of permit violations	16	Mapped, Township/ Range/Section/ River mile
Department of Water Resources (ODWR)	Hydropower development permits and licenses	5	Mapped. Stream, Point of Diversion, Township, Range/ Section/¼ Section
	Stream flow recordings	16	Township/Range/ Section, Latitude/ Longitude
	Appropriations of water	16,18	Mapped, Stream, Point of Diversion, Township, Range/ Section/ ¼ Section*
	Well water levels	3,6,11,18	Well locations
	Stream flow reports	5,6,16	Monitoring locations
State Marine Board (OMB)	Houseboat permits	16	Marina/Slip #/ Mailing address

TABLE V-6 (continued)

Source Agency	Title	Goal Area(s)	Geographic Designation
	FEDERAL		
Army Corps of Engineers (COE)	Dam Construction permits	4	Mapped/Water body and river mile*
	Section 404 permits	3,8,16,17,18	Mapped/Water body and river mile*
	Section 10 permits	3,16,17,18	Mapped/Water body and river mile*
	Investigation of permit violations	16	Mapped/Water body and river mile*
	Offshore sand movement studies	18	Mapped/Water body and river mile*
Bonneville Power Administration (BPA)	Transmission lines	4	Mapped

*One or more of indicated designations may be used.

VI. APPLICATION OF THE MONITORING SYSTEM

The purpose of this chapter is to illustrate in further detail how to use the basic monitoring system described in Chapter V. It includes a description of how to apply the system to the problems of day-to-day land use decisions as well as how to apply it to monitoring of plan implementation in the longer term. Examples are used to ensure better understanding of the use of system components and procedures.

The sections following this introduction contain descriptions of a step by step application of the system by a coastal city and a coastal county. Coastal jurisdictions are used as examples because their plans must address all applicable statewide planning goals except Goal 15 (Willamette Greenway). Although the described applications of the system are basically hypothetical, they are the result of interviews with coastal planning personnel and reflect actual situations in two coastal jurisdictions. The application of the monitoring system is consistent with the approach set forth in the "User's Guide" presented in the second section of this chapter. The third section describes application to monitoring plan implementation. The fourth includes a discussion of system application to selected problems involving current land-use decisions. Finally, this chapter concludes with observations concerning the possible difficulties jurisdictions will encounter in establishing and implementing a monitoring system and some suggestions for overcoming those difficulties.

User's Guide

Each Chapter in this handbook has built upon the previous in discussing development of a plan monitoring system. This section is intended to recap the discussion in those chapters by setting forth, step by step, the basic steps in designing a monitoring plan to meet the objectives and capabilities of your jurisdiction.

This User's Guide is not intended to substitute for a more thorough reading of the handbook but rather to provide a concise outline and series of references to the reader. The User's Guide is simply an outline of the process recommended for setting up a monitoring system and for using this handbook to do so.

Step 1: Familiarize Yourself with the Handbook. Skim through the handbook to gain familiarity with the background, organization and type of information provided. In particular, review Chapter II, which discusses the various functions a monitoring system can provide, and Chapter III to

discover the various comprehensive plan objectives upon which the monitoring system is based. Also review Appendix A which describes some of the existing planning data systems currently in use by Oregon jurisdictions.

Step 2: Identify and Select Plan Objectives. Prior to design of a monitoring system the major objectives of the plan and its implementing ordinances must be identified. Chapter III of the handbook is a good place to begin. Chapter III lists the major objectives and, where appropriate, components of each statewide planning goal. Each local government, based on its individual situation and how its plan policies are phrased, may want to state these objectives more explicitly or add components not identified in the Tables of Chapter III.

Most jurisdictions will not have the resources sufficient to undertake monitoring for all plan objectives and components. However, staff resources available should not be the primary consideration in this initial step. The jurisdiction should define its monitoring needs initially based upon local considerations, as reflected in the plan, and the value of the monitoring data in resolving planning issues. Some of the factors to be considered in this initial selection may include:

A. The importance attached to particular local goals, plan policies and implementation measures. For instance, a common controversy centering on forest lands is the amount of "non-forest" development which can be allowed and the standards used to control non-forest uses. A county with considerable forest acreage, and hence an objective of protection of the forest base, may choose to carefully monitor the effects of non-forest uses on forest land so it will have a rational basis for evaluating implementing standards at the first plan update.

B. The frequency with which the local agency must deal with certain planning issues during implementation. If application of an implementation standard or land use action for specific activities (i.e., conditional use standards and procedures or application for non-farm dwelling) is a frequent occurrence, the jurisdiction may choose to monitor the outcome of the planning decisions to ensure the intent of plan policies is being met or the standards are being applied objectively. If policies or implementing standards pertaining to frequently dealt with issues are inadequate, the opportunity for planning problems is far greater than for infrequent actions.

C. The confidence placed on the implementing measures to accomplish their intended purpose. If the implementing measures are clear and objective so there is little doubt application will result in the desired policy implementation, monitoring is less critical. However, where implementation measures rely on highly subjective standards or inadequate baseline data, monitoring is far more critical.

D. The dollar savings achievable by maintaining current plan inventories and avoiding re-inventorying for plan update work. If a jurisdiction were to maintain a current inventory of buildable lands or dwelling units through monitoring, the data necessary to re-evaluate planning

assumptions during plan updates will be readily available. There will be no need for costly surveying or field observations. Therefore, where the cost of re-inventorying is likely to be high, monitoring should receive a higher priority.

E. The value of monitoring data for other uses which may be unrelated to the comprehensive plan. For instance, data on household income distribution, housing unit demand, tenure or housing vacancy are often necessary to apply for housing assistance grants from state or federal agencies. Data on development occurring within the urban growth boundary may be valuable in determining revenue projections.

F. The emphasis placed on certain plan policies or implementing measures by the Land Conservation and Development Commission.

Step 3: Select Data Items. Once a list of goals and objectives has been established the specific types of data needed for monitoring must be identified. The Tables in Chapter III and Tables V-1 through V-4 in Chapter V will be helpful in this regard. It is important to identify the data needed for monitoring in very specific terms. In specifying monitoring indicators the jurisdiction will need to:

A. Identify the level of measurement to be used. This will vary with the type of item being monitored. Some examples of monitoring indicators might include number of building permits issued, parts per million of dissolved oxygen, number of stream miles or number of acres in certain plan categories. These can be specified in as much detail as desired, for instance, building permits issued by type (single family, multi family, mobile home) and size (one bedroom, two bedroom, etc.). The choice of measurement level will depend on the quality of inventory the jurisdiction is trying to maintain, the monitoring objectives and the resources available. When recording local administrative permits it should be emphasized that it takes very little additional time to record building permits by type and size over what it takes simply to tally permits issued. The majority of data items in Tables V-1 through V-4 are specific although several are phrased more generally. These will have to be converted to specific data items based upon local monitoring priorities.

B. Identify the geographical districts to be used for geocoding. For instance, if a tally of building permits, zone changes, etc. is to be maintained for monitoring purposes, the jurisdiction will need to identify the geographical breakdown which will be most useful in monitoring (i.e., inside UGB versus outside, by census tract, by transportation zone, by neighborhood or simply for the city as a whole). Chapter V and the appendices provide some direction concerning choice of the geographical districts.

C. Identify the frequency with which the data indicators will be summarized. For instance, residential building permits issued by type and size by month for areas inside the urban growth boundary but outside the city.

Step 4: Identify Data Sources. Once the data needed for plan monitoring has been identified the jurisdiction will need to identify the sources for each data item and evaluate the adequacy of the source data in meeting monitoring objectives. To use the handbook for identification of sources the jurisdiction should:

A. Consult the Tables in Chapter III which identify the source records or agency for each of the data items identified there.

B. Develop a data needs/sources matrix which lists the data items selected for monitoring on one axis and the source or sources for that data on the other axis. A sample of this matrix format is shown in a later section of this chapter. The matrix allows the jurisdiction to identify where one source will be used for a variety of data items and, consequently, will help in designing forms on which to record or tally data items. The matrix will also point out data items for which more than one data source is required. This will aid in coordinating data collection and also in further refining the list of data items according to the amount of staff time and effort data collection will require.

C. Consult Chapter IV and Tables V-5 and V-6 in Chapter V for specific information on the data sources. Chapter IV contains a source by source and agency by agency discussion of the content of published data sources, a listing of applicable permits or administrative records issued or compiled by state or federal gencies, and a general discussion of the limitations of the data. Tables V-5 and V-6 contain, respectively, a listing of published data sources and administrative record data sources. Information is provided on the frequency of publication and the level of geographical coverage.

D. Determine, based on the discussion of limitations in Chapter IV or the level of geographical disaggregation shown in Tables V-5 and V-6, if the published source or the state or federal administrative records are sufficient for local monitoring needs. The jurisdiction may need to contact the source agency to determine if the data could be obtained at a level more useful for local plan monitoring purposes and, if so, how much staff time or cost will be involved. From the data needs/source matrix identify those items where field investigations or interviews will be required and the level of expertise required to undertake these investigations. Estimate the staff time involved and compare this with existing staff resources.

Step 5: Define Scope of Monitoring System. In Step 2 it was recommended that the jurisdiction select monitoring goals and objectives based on several factors. Step 5 involves a further refinement of this list based solely on the availability of staff resources and the adequacy of data available from published sources. Where data meaningful to local plan monitoring is not available from published sources and cannot be obtained efficiently, abandonment of the associated data item may be necessary. If alternative data items are not available, the jurisdiction may not be able to monitor that component. In some cases the overall monitoring objective may need to be abandoned. As an example, a city with

the objective of providing affordable housing to all residents may choose to monitor vacancy rates by tenure according to various price ranges of rental and owner occupied housing to determine what type of housing is most needed. However, in finding that vacancy data at this level of detail would require periodic survey research by the city staff, the city may decide that a single general vacancy rate figure will have to suffice as an indicator without careful examination of tenure or cost components. If the staff is not trained to undertake certain types of field investigations (i.e., habitat quality changes in estuarine areas), and state or federal agency personnel are unable to provide the necessary field investigations that monitoring requires, the jurisdiction may have to look for less ideal sources of monitoring data or monitor at a more general level. It is suggested that jurisdictions use a data needs/sources matrix along with the evaluation of sources and delete unfeasible data items from the matrix. The final matrix will define the scope of a realistic plan monitoring system.

An example of this step in applying the monitoring system is provided in the following section of this Chapter.

Step 6: Establish a Process for Collecting, Recording and Summarizing the Data. Now that a final listing of data items needed for monitoring has been established a procedure must be developed for collecting, recording, summarizing and analyzing the data. The following process is suggested:

A. Published Sources.

1) Establish a checklist of required materials; use this checklist to gather materials initially and to maintain a record of which materials are received and on file.

2) Establish a central location for maintaining the monitoring materials collection, or a system by which the location of the materials can be found. If a central location is not feasible, the checklist of materials can include a reference to the location.

3) Designate one individual to be responsible for maintaining the collection of published materials.

4) For each publication adopt a specific means by which it is obtained. Ask to be placed on the source agency's mailing list, or periodically contact agencies with a request for the most recent material.

5) In most cases it will not be necessary to transfer published data to special forms for summary or analysis. Most published data available have primary value for plan updating or are valuable as background data for permit approvals (i.e., quarry operations, subsidized housing project proposals, etc.) and for preparation of grant proposals. These published sources are also valuable for comparisons

between jurisdictions. However, maintaining a central location for the published documents so they are readily accessible and a catalog of their general content and value for monitoring and update purposes is sufficient. Some examples of the use of published data in monitoring applications is provided in this chapter.

B. Local, State and Federal Administrative Records.

1) Using a data needs/sources matrix, identify the local, state or federal permits or records which will be necessary to review for monitoring purposes. Identify those state and federal permits for which the jurisdiction routinely receives notification or referrals (i.e., Army Corps Section 10 and 404, Division of State Lands, Department of Environmental Quality, Department of Geology and Mineral Industry permits, etc.). Certain agencies are not required to notify local governments of administrative actions. The jurisdiction should identify any of these permits which it might need for monitoring purposes and arrange with the responsible agency to receive notification or collect summary data.

2) Determine the data needed from local, state and federal administrative records. If the data provided in the notification are insufficient for monitoring, contact the agency and try to arrange for a more complete referral. The level of detail in measurement required will determine how the data are recorded. In many cases the interest will be simply in tallying the number of permits issued by type. For instance, number of building permits issued by type by month or number of approvals granted by ODSL for fill or removal. However, these data are often more valuable if delineated geographically and if further substantive information is provided. For instance, the number of ODSL permits for fill or removal, number of acres involved by estuary and river mile. These data can be summarized annually to keep a current inventory of the number of acres in each estuarine management unit and can be compared with measures of habitat quality to make judgments concerning long term effects. For even more detailed monitoring the tally can be keyed to a file of impact assessments and conditions of approval summaries.

3) Determine if any portion of the data recording or monitoring effort will be computerized. If there is interest in a computerized system, consult Chapter VII and Appendix B to gain some insight into the process for setting up a computerized system.

4) Establish a coding or classification system for the data. If, for example, the jurisdiction wants to monitor building permit activity by geographic location, the recording forms should include a code representing types of permits (i.e., 1 = single family, 2 = multi family, 3 = mobile home) and geographical location. Geographical boundaries also must be adopted (i.e., neighborhood, census tract, etc.) and a coding system established for converting addresses or map and tax lot numbers to those boundary designations.

5) Develop forms for recording the coded data and disseminate those to the person or persons responsible for the permits. A sample form for recording building permit activity is shown in Figure VI-1 but a wide variety of formats can be used depending on the level of aggregation desired.

   The forms should be set up to permit quick summarization for the time period selected (monthly, annually, semi-annually, etc.).

   The data and analysis associated with monitoring change for each given time period (e.g., each year) should be maintained as a specific file or map. The locational patterns at the beginning of the period, the changes during the period, and the patterns at the end of the period are important elements in the analysis of change.

C. Field Investigations.

1) Establish a schedule for conducting field observations and interviews where such a schedule is implied by the monitoring.

2) Establish some basic criteria which the field observer will use so changes over time can be monitored. For instance, when measuring the "quality" of estuarine or shoreland habitat types it will be necessary to establish a series of quantifiable indicators to be monitored over time such as number of animals supported, stream miles of riparian vegetation, etc.

3) A filing system for the reports of field observations and interviews should be established.

An example of establishing a process for collecting, recording and summarizing data is presented in the following section of this chapter.

Step 7: Use of Data for Monitoring and Other Purposes. The primary monitoring applications for the data collected and summarized include:

a) documenting and evaluating plan objective achievements. Change and components of change summaries can be compared to plan

FIGURE VI-1

Building Permit Activity Record (New Construction, Demolitions, Conversions)

_____ Month _____ Year

Geographical Location	New Construction							Demolitions	Total Issued
	Residential (1)					Commercial (2)	Industrial (3)		
	Single Family	Apartment	Duplex	Condominium	Mobile Home				
Inside City									
North									
Northeast									
Northwest									
West									
East									
South									
Southeast									
Southwest									
Urban Growth Boundary									
North									
South									
East									
West									
Total Issued									

1. Indicate in parenthesis the number of units in the apartment or condo complex.
2. Use this code to denote category of commercial development, based on zoning code:
   1 = Neighborhood Commercial
   2 = Community Commercial
   3 = Regional Commercial
   4 = Public
3. Use this code to denote category of industrial development, based on zoning code:
   1 = Light Industrial
   2 = Medium Industrial
   3 = Heavy Industrial

objectives, and the effectiveness of plan policies and implementation measures ascertained.

b) adapting plan policies and implementation procedures to current community conditions. Monitoring data summaries will identify inventory, capacity and other changes which are necessary given changes occurring in the community.

c) critiquing plan goals and objectives. Monitoring information can suggest that alteration of local objectives may lead to more desirable community development.

The city or county also may use the collected data for other purposes such as maintaining or developing plan inventories, analyzing current land use proposals, and preparing grant assistance applications. How the data are to be used obviously influences the type of data handling procedure and the method and frequency of data analysis established by a jurisdiction.

In the following two sections of this chapter a discussion of examples of applying data to monitoring and to the other purposes identified above is provided.

Application of Monitoring System to Plan Implementation

This section provides an illustration of a step by step application of the basic monitoring system which is consistent with the User's Guide described above. The City of Newport and Lincoln County are used as example jurisdictions. These two jurisdictions were chosen since they represent many of the problems faced by the typical city or county in addition to those special problems faced by coastal cities and counties. It is recognized, however, that there can be very important differences between jurisdictions in monitoring needs for certain goal areas based on local circumstances, size of the jurisdiction, the resource mix and geographical location. Unfortunately, it is not possible to provide examples which take into account each of these local circumstances.

In reviewing this example of applying the monitoring system, it must be understood that:

1. The monitoring illustrations were based on only preliminary conversations with members of the planning staff of each jurisdiction. The monitoring priorities in an actual situation would not be finalized without extensive discussions among the planning staff and other local personnel and perhaps the elected body.

2. The list of monitoring objectives is for illustration purposes only and may differ from a list which would be derived after more extensive local review.

3. The monitoring objectives and data needs are not intended to indicate priorities or importance ascribed by the Land

Conservation and Development Commission. Again, the examples are intended to illustrate the process of monitoring for planning objectives.

With these caveats in mind the subsequent pages follow the steps outlined in the User's Guide, with the obvious exception of step 1, review of the entire handbook.

Step 2. Selection of Planning Objectives to Monitor. Planning staff from Lincoln County and Newport reviewed Chapter III of the handbook and compared it to their comprehensive plans to arrive at lists of plan objectives they wanted to monitor. Tables VI-1 and VI-2 indicate the selections by goal area which were made by Lincoln County and Newport respectively. The second column in each table explains briefly some of the reasoning behind selection of each objective.

Step 3. Identify Data Needed for Monitoring the Selected Objectives. Tables VI-1 and VI-2 also include the lists of needed data items. These were identified by reviewing the data items specified in Chapter III and in Tables V-1 through V-4 and listing those that apply to the planning objectives and components selected by Lincoln County and Newport. In several instances, the data items listed in the following tables are more specific than those listed in Chapter III and Tables V-1 through V-4. The reason for this is that Lincoln County's and Newport's monitoring preferences were more specific as to type of development indicator, unit or level of measurement, or geographic area to consider. In nearly all cases, the data items listed in the tables are included within, if not the same as, those listed in the handbook. The numbering of the data items in the following tables refers to the data items suggested in Chapter III and Tables V-1 through V-4. When data items have been broken into separate items to address specific local monitoring objectives, the numbers reflect this division. For example, data item 4-4 relating to forest land may become 4-4(a), 4-4(b), etc. When totally new data items are needed to monitor for unique local objectives, these are identified with a goal number followed by a letter (e.g., 4-a).

Identifying data items in the most specific terms allows easier evaluation of the amount of time collection or recording will entail, and determination whether outside sources are adequate to supply the data. Without knowing exactly what data are desirable for monitoring it will not be possible to accurately identify and evaluate sources.

Step 4. Identify Data Sources. With the specific delineation of data needs in Tables VI-1 and VI-2, it then becomes possible to identify sources for the data and any overlap between those sources. As suggested by the User's Guide, the general sources for the various data items were identified by examining the Tables in Chapter III. A data item sources matrix is then developed for both Lincoln County (Table VI-3) and Newport (Table VI-4) which lists the data items in goal order on the horizontal axis and the various sources on the vertical axis. The data item number in Tables VI-1 and VI-2 is used in the two matrices rather than stating the data item itself. This is done to permit reproduction in the handbook. In actual application the matrix can be developed on large paper so the individual

data items can be specified. To avoid listing a large number of potential data sources on the vertical axis and to provide a more complete explanation of the specific data source (e.g., appropriate permit or title of published source) a series of footnotes is used.

The specific permits and titles of published reports are identified by consulting Chapter IV under the appropriate agency responsible. Using this matrix method a comprehensive listing of the various data sources can be developed and any overlap between data items and sources can be identified. For example, Table VI-3 shows building permit records are the primary data item needed in 10 instances in monitoring for Lincoln County's objectives. This has implications for the types of forms developed for recording building permit data. The matrix also is used to determine if there are adequate staff resources to monitor for various objectives.

Following this identification of sources, each source should be critically evaluated in terms of its ability to provide the level of data needed for local monitoring purposes and the limitations inherent in the data. This step is not illustrated for all data items. However, to provide the reader with an illustration of how this evaluation would work and how subsequent steps described in the User's Guide would be carried out, an example using coastal planning objectives is presented below.

A review of the data items and sources shown in the sample matrix for Lincoln County (Table VI-3) indicates that to monitor objectives for estuarine resources and coastal shorelands the county must rely heavily on field observations, interviews and state and federal administrative records (ODSL, COE). During the county's first review of planning objectives and data items (Steps 2 and 3) it eliminated several data items because the planning objectives had a low priority and the sources were limited to field observations and interviews (e.g., Data Items 16-1, 3, 15 and 17-1, 3). The county felt that it had neither the time nor expertise to conduct the field inspections and interviews required to obtain the data. Now, with all data items and sources identified in one Table, a general impression of the staff time required in field investigations and interviews can be seen. An estimate of the required time should be made and compared to existing staff resources and the priority attached to collecting the data. In cases where field observations and interviews serve as supplementary sources of data they possibly can be eliminated. Where the planning objective has a high priority and the only source of data is through field observations and interviews, such as providing for disposal of dredged material, the county will conduct the inspections and interviews to determine the current capacity and suitability of designated dredged material disposal sites (Data Items 16-11 and 17-5).

With regard to the state and federal administrative record sources, the county needs to determine if those shown in the matrix are adequate to provide the required data and what, if any, modifications to content, geographical coverage or format are necessary. In the example of providing for dredged material disposal, major sources of data are the Division of State Lands fill and removal permits, leases of submerged and submersible lands and reports of permit violations. Also, the Corps of Engineers Section 10, 103 and 404 permits, permit violation reports and facility

construction plans can provide needed data. These sources can be used to help identify the location and amount of dredging and material disposal and to provide information on development and activities occurring on or adjacent to designated disposal sites (Data Items 16-12 and 17-6). In considering these sources, the county would discover that information on actions taken in COE Section 10, 103 and 404 permits are not provided unless a special request is made for each permit application. A quarterly summary of permits issued can be obtained by request but it does not report the conditions placed on permit approvals. Also, reports of permit violations are not provided by the COE unless requested. Likewise, information on leases of submerged and submersible lands and lease and permit violations are not provided by ODSL unless requested. Before requesting the information from these agencies, county staff should estimate the value of the information and the time required to make use of it in monitoring the objective. For example, lease information may not be needed since leases are normally issued after permits reviewed by the county are approved by ODSL. The information contained in the leases also is found in the permit applications.

Local planning records also serve as sources for a number of data items required to monitor estuarine and shoreland planning objectives. The county will want to select which of those sources it intends to use given monitoring requirements of other plan objectives and the current format and geographical coverage of the source record. In the example of protecting dredged material disposal sites, building permits and conditional use permits likely will be the most important source records for identifying the type, size and location of development and activities on or adjacent to the designated sites (Data Item 17-6).

After examining the data items and data sources identified in the matrix (Table VI-3), Lincoln County then moves to the next step in implementing its monitoring system. That is to establish the scope of their system given the county's staff resources and monitoring priorities.

Step 5. Define Scope of Monitoring System. At this point of developing a monitoring system, Lincoln County will have identified the data items it should obtain and the limitations of the sources for those data items. It will have determined the adequacy of published sources and will have contacted agencies administering data source records to determine whether or not problems of format, coverage, timing and availability could be resolved. Also the county will have estimated the amount of staff time and cost to collect, modify and use data from all listed sources. With this information the county planning staff can revise the original selection of data items, components and objectives as necessary to arrive at a monitoring system within the scope of available staff time and expertise.

In revising the list of data items to bring the scope of the system within staff capability, preference should be given to those data items that require little if any modification, that are easy to obtain and that are current and location specific. Also, data sources providing several data items should be preferred over those providing only one. Local sources should be preferred over state and federal sources.

In the example of providing for dredged material disposal, Lincoln County might revise its list of data items to exclude ODSL lease records, COE reports on proposed facilities and reports of permit violations because they are unlikely to provide much information concerning dredging and disposal activity or impacts on designated material disposal sites. Also, to obtain the sources would require a special request to the agencies. With respect to field observations and interviews, they could be combined and scheduled at longer intervals. Both estuarine and shoreland sites could be inspected at the same time by a team consisting of a county planner, port district representative, COE representative and local ODFW representative. Interviews with those individuals could take place during the inspection. This activity might amount to one person-day per year.

Of course, all jurisdictions will monitor what they consider to be most important and what they consider the easiest to accomplish given the required data items and available sources. Jurisdictions should strive for highly organized processes for collecting, recording and summarizing the data. The better the procedure the greater the amount of information the jurisdiction will be able to handle given its available staff resources.

A one-person planning office such as Newport's will be able to accomplish significant monitoring activity if field observations are kept to a minimum and scheduled in longer intervals and if only the best published and administrative record sources are used. Sources should be of the type that lend themselves to quick tabulation and simple recording. The type of filing system and the method of analysis for the data will determine how many different planning objectives Newport can examine.

Obviously the problem that all jurisdictions will encounter is the time and effort needed to organize a data handling system for monitoring. Step 6 of the User's Guide (above) provides some suggestions for organization. The following paragraphs include a discussion of some example procedures.

Step 6. Establish a Process for Collecting, Recording and Summarizing the Data. The discussion and examples provided in Chapter VII discusses the use of data processing equipment for parts of the monitoring system. Use of computers may be an integral part in many systems--if not initially, then likely with subsequent modifications. However, this part of the applications chapter does not discuss automation but instead looks at manual procedures.

The first step in the process is to ensure that all required data are being received. From a checklist of data sources, Lincoln County planning staff would identify those sources currently received, those which will be received when the county requests to be placed on the agency's mailing or routing list, and those requiring periodic and specific requests to the administering agency. Then the county would contact appropriate agencies to request placement on mailing or routing lists and to identify contact persons for periodic requests of other sources. Although some agencies may not want to provide certain data unless requested at the time the source is generated (e.g., impact assessment comments concerning proposed activities regulated by COE Section 10 and 404 permits), the county should make a

blanket request for the data to indicate its interest. To the extent possible, a schedule for receipt of data should be established.

The county then would set up a file for each data source so that data can be easily retrieved. An individual should be designated to collect and temporarily file the material as soon as it is received. With the example of dredged material disposal the county would have separate files for field observations and interviews specific to dredged material disposal sites and to the amount and location of dredging operations in Yaquina Bay. Also, there would be separate files for ODSL fill and removal permit data (for all desired applications) and COE Sections 10, 103 and 404 permit data (for all desired applications). The file on COE permits also might be used for the Corps' quarterly summary of permits issued. Also, files for building permit and conditional use permit information for areas encompassing dredged material disposal sites would be established.

Once data source collection procedures, personnel assignments and schedules are determined, the county would set a schedule for data modification. This would include any aggregation or disaggregation of the data to meet specific geographic needs. Also, required coding or classification would be included. Staff personnel would be assigned to perform these functions at the scheduled intervals. Files for storing the modified data should be created. This part of the process might include coding fill and removal activities to impacts on certain dredging or disposal sites so that disposed material or site development conflicts could be totaled and summarized by site at a later time.

The next step in the process is to summarize and record the data collected. As indicated above, dredged material by site location and development activity affecting designated sites would be totaled and summarized by site. That information would then be recorded on a map of the designated dredged material sites or in tables that could be used for quick reference. Again, the schedule and personnel assignments for this part of the process would need to be determined in the organizational stages of system development.

Once organized with filing and routing procedures, personnel assignments and summarizing and recording methods, the county can begin to use the data for monitoring plan implementation.

Step 7. Use the Data System to Monitor Plan Implementation. Data collected in the monitoring effort can have a wide variety of planning applications. A primary concern involves determining whether or not the comprehensive plan, or specific aspects of it, are accomplishing their intended objectives; other concerns relate to adapting the plan to changing situations. This section discusses four general categories of applications of data to monitoring plan implementation and provides some examples of each. A subsequent section discusses several applications of the data which are not oriented to plan monitoring but are beneficial by-products of any monitoring system.

The examples of plan monitoring fall within four basic categories:

1. Consideration of basic planning assumptions;
2. Measurement of success in meeting plan goals or objectives;
3. Examination of implementation techniques; and
4. Evaluation of planning efficiency.

There can be considerable overlap between these categories; they are treated separately for purposes of discussion.

1. Consideration of Basic Planning Assumptions. Long range community goals and the policies to achieve these goals are based on certain assumptions on what will occur in the future and the needs and desires of future residents. For example, the amount of land allocated to various land uses and the size of a city's urban growth boundary are based on assumptions concerning how rapidly the community will grow, the types of industries and support services the jurisdiction can attract, the cost of housing, land and the provision of services, and other factors. These assumptions form the basis for 20-year projections, in combination with data on past trends and educated guesses about future trends.

The result of these projections is an allocation of land to various uses and a set of policies aimed at insuring the allocated land is used for its intended purpose. The ability of a plan to meet identified needs is dependent, therefore, on the accuracy of those initial planning assumptions. The data on which these assumptions are based should be monitored over time to check accuracy and to identify new and pervasive trends which may substantially alter plan projections and, hence, land use allocations.

Changes in the plan to address modification in assumptions can be quite major and should not be made based only upon short term trends. For instance, a national recession which results in a short term (several year) loss of employment and population does not mean long term (20 year) growth projections need be altered and the urban growth boundary altered. However, such trends noted over a five year period coupled with permanent closure of major employers may require fundamental alteration of planning assumptions.

Other assumptions do not require such pervasive long term evidence to induce modifications. If a community has planned for a certain type of industry that is undergoing rapid technological changes which may modify site location requirements, it is illogical not to account for these new locational requirements in the plan.

There are certain basic data that all communities should monitor in order to examine basic planning assumptions. These include annual population projections made by Portland State University, employment data compiled by the Oregon Employment Division and building permit summaries compiled by the Oregon Housing Division. These data permit monitoring of the most basic assumptions concerning population growth, employment growth by industry and sector, and construction activity.

2. Measurement of Success in Meeting Basic Goals and Objectives. Monitoring can be undertaken to determine the success of policies or

planning decisions aimed at achieving plan goals and objectives. The previous application could result in changes in the basic assumptions on which community goals, and hence the plan, are based. This application is aimed only at determining whether or not the planning strategy designed to achieve those goals is effective.

For example, Lincoln County's overall forest lands goal is to conserve forest land for forest uses, echoing the statewide goal. One of the primary strategies for effecting this goal is to protect forest lands from incompatible uses. If the county's policy is effective in achieving this objective, the number of complaints or incidents relating to incompatibility between forest and non-forest uses should decline. The county therefore intends to keep track of all complaints received by the planning department and other county departments by landowners which concern activities related to normal forest management and harvest operations. They also intend to monitor forest fires by cause with the help of the Department of Forestry. If monitored consistently over a period of three or four years such data will provide some indication of how effective the policy is and whether some more restrictive modification is necessary to accomplish the overall goal.

Another example applicable to Newport and Lincoln County concerns the measurement of the effects of permitted development on estuarine resources. Planning policies to protect estuarine environmental values and to provide for appropriate water-dependent uses are based on a consideration of likely cumulative effects of the permitted uses on the estuary. Over time, data generated by the monitoring system can be used to identify changes in resource quality, which in turn can be related to permitted uses. That information can be compared to the projected effects of these uses and conclusions can be drawn as to the need for adjustments in policies.

A third example concerns more specific planning policy decisions. Certain statewide goals require planning policy decisions for specific sites. Statewide Goal 5, for instance, and the administrative rule implementing it, call for an explicit process to evaluate natural resource sites and requires a site specific planning decision. Often this decision must be made without adequate knowledge of what uses might adversely impact a valuable natural resource such as a natural area. This was the case in Lincoln County with a sphagnum bog located on commercial forest land. The county received conflicting opinions concerning the impacts logging on adjacent land might have on the bog area itself and concerning the sufficiency of the Oregon Forest Practices Act in protecting the bog. The county elected to permit forest management on adjacent lands but wants to monitor that activity to determine if any adverse impact is occurring. In doing so, they are monitoring the effectiveness of a very specific planning policy decision.

3. Examination of Implementation Measures. Frequently there are situations where there is considerable confidence in basic planning assumptions, goals and policy directions but doubt as to the proper measures or standards by which to implement plan policy. Approval criteria may be couched in vague or ambiguous language simply because there are not sufficient data on which to write clear and objective standards that

account for a variety of situations. In the forest lands example used above, the inability of plan policy to accomplish the objective of conserving forest lands may be due not to an inadequate policy but to vague and subjective conditional use criteria and inadequate standards by which to judge whether an activity is forest-related. Any plan modification needed may not relate to policies as much as to the zoning ordinance which implements them. For example, Lincoln County sets forth three approval criteria for non-forest related dwellings (which are similar to criteria used in other counties). These criteria are:

"a) The dwelling shall be compatible with adjacent farm and/or forest uses.

b) The dwelling shall not materially alter the stability of the overall land use pattern of the area.

c) The dwelling shall be on portions of the property least suitable for the production of farm and forest products, taking into consideration terrain, adverse soil and land conditions, drainage and flooding, vegetation, and location and size of parcel."

Terms such as "compatibility," "materially alter" and "stability of overall land use pattern" are highly subjective and require considerable discretion in application. By monitoring the types of incompatibility issues which regularly occur the county may be able to establish some more specific and objective siting criteria which will allow non-forest dwellings while minimizing impacts on forest uses.

Lincoln County has developed a set of joint policies with cities within its boundaries that govern development within urban growth boundaries. Basically, these policies limit urban level development unless urban services are installed to city standards. Land divisions can occur at urban densities although an urban level buildout cannot occur without city approved urban services. The means of implementation is a referral to and review by the respective city. Lincoln County is curious as to whether the review will be adequate to anticipate service extension problems, especially where development is at the outer periphery of the urban growth boundaries where detailed service extension plans may not be formulated. By monitoring development activity within the boundaries and cataloging any service extension problems based on interviews with service providers the county hopes to determine whether the urbanization policies and their implementation are adequate.

4. Evaluation of Planning Efficiency. Monitoring can also be used to determine how efficiently plan implementation measures are being applied; how long does it take, for instance, to process a locally initiated planning action such as a zone change, a partition or a conditional use permit. Although a portion of the approval period corresponds to notification requirements which are beyond local control, the length of time it takes the planning commission or elected bodies to make a decision can be related to the ambiguity of the approval criteria. It is generally accepted that a protracted approval period adds to the cost of development--a cost often

passed along to consumers. If a city has policies encouraging the provision of low cost housing, higher density housing, cluster housing or mobile homes, but the approval period for proposals regarding such uses is far longer than for more conventional housing types, this may suggest an undue amount of discretion in plan policies or the zoning code.

Monitoring for planning efficiency may point out ways by which the overall process can be shortened or better coordinated and may be useful in setting user fee schedules.

Other Applications of Monitoring Data

In addition to providing the information necessary to self-evaluate plan assumptions, policies and implementation measures, the data collected in the monitoring system can have other important applications.

1. Maintenance or Development of Plan Inventories. Assuming a reasonably accurate baseline inventory exists when monitoring is initiated, the data collected can be used to keep the inventory current. Doing so will avoid costly field investigations for plan updates. For example, by maintaining a time record of building permits by location, a reasonably accurate inventory of the number of structures, by type, can be maintained for various locations within a city and its urban growth boundary. A sample table for maintaining this type of record is shown in the User's Guide. A current land use map can be maintained by establishing symbols for various types of land uses and placing these on base maps of geographical districts each time a building permit is issued.

Newport has invested considerable time and money in a very good housing inventory for the city and wants to keep that inventory current. By monitoring residential building permits for new construction, demolitions and renovations, by geographical areas within the city, city personnel can keep a reasonably current count of the number of housing units by type, identify changing trends in building type, and monitor rehabilitation activity which they are trying to foster. By monitoring both zone changes and building permits and noting acreages involved the city will be able to specify exactly how many acres of vacant residentially zoned land exists in the city and the Urban Growth Boundary by zoning type, at any given time. If this is combined with data on service extensions, an inventory of buildable residential land is maintained.

The monitoring system can, in some cases, be used to generate inventories where none previously existed. For example, Newport does not have the funds required to conduct detailed geologic hazard surveys. The city therefore must require a geologist's report for any area generally identified as having hazard potential. By translating hazard mapping done in conjunction with these reports to a common scale and developing a classification system for the reports, the city hopes to develop a comprehensive detailed inventory of hazards that will permit better planning decisions. By keeping track of recommended safeguards the city may eventually be able to set forth some standards under which construction without an extensive study can occur, thereby streamlining the city's approval process.

Another example of using the monitoring system to generate inventory data is found in the impact assessments required for certain proposed uses and activities in estuarine areas. Information contained in impact assessments, when assembled to describe specific areas of the estuary, may serve as a factual base that is a significant improvement over current levels of inventory data for those particular locations. Local jurisdictions that require impact assessments and others that obtain data from federally required impact assessment can evaluate the suitability of the information and add it to the estuarine data base, as appropriate, for consideration in future use decisions.

2. Analyzing Current Land Use Proposals. Data collected through the monitoring system may be valuable in preparation of staff analyses and recommendations concerning land use proposals by providing some of the information necessary to: a) compare alternative development choices; b) identify potential impacts of the development; c) identify site suitability; and d) recommend appropriate conditions for approval. For example, developable aggregate or rock resources are apparently scarce in Lincoln County. Yaquina Head, the primary source of quarry rock for the county, may be acquired by the federal government and either protected or developed in a manner producing less scenic impact. If Newport and Lincoln County are monitoring the supply of and demand for rock resources they may estimate the costs (in terms of higher rock and construction costs in Lincoln County) and benefits of using Yaquina Head for its rock resource versus the open space alternative.

Another example concerns monitoring residential development activity on forest lands. One of Lincoln County's objectives is to determine the appropriateness of a plan policy permitting such development and of the standards and criteria for evaluating that type of development. While the data necessary to determine the appropriateness of the policy or to revise the approval criteria may require several years of careful monitoring, it will provide some valuable indications of potential impacts which the planning staff can use in recommending conditions to mitigate those impacts.

Newport, in monitoring data on geologic hazards, intends to develop a comprehensive hazards inventory which will allow it to set objective development standards and devise appropriate policy regarding development in erosion and slide prone areas. In the interim, the information contained in geologist reports will permit the city to comment on current development proposals in those areas and advise prospective developers of likely requirements.

A particular interest to both Newport and Lincoln County is erosion rates in coastal shorelands. A special hazards study conducted in the county provides the basis for the establishment of rates of erosion. That information supports the requirement for building setbacks which provide for a 20 year life of structures. To build within the setback distance, an applicant must provide evidence from a geologist that the erosion rates are not applicable to the particular site. Newport and Lincoln County can use the site specific information, along with the data provided in the hazards study and actual erosion experience, to better evaluate other requests for encroachment into specified setbacks.

In some cases a monitoring system may be instituted primarily to collect data needed to comment on controversial or frequently received land use proposals. Newport, for instance, receives applications for construction or expansion of marina facilities--applications which tend to be highly controversial. Lincoln County has received a number of applications for creation of recreational vehicle parks. In both cases planners need information on the demand for these facilities in order to provide good factual data to decision makers.

Newport, therefore, proposes to examine boating use in the bay through the State Marine Board's survey of boating use and to watch occupancy rates at existing marina facilities. Lincoln County will monitor occupancy of RV sites at public and private campgrounds by season so the staff is better able to comment on applications for expansion or new development.

3. Grant and Assistance Applications. Data collected through plan monitoring may provide the information necessary to make application for state or federal assistance programs. Newport, for example, has a policy encouraging agencies to develop modest cost housing through, "Cooperating with governmental agencies, housing authorities and sponsors of assisted housing to attract and secure financing for affordable housing." The city also has a policy to seek sources of funding for housing rehabilitation. Application for such funding will require a good market analysis of Newport's housing. By using the monitoring system to provide the data necessary to compile this analysis, the city is reinforcing its policy statements.

General Conclusions Concerning Development and Implementation of a Monitoring System

The guidelines provided in this handbook are intended to assist local governments in establishing and implementing a monitoring system. The document suggests what information is needed to monitor plan objectives, where it can be obtained and how it might be handled and used. Since the handbook is designed to meet the needs of local jurisdictions, it does not describe the process state and federal agencies should follow in assisting local governments in monitoring the effectiveness of their comprehensive plans. However, state and federal agency cooperation and coordination are essential in developing and carrying out a successful monitoring system at the local level. City and county governments will depend upon information available from state and federal agency publications, reports, studies and administrative records. Local jurisdictions also will depend on the technical expertise of agency representatives to carry out many of the monitoring tasks requiring field observations. In some cases, such as water, land and air quality measurements, local governments will look to state and federal agencies to perform the actual monitoring function. Consequently, it is important that a coordination mechanism, geared specifically to plan monitoring, be established.

In order for the local monitoring systems to be effective, state and federal agencies identified in this document as sources of data should:

1) Carry out the responsibilities assigned to them in the statewide planning goals, such as the requirement to maintain water quality and minimize man-induced sedimentation in estuaries (Implementation Requirement 2 in Goal 16);

2) Modify the format and geographic coverage of data items they administer to the maximum extent possible to simplify use at the local level. For example, identify major employers by addresses of local operations instead of by address of home office which may be in another county or state;

3) Provide information needed by local governments as it becomes available without requiring special requests for each data item. Presently local coastal governments do not receive information concerning action taken on Corps of Engineers Section 10 and Section 404 permit applications. They also do not receive copies of impact assessment comments concerning permit requests provided to COE by other federal and state agencies; and

4) Provide ongoing technical assistance through interviews and field investigations. The planning requirements for the coastal goals in particular require technical expertise not always present in local government staffs.

In order for local governments throughout the state to develop and implement systems to monitor plan implementation, the Department of Land Conservation and Development likely will need to revise state agency coordination agreements and enter into agreements with certain federal agencies. The objective is to improve the flow of information and the level of technical assistance provided to cities and counties.

Even with those improvements, the development and implementation of local monitoring systems will require additional planning staff time. In many planning offices, it will be necessary to obtain additional funding and personnel in order to establish the initial system. It is likely that state funding support will be needed.

As local governments gain experience in using their initial monitoring systems, they will want to make modifications to incorporate other data items and data sources and to improve overall procedure and organization. They will probably move toward mechanization as opportunities to do so present themselves. It is important to maintain system flexibility and adaptability so that these improvements can be easily made, particularly in the first few years of operation.

TABLE VI-1

MONITORING OBJECTIVES, RATIONALE FOR SELECTION AND DATA ITEMS NEEDED FOR MONITORING IN LINCOLN COUNTY

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Agricultural Lands	Keep EFU lands in farm use and maintain their productivity	The vast majority of resource land in Lincoln County is in forest use. However, the County does want to ensure that surrounding uses do not adversely impact existing agricultural uses and that any non-farm related uses do not result in loss of stability in land use pattern in an area. In other words, the county wants to confirm the adequacy of the conditional use process and the Agricultural Conservation Zone as they relate to non-farm uses. They also want to assess the impact of the lot of record legislation on agricultural land.	3-3) Conditional Uses approved on land zoned Agricultural Conservation by type of use (residential, public, religious, etc.) by year in the county. 3-a) Building permits issued on lots of record in areas zoned Agricultural Conservation. 3-b) Number of acres qualifying under ORS 215.213 for EFU taxation by year based on county assessor records.
Forest Lands	Maintain Forest lands in forest uses and avoid actions which adversely affect forest lands' productivity	Forest lands comprise the vast majority of Lincoln County's resource lands. The most controversial item relating to forest lands on both the local and state level is whether or not residences should be allowed and, if so, what standards should be used to protect forest lands. The county has established standards for determining if residences are forest related, for approval of non-forest related dwellings (CUP) and for exceptions to minimum lot size. The county wants to assure itself of the adequacy of these standards or criteria.	4-4(a) Building permits issued on TC zoned lands for forest related residences, Conditional Use Permits granted for non-forest related residences and exceptions to minimum lot size granted by year by subarea of the county. 4-4(b) Complaints received by county departments for dust, noise, herbicide spraying etc. by residents living on or adjacent to TC zoned lands by subarea of the county. 4-4(c) Incidence of forest fires by cause by subarea of the county.

TABLE VI-1 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Open Space and Natural Resources	Conserve and protect Goal 5 resources for the use and enjoyment of future generations	The county is confident concerning its protection decision for most Goal 5 resources. However, there is designated natural area where it was determined adjacent timber harvest could occur without damage to the resource. There is some uncertainty about what the impacts will actually be. Therefore the county is interested in monitoring to see if changes in standards or the protection decision are warranted at the next plan update.	5-1(a) Timber harvest occurring within a specified distance of the natural area and types of recommendations made by the forest practices officer. 5-1(b) Amount of sedimentation occurring in the sphagnum bog and any other evidence of reduced resource quality which could be related to logging activity.
	Maintain a current inventory of the supply of gravel resources and demand for them	The county has only two existing sources of rock for construction purposes. One is a state Highway Division rock source, unavailable for public use. The other, Yaquina Head, is being considered for federal acquisition and extraction has been halted. Currently, aggregate for concrete and private construction is hauled from Corvallis resulting in high rock costs.	5-3(a) Cubic yards of gravel or rock resource by type needed for private and public uses. 5-3(b) Data on existing supply of gravel or rock resources in Lincoln County by location of resource.
Air, Land and Water Quality	Avoid actions which would violate environmental quality statutes, rules and standards	The standards are set by DEQ and other agencies through administrative rule, enforced by them and monitoring is conducted by them. The county will monitor published reports and problems which occur to see if additional local standards become necessary.	Measures are highly diverse so are not listed in their entirety here. Some examples are listed below. 6-1(a) Measures of turbidity by stream system or various measures of water quality by private water system. 6-1(b) Particulate counts by month by airshed.

TABLE VI-1 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Natural Hazards	Prohibit development subject to damage or loss of life within known hazard areas unless it complies with safeguards	The majority of development pressure is in ocean shoreland areas. These areas are also some of the most potentially hazardous in the county due to shoreline erosion and the resulting landslide hazard. The county has established setback requirements to protect against hazard and allows exceptions to these provided a qualified geologist specifies appropriate safeguards. The county wants to evaluate its standards.	7-1) Rate of erosion in ocean shoreland areas identified and mapped as hazardous areas. 7-2) Building Permits issued in ocean shorelands areas broken down by those meeting the setback and those where a special exception is granted and the safeguards used.
Recreational Needs	Maintain an appropriate balance between the demand for and the supply of recreational resources with special emphasis on: recreational vehicle camping; and	The state and federal government have provided public campgrounds and monitor their use. The county, however, must permit private campgrounds and receives numerous applications for rezonings to allow recreational vehicle parks. Monitoring RV park supply and demand will aid in these planning decisions.	8-1) Number of RV campers using public and private campgrounds in Lincoln County and percent occupancy of available sites by season. 8-3) Boating use by type and by water body in the county. 8-6) Proposed increase in recreational vehicle campsites with hookups in existing public and private campgrounds.
	Marina facilities	The county receives applications for marina facilities in estuarine areas which are often controversial. Much of the controversy revolves around the "need" for such facilities so the county wants to monitor trends in boat use and demand for new facilities.	8-7(a) Changes in the supply of boat mooring and launching facilities by type of facility and water body. 8-7(b) Percent capacity at existing marina facilities by season.

TABLE VI-1 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Local Economy	Maintain the health of the local economy	For planning purposes the county wants to monitor employment type and distribution by industry and employment sector to chart the growth or decline in various sectors or industry. This will help to identify local constraints to particular industries and will highlight comparative advantages the county holds. The county also is interested in diversifying its economic and employment base and this monitoring will aid in determining if diversification is occurring. This data is also an indicator of population change and land use demand.	9-1) Employment by type of industry. 9-2) Employment distribution by sector.
	Assure that adequate land resources are available for desired commercial and industrial development	A consistent local issue is whether or not adequate developable land is available for industrial and commercial growth. The county also wants to maintain a current inventory of industrial and commercial land.	9-3) Building Permits issued on planned or zoned commercial and industrial land by type of use and subarea of the county by year. 9-5) Number of areas of industrially and commercially planned land by type by level of services provided (water, sewer, road access, rail access, etc.) by year. 9-a) Reasons why firms from outside Lincoln County who considered industrial or commercial sites rejected those sites.

TABLE VI-1 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Housing	Provide affordable housing for all residents of the jurisdiction. To test if this objective is being met the county wants to keep a current housing inventory.	The cost of keeping a current inventory through monitoring building permit activity is far less costly than conducting field research at plan update time. The county also has a policy to work with cities in developing a plan for housing assistance. This raw data will be valuable in developing that plan.	10-1(a) Residential building permits by type issued in rural areas by zoning designation by year. 10-1(b) Residential building permits by type issued in urbanized areas and in urban growth boundaries by UGB or urbanized area by year. 10-2) Zone changes approved to or from residential use by type of zone and number of acres involved by year.
	Determine trends in the use of Lincoln County housing for second homes	Lincoln County is aware that a sizable percentage of its housing stock is for vacation use but this may be changing due to higher interest rates and the increased cost of housing. Without monitoring these trends it will be impossible to plan for the needs of permanent residents.	10-a) Percent of housing stock by type and tenure which is for use as vacation housing versus primary housing by census tract and enumeration district.
Public Facilities and Services	Ensure that public, quasi-public and private services in the county (especially water provision and fire protection) are sufficient to maintain and insure safety, health and welfare	The county is not a primary service provider although it does currently monitor the adequacy of services it provides such as police protection. However, the county does receive development proposals which require annexation or creation of water districts or the joining of rural fire protection districts. The county wants to ensure that these services are adequate to protect safety health and welfare and do not impose costs on adjacent land uses; especially endanger the county's forest lands. Will aid in setting standards and in long term planning decisions.	11-5) Capacity (gallons supplied per minute) of private, public and quasi public water systems by season and storage capacity by season. 11-13) Staffing levels by time of day and response time from station to outer boundaries of district by fire protection district. 11-a) Incidence of water system failures (quality or quantity) by system.

TABLE VI-1 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Transportation	To provide for a safe, efficient transportation system	The development pressure in Lincoln County is heavy along Highway 101 which is also the location of the majority of traffic. The county must respond to applications for highway access permits and wants to be able to develop safe access plans where Highway 101 access is required. This data will also be valuable for long range planning.	12-1) Traffic counts on Highway 101 by various locations and by season and time of day. 12-2) Building permits issued by type along Highway 101 by location. 12-8) Traffic accidents by location along Highway 101 by cause.
Energy Conservation	None	The county intends to develop wind and solar access easement standards and will monitor application and success of these standards when they are developed. Otherwise the county does not take an active role in energy conservation but instead relies on programs developed by utilities and state or federal agencies.	N/A
Urbanization	Ensure that development occurring within the UGB does not adversely impact future urbanization	The county has policies which prohibit urban level development unless all public facilities are installed to city standards or unless a commitment is made to accept and pay for urban services at city standards in the future. Rural level development can occur until services are provided if it does not interfere with efficient urbanization. All subdivisions or partitions must be to urban densities or be set at interim densities of 5 acres or greater. The county wants to determine if these policies are sufficient to allow efficient urbanization, especially when development occurs at the fringe of the UGB where urban services may not be provided for many years.	14-1(a) Land divisions approved within urban growth boundaries by location within the boundary according to zoning designation and average density (for subdivisions) approved. 14-1(b) Building permits issued by type within urban growth boundaries by location within the boundary. 14-a) Service extension problems occurring due to pre-existing development and due to development approved under plan policies by urban growth boundary and location within the boundary.

TABLE VI-1 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Estuarine Resources	Avoid degradation or destruction of estuarine natural biological productivity, habitat diversity, unique features and water quality. Maintain diversity and unique features through estuarine management units and permissable uses. Maintain diversity of natural habitat Maintain natural productivity through impact assessment. Provide for mitigation of effects of dredge and fill in inter-tidal or tidal areas. Provide for disposal of dredged material.	Lincoln County contains four estuaries which represent economic, recreational and natural resources of local, regional and statewide importance. The county is committed to managing these resources to protect the diverse values. Consequently, the county wants to monitor these objectives to the extent that it is able to do so given limited personnel resources. There is particular interest in ensuring that designated sites for mitigation and for dredged material disposal are protected so that needed development may occur.	16-2) Zone changes, mitigation and restoration efforts, fills, removals, placement of structures and other development and activity that acts to add or remove area from specified management units. 16-4) Projected and actual impacts of permitted development and activity on habitat areas as indicated by impact assessments, project monitoring, agency comments and testimony. 16-5) Results of impact assessments by state and federal agencies with regard to productivity variables of water quality, species of flora and fauna, hydrologic characteristics, etc. 16-9) Additions, deletions, changes to sites designated as suitable for mitigation. 16-10) Mitigation actions taken as part of approval of fills and dredging in inter-tidal or tidal waters. 16-11) The number, amount of area and capacity of sites considered suitable for dredged material disposal. 16-12) Location and amount of dredging and material disposal.

TABLE VI-1 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Estuarine Resources (continued)	Maintain existing navigational capability and areas identified and needed for water dependent and water related development. Maintain navigational capability. Provide for water dependent and water related development.	The county recognizes the economic value of maintaining the authorized navigational capability of Yaquina Bay and of protecting areas suitable for water-dependent and water-related uses. Monitoring the status of navigation in the estuary is desirable and relatively easy to accomplish through assistance of the Corps of Engineers and the Port District. Also, the county is interested in maintaining a current inventory of sites designated for water-dependent uses.	16-13) Depth and width of channels, turning basins, bar crossings and status of authorized navigation structures. 16-14) Efforts by Corps of Engineers and Port District to improve or maintain navigational capability. 16-16) Type, size and location of development and land use actions affecting areas designated for water-dependent development.
	Restore estuarine environmental economic and social values; diversity and benefits. Protect sites for restoration.	The county's most important restoration sites are those designated for use in mitigating fills and dredging. However, it is interested in generally monitoring the status of other potential restoration areas through review of development permits.	16-18) Type, size and location of development and land use actions affecting areas identified for possible restoration.
Coastal Shorelands	Avoid reduction of natural values of major marshes, significant habitat, headlands, aesthetic resources and historical/archaeological sites. Protect natural values.	The county has identified "natural" coastal shorelands within the jurisdiction and is interested in monitoring the effectiveness of its plan policies and the standards of its shorelands Overlay Zone in protecting the natural values of those coastal shoreland areas.	17-2) Type, size and location of developments and land use actions allowed in "natural" shoreland areas.

TABLE VI-1 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Coastal Shorelands (continued)	Avoid committing shoreland areas especially suited for water-dependent uses, dredged material disposal or mitigation to other uses. Protect water dependent areas and sites. Protect dredged material disposal sites. Protect mitigation sites.	Lincoln County has identified shoreland areas for water-dependent uses, dredged material disposal and mitigation and is interested in monitoring use of those areas to ensure that they are retained for the intended purpose. The county recognizes the economic importance of having available sufficient shoreland area to satisfy future development needs.	17-4) Type, size and location of developments and activities allowed on and adjacent to water dependent sites. 17-5) Changes in amount of area, availability and suitability of dredged material disposal sites. 17-6) Type, size and location of developments and activities on or adjacent to disposal sites. 17-7) Changes in the amount of area, availability and suitability of mitigation sites. 17-8) Type, size and location of developments and activities on or adjacent to mitigation sites.
	Maintain, restore and enhance riparian vegetation. Maintain existing riparian vegetation.	The county considers the maintenance and restoration of riparian vegetation to be important. Plan policies address this concern and the coastal shorelands Overlay Zone sets standards for protecting and restoring riparian vegetation. Consequently the county wants to monitor development for possible impact on vegetation.	17-11) Location, type and extent of developments and activities affecting riparian vegetation; measures taken to minimize impact on the vegetation; effects of permitted development.
	Minimize hazard to life and property in the use of shorelands. Manage floodplain areas.	Lincoln County participates in the federal flood insurance program and consequently is interested in monitoring flooding and development allowed in flood prone areas to maintain its eligibility for the insurance.	17-13) Location, nature, extent and impact of actual flooding in shoreland areas. 17-14) Type, location and size of developments and activities permitted in floodplain areas and safeguards required.

TABLE VI-1 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Beaches and Dunes	Avoid degradation or destruction of the resources and benefits of coastal beach and dune areas. Minimize erosion.	The county has plan policies and standards that it applies to sand areas designated within its comprehensive plan inventory. The policies and standards require that vegetation removal and exposure of sand areas to erosion be minimized. Thus, the county is interested in monitoring the occurrence of vegetative damage and erosion and identifying causes for it so that policies and standards can be evaluated for effectiveness.	18-2) Location and extent of vegetative damage and erosion in beach and dune areas; natural or man-made causes of damage and erosion.
	Reduce hazard to life and property from natural or man induced actions associated with beaches and dunes. Prohibit development in hazardous areas. Control construction of beachfront structures. Limit breaching of foredunes.	Lincoln County recognizes the hazard problems associated with beach and dune areas and has set forth policies in its plan controlling beach front structures and breaching of foredunes. Standards in the zoning ordinance require reports from geologists or engineers on all proposed beach front protective structures that identify potential hazardous impacts as well as effects on visual qualities and public access. Breaching of foredunes and potential erosion is also covered by the standards. The county views these planning objectives as important to monitor to verify erosion rates and cause-effect relationships.	18-4) Location, extent and impacts of beach front structures. 18-5) Location, extent and impacts of breached foredunes. 18-6) Type, extent and location of developments and activities approved for beach and dune areas.

TABLE VI-2

MONITORING OBJECTIVES, RATIONALE FOR SELECTION AND DATA ITEMS NEEDED FOR MONITORING IN NEWPORT

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Agricultural Lands	None	None within UGB.	N/A
Forest Lands	None	Forest lands within UGB or city are either needed for urban uses, public lands or protected by other policies.	N/A
Open Space and Natural Resources	Monitor the supply of and demand for gravel resources	Yaquina Head is currently the primary source of rock in the county for private use. When rock from this site is not available it must be brought in from Corvallis and haul distance adds greatly to the cost. The city must therefore monitor existing supply and demand so that additional resources can be planned for as needed.	5-3(a) Cubic yards of gravel or rock resource by type needed for private and public uses. 5-3(b) Data on existing supply of rock resources in Lincoln County by location.
Air, Water and Land Resource Quality	None	Monitoring for air, land and water quality is conducted regularly by DEQ and data is provided to city personnel. The city responds by ensuring that all applicable DEQ standards are met. No special monitoring effort is necessary in the city's opinion.	N/A
Natural Hazards	Prohibit development subject to damage or loss of life within known hazard areas unless it complies with safeguards. Develop a good shoreland hazards inventory.	Much of the land within the city and UGB is underlain by geologic formations which cause soil on them to be subject to slide hazard. Also, ocean erosion in some ocean shoreland areas can be as much as 18 ft. per year. The cost of a detailed geologic hazards study is prohibitive. Consequently, the city requires a geologic study on specific parcels prior to evaluation of development proposals.	7-2(a) Development approvals (building permits, subdivisions, PUDS, zone changes, CUPS) requiring geologic reports granted in hazard areas and associated safeguards required by type of hazard. 7-2(b) Geologist reports, findings and associated safeguards by location within the city and Urban Growth Boundary.

TABLE VI-2 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Natural Hazards (continued)	(continued)	If these reports and recommended safeguards are monitored and catalogued, a detailed inventory can be developed and approval standards devised.	(continued)
Recreation	Maintain an appropriate balance between the demand for and the supply of facilities used by tourists	Tourism is a dominant source of employment and economic benefit in Newport. Consequently it is important to ensure that recreational facilities demands are being met. Since Newport is the primary access to Yaquina Bay there is pressure to develop marina facilities. The need for these should be monitored.	8-1) Visitation trends by month at public and private campgrounds in the Lincoln County coastal area and at tourist attractions within the city (Undersea Gardens, Marine Science Center). 8-3) Boating use by type and in Yaquina Bay. 8-5) Occupancy rates at Newport hotel accommodations by month. 8-7(a) Changes in the supply of boat mooring and launching facilities by type of facility in Yaquina Bay. 8-7(b) Percent capacity at casting mooring facilities by season.
Local Economy	Maintain the health of the local economy	A survey of city residents indicated a desire for more light industry, marine related industry, deepwater shipping and recreation and tourism development in the city. The city is currently dependent on tourism, wood products and fish processing. Various groups are attempting to sell Newport and Lincoln County as a business location. Monitoring will help to judge the success of those efforts.	9-1) Employment by type of industry in the city. 9-2) Employment distribution by sector in the city.

TABLE VI-2 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Local Economy (continued)	Assure that adequate land resources are available for desired commercial and industrial development	Much of Newport's industrially planned land is unserviced and much of the water dependent industrial land will require redevelopment. Newport may choose to determine the degree of constraint this places on the location of new firms. The city also wants to maintain a current inventory of vacant industrial and commercial land of various types.	9-3(a) Building permits issued on commercial and industrially zoned land by zone type and location within the city or Urban Growth Boundary. 9-3(b) Zone changes approved and number of acres involved which affect the status of industrial or commercially zoned land. 9-5) City service extensions (or interim urban services developed on) to industrial and commercially planned land by acres involved. 9-a) Business licenses issued by the city of Newport by SIC code and number of employees. 9-b) Reasons why commercial or industrial concerns who considered locating in Newport chose not to.
Housing	Provide affordable housing for all residents of Newport	The city has policies to encourage provision of affordable housing and a variety of housing choice. There are also areas of the city where rehabilitation in order to stabilize neighborhoods is desired. To make affordable housing available and to assist in rehabilitation the city proposes to aid in obtaining special assistance and funding, encourage higher density housing and facilitate mobile homes. The city will want to determine the success of these policies over time. Also, the city has invested considerable funds for a thorough inventory of its housing stock and it is in its	10-1) Number of residential building permits issued for new construction, rehabilitation or demolition by type of unit (single family, multi family, mobile home, etc.). This should be summarized by year by enumeration district. 10-2) Number of acres zoned or planned for residential use by type of zone and maximum densities allowed. 10-3) Residential vacancy rates by tenure. 10-4) Housing costs by type (rentals vs new and existing sales).

TABLE VI-2 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Housing (continued)	(continued)	interest to keep the inventory current both for planning purposes and to provide the data necessary to permit applications for housing assistance.	10-5) Number of housing units in the city and Urban Growth Boundary by "percent good" category. 10-6) Differences between maximum allowable densities allowed by residential zoning district versus actual densities approved for major subdivisions or Planned Unit Developments 10-a) Percent of housing stock by type and tenure which is for use as second homes versus principal residence by enumeration district.
Public Facilities and Services	Plan for and maintain adequate levels of service for Newport	The city has projections of long term demand for city services and is striving to meet that projected demand in advance. However, the projections are based on numerous assumptions concerning past demand and other factors over which they exercise little control. Therefore the city wants to monitor changes in supply and demand on a periodic basis to determine if any modification in assumptions or projected service demand is necessary. The city may also want to evaluate standards for level of service provision in some cases to determine the appropriate level.	11-1) Available wastewater treatment capacity remaining by year. 11-5) Available source, treatment and pumping capacities of the water system. 11-8) Capacity of landfill sites used by Newport (number of acres). 11-11) Hospital/clinic beds per capita. 11-12) Ratio of police officers to resident and non-resident population by month and year. 11-13) Fire Insurance Classification for Newport and by year and any service deficiencies noted. 11-14) Condition and capacity of existing school buildings and actual and projected enrollment by grade level by year. 11-a) Population estimates for city of Newport by year.

TABLE VI-2 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Public Facilities and Services (continued)	(continued)	(continued)	11-b) Reports of hospital deficiencies by year. 11-c) Incidence of crimes reported by type and month in Newport by year and number of crimes solved.
Transportation	To provide a safe, efficient transportation system	The primary transportation problem relates to access on Highway 101, especially during the summer months. The city is also concerned with monitoring activity at its airport. As the population and Newport's importance as a tourist destination increases there may be a need for airport expansion.	12-1) Average daily traffic counts and peak traffic counts on Highway 101 by month at selected locations within the city. 12-5) Landings and takeoffs at the Newport airport by month and year. 12-8) Traffic accidents by cause by location within Newport and the Urban Growth Boundary.
Energy Conservation	None	The city has no policies or implementing ordinances aimed primarily at energy conservation and will rely on utility companies to provide incentives for that.	N/A
Urbanization	Prohibit development of urbanizable land which will preclude or limit planned urban densities and the efficient provision of urban services	The city reviews all land division and development proposals within its urban growth boundary to ensure that they are at planned urban densities, that urban level services to city standards are installed or planned for and committed and that they will not adversely impact planned growth. The city feels this will be adequate and no special monitoring is required. Monitoring for Housing and the Local Economy provide the data necessary to keep the buildable lands inventory current.	N/A

TABLE VI-2 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Estuarine Resources	Provide for disposal of dredged material	The city considers its designated dredged material disposal sites to be important for maintaining the economic values of the Yaquina Bay Estuary. Consequently policies and ordinance provisions are directed at protecting these sites. The city planner feels it is desirable to periodically inspect the sites to evaluate remaining capacity.	16-11) The area and capacity of sites considered suitable for dredged material disposal.
	Protect areas suited and needed for water dependent and water related uses	The city's estuarine areas suited for water dependent and water related uses are mostly developed. However changes in use, renewal or existing uses and conditional uses allowing non-water related uses are considered important to monitor to ensure continued economic values.	16-16) Type, size and location of development and land use actions affecting areas designated for water dependent and water related development.
Coastal Shorelands	Avoid committing shoreland areas especially suited for water dependent uses and dredged material disposal to other uses. Protect water dependent areas and sites. Protect dredged material disposal sites.	Consistent with the city's interest regarding estuarine disposal and water dependent development sites, it also considers it important to monitor the protection and use of shoreland areas designated for dredged material disposal and water dependent and water related uses.	17-4) Type, size and location of development and land use actions allowed on and adjacent to water dependent and water related sites. 17-5) Changes in the amount of area capacity and suitability of dredged material disposal sites. 17-6) Type, size and location of development and activities on or adjacent to disposal sites.

TABLE VI-2 (continued)

Goal Area	Selected Objectives	Rationale for Selecting Objectives and Data Items	Data Items Needed for Monitoring
Coastal Shorelands (continued)	Minimize hazard to life and property in use of shorelands. Manage floodplain areas.	The city has identified several hazards within the coastal shorelands in its jurisdiction. Because of a high level of public interest and potential legal problems as well as the need to maintain eligibility in the federal flood insurance program, the city makes a major effort toward consideration of possible hazards. Monitoring this objective is important.	17-13) Location, nature, extent and impact of actual flooding in shoreland areas. 17-14) Type, location and size of developments and activities permitted in floodplain areas and safeguards required.
Beaches and Dunes	Reduce hazard to life and property from natural or man induced actions associated with beaches and dunes. Minimize erosion.	The emphasis the city places on keeping track of potential hazards also applies to beach and dune areas. Site specific studies required by the city can be used to improve inventory data on erosion rates and verify areas having potential problems.	18-2) Location and extent of vegetative damage and erosion in beach and dune areas. 18-4) Location, extent and impacts of beach front structures.

TABLE VI-3

DATA ITEMS AND SOURCES MATRIX FOR LINCOLN COUNTY

Data Source	Data Items by Goal Area																		
	Agricultural Lands			Forest Lands			Natural Resources				Air, Land, Water Quality		Natural Hazards		Recreational Needs				
	3-3	3-a	3-b	4-4 (a)	4-4 (b)	4-4 (c)	5-1 (a)	5-1 (b)	5-3 (a)	5-3 (b)	6-1 (a)	6-1 (b)	7-1	7-2	8-1	8-3	8-6	8-7 (a)	8-7 (b)
Local Planning Records																			
Building Permits		*		*										*			*		
Land Division Approvals																			
Conditional Use Permits	*			*															
Zone Change Approvals																			
Plan Amendments																			
Capital Improvement Projects																			
Assessors Records																			
Acreage of Parcels			*																
Property Class			*																
Published Source Data																			
State or Federal Agencies						2.										17.			
Local Jurisdiction									8										
Administrative Records or Permits of State or Federal Agencies																			
ODOF						3	5.												
ODEQ											13.	13.							
ODOT													14		15.				
ODSL																			
Army Corps Engineers																		19	
Other																			
Field Interviews or Observations																			
Local Agency Interviews					1.				9										
Interviews with State or Federal Sources						4.	6.		10.	11							13.		
Interviews with Private Sources										12.					16.				20
Field Observations Required								7											21
Survey Research Required																			

TABLE VI-3 (continued)

Data Source	Data Items by Goal Area: Local Economy					Housing				Public Facilities			Transportation			Urbanization		
	9-1	9-2	9-3	9-5	9-a	10-1 (a)	10-1 (b)	10-2	10-a	11-5	11-13	11-a	12-1	12-2	12-8	14-1 (a)	14-1 (b)	14-a
Local Planning Records																		
Building Permits			*	*		*	*							*			*	
Land Division Approvals																*		
Conditional Use Permits																		
Zone Change Approvals				*				*										
Plan Amendments																		
Capital Improvement Projects																		
Assessors Records																		
Acreage of Parcels																		
Property Class																		
Published Source Data																		
State or Federal Agencies	22.	22.							23				27.		27.			
Local Jurisdiction																		
Administrative Records or Permits of State or Federal Agencies																		
ODOF																		
ODEQ												*						
ODOT													*		*			
ODSL																		
Army Corps Engineers											26.							
Other																		
Field Interviews or Observations																		
Local Agency Interviews										25.								*
Interviews with State or Federal Sources																		
Interviews with Private Sources					*													
Field Observations Required																		
Survey Research Required									24.									

TABLE VI-3 (continued)

Data Source	Data Items by Goal Area: Estuarine Resources										
	16-2	16-4	16-5	16-9	16-10	16-11	16-12	16-13	16-14	16-16	16-18
Local Planning Records											
Building Permits		*								*	*
Land Division Approvals										*	*
Conditional Use Permits		*								*	*
Zone Change Approvals	*				*					*	*
Plan Amendments	*				*					*	*
Capital Improvement Projects											
Assessors Records											
Acreage of Parcels											
Property Class											
Published Source Data											
State or Federal Agencies	28	28								28	
Local Jurisdictions											
Administrative Records or Permits of State or Federal Agencies											
ODOF											
ODEQ											
ODOT											
ODSL	29	29			36		42			29	
Army Corps Engineers	30	30			37		43			30	
Other	31	31								31	
Field Interviews or Observations											
Local Agency Interviews		32				39	44		47		
Interviews with State or Federal Sources		33	33	34	38	40	45	46	48		
Interviews with Private Sources											
Field Observations Required				35		41					
Survey Research Required											

TABLE VI-3 (continued)

Data Sources	Data Items by Goal Area: Coastal Shorelands									Beaches and Dunes			
	17-2	17-4	17-5	17-6	17-7	17-8	17-11	17-13	17-14	18-2	18-4	18-5	18-6
Local Planning Records													
Building Permits	*	*		*		*	*		*				*
Land Division Approvals	*	*		*		*	*		*				*
Conditional Use Permits	*	*		*		*	*		*				*
Zone Change Approvals	*	*		*		*	*		*				*
Plan Amendments	*	*		*		*	*		*				*
Capital Improvement Projects	*	*		*		*	*		*				*
Assessors Records													
Acreage of Parcels													
Property Class													
Published Source Data													
State and Federal Agencies	49	49		28		28	28		28		60		
Local Jurisdictions													
Administrative Records or Permits of State or Federal Agencies													
ODOF													
ODEQ													66
ODOT	50									57	61	57	61
ODSL	29	29		29		29	29		29				29
Army Corps Engineers	30	30		30		30	30		30				30
Other	51	51		51		51	51		51				51
Field Interviews or Observations													
Local Agency Interviews			39										
Interviews with State or Federal Sources			40		34	34	52	54		58		63	
Interviews with Private Sources								55				64	
Field Observations Required			41		35		53	56		59	62	65	
Survey Research Required													

Table Notes on Sources Matrix for Lincoln County

1. Most likely agencies will be sheriff, health department or planning department. State or federal agencies may also receive complaints. Request they keep track.

2. ODOF's Annual Report.

3. Local District office will have more detailed records of fire causes.

4. Interviews with District Fire Ranger may be necessary for very specific information on cause and location.

5. Must request notification of FDA recommendations and actions, local district office.

6. Interviews with Forest Practices officer may be necessary.

7. Will require field observation and staff expertise. May need assistance from private expert or state agency personnel.

8. Local road improvement program from Public Works department.

9. May require discussion with Public Works personnel.

10. Interviews may be necessary to obtain information on major construction projects planned by state or federal agencies.

11. Annual interviews with State Highway Division about the total supply of rock at their quarry site.

12. Annual interviews with private quarry operators.

13. DEQ maintains records of readings they take in regard to their monitoring effort. The county will want to obtain these annually by prior arrangement.

14. Records of shoreline erosion are maintained by ODOT by means of aerial photos and other records. If not adequate, field observation may be required.

15. Data on occupancy of sites by season at state parks can be secured through ODOT, Parks and Recreation Division.

16. For private facilities field interviews will be required.

17. Results of boating use survey published by State Marine Board.

18. Interviews with State and Federal Parks personnel.

19. Marina facilities will require a Corps section 10 or 404 permit of which local governments are notified.

20. Interviews with private marina operators.

21. Regular field observation to count vacant slips may substitute for above.

22. The various publications of the Oregon Department of Human Resources, Employment Division are the best sources.

23. The 1980 Census of Housing contains some data on vacant housing held for occasional use.

24. To accurately monitor trends in the percentage of the housing stock in second home use will require periodic survey research.

25. Will require interviews with the small private water district personnel.

26. Fire Insurance Classification Reports for rural fire protection districts will list deficiencies and response time.

27. ODOT Motor Vehicle Division Reports.

28. Army Corps of Engineers Section 10 and 404 quarterly permit summaries and reports or studies concerning proposed COE facilities (e.g., jetty extensions and wing dams).

29. Fill, removal and riprap permits; leases of submerged and submersible lands; reports of discovery and investigation of permit violations.

30. Section 10 and Section 404 permits and reports of discovery and investigation of permit violations.

31. ODFW and ODOA licensing of aquacultural operations; Marine Board houseboat licensing information; state and federal facility construction plans (primarily ODOT and COE).

32. Interview local Marine Extension Agents to evaluate impacts of permitted development and activities on habitat area.

33. Obtain by interview or request for copies impact review comments prepared by ODFW, NMFS, USFWS, ODEQ, EPA.

34. Interview local representatives of ODFW to determine status of designated mitigation sites.

35. Periodically inspect designated mitigation sites to determine status. May need assistance of state and federal agency representatives.

36. Mitigation requirements associated with fill and removal permits.

37. Mitigation needs identified in review comments or proposed Section 10 and Section 404 permits.

38. Interview ODSL and COE representatives concerning mitigation requirements and means of implementing them.

39. Interview local port district representatives and obtain their assistance in reviewing status of designated disposal sites (both estuarine and shoreland).

40. Interview COE representatives concerning current suitability of designated dredged material disposal sites (both estuarine and shoreland).

41. Periodically inspect designated dredge material disposal sites to determine status. May need assistance from COE, Port District and ODFW representatives.

42. Obtain information from Fill and Removal permits concerning location and amount of dredging and material disposed.

43. Obtain information from Sections 10, 103 and 404 permits concerning location and amount of dredging and material disposal.

44. Contact local port district representatives for estimates of private material disposal and overall projected disposal needs.

45. Interview ODSL and COE representatives for additional information on dredging activity and projected disposal needs.

46. Obtain results of periodic inspections of navigation channels conducted by COE.

47. Consult with Port District representatives concerning efforts to improve navigational capability.

48. Obtain information from COE representatives concerning efforts to improve navigation.

49. COE Sections 10 and 404 permit summaries and reports or studies of proposed facilities; ODOT Summary of Ocean Shore Improvement permits used.

50. Ocean Shore Improvement permits.

51. State and federal facility construction plans (primarily ODOT and COE).

52. Interviews with representatives of ODOT and ODFW concerning effects of permitted development on riparian vegetation.

53. Inspect riparian vegetation to estimate impacts of permitted developments and status of required re-vegetation efforts.

54. Obtain information from representatives of ODOT, DOGAMI, COE and FEIMA on extent of flooding.

55. Interview private property owners concerning flooding experience.

56. Inspect flooded areas at time or shortly after flooding.

57. "Zone Line" and beach front erosion investigation reports.

58. Obtain information concerning offshore sand movement from COE studies by interviewing representatives; consult ODOT representatives on erosion reports.

59. Periodically investigate beach and dune areas to identify occurrences of significant erosion and vegetative damage.

60. ODOT Summary of Ocean Shore Improvement permits.

61. Ocean Shore Improvement permits.

62. Periodically inspect beach front structures authorized by ODOT to estimate negative impacts on visual quality, public access, adjacent property and erosion.

63. Interview representatives of ODFW and ODOT to identify breached foredunes and estimate impact on habitat and damage to property from sand deposition or erosion.

64. Interview private land owners concerning breaching of foredunes.

65. Periodically inspect foredunes for possible breaching and impacts.

66. Review Subsurface Sewage Disposal Permits to identify type and location of developments in sand areas.

TABLE VI-4

DATA ITEMS AND SOURCES MATRIX FOR THE CITY OF NEWPORT

Data Source	Data Items by Goal Area														
	Natural Resources		Natural Hazards		Recreation					Local Economy					
	5-3 (a)	5-3 (b)	7-2 (a)	7-2 (b)	8-1	8-3	8-5	8-7 (a)	8-7 (b)	9-1	9-2	9-3 (a)	9-3 (b)	9-5	9-a	9-b
Local Planning Records																
Building Permits			*	*								*				
Land Division Approvals			*	*												
Zone Change Approvals			*	*									*			
Conditional Use Permits			*	*												
Plan Amendments																
Capital Improvement Projects																
Other Local Sources																
Business Licenses															*	
Police Department																
Public Works	*													*		
School District																
Other																
Assessor's Records																
"Percent Good" Records																
Published Source Data																
State or Federal Agencies					4.	7.				11.	11.					
Other																
Administrative Records or Permits of State/Federal Agencies																
ODEQ																
ODOT																
ODSL																
Army Corps of Engineers								9.								
Other					5.					12.	12.					
Field Interviews or Observations																
Interviews with Local Agencies																*
Interviews with State or Federal Sources	1.	2.														
Interviews with Private Sources		3.			6.		8.		10.							*
Field Observation Required									10.							
Survey Research Required							8.									

TABLE VI-4 (continued)

Data Source	Data Items by Goal Area: Housing							Public Facilities									
	10-1	10-2	10-3	10-4	10-5	10-6	10-a	11-1	11-5	11-8	11-11	11-12	11-13	11-14	11-a	11-b	11-c
Local Planning Records																	
Building Permits	*																
Land Division Approvals						*											
Zone Change Approvals		*															
Conditional Use Permits																	
Plan Amendments																	
Capital Improvement Projects																	
Other Local Sources																	
Business Licenses																	
Police Department												*					*
Public Works								*	*								
School District														*			
Other																	
Assessor's Records																	
"Percent Good" Records					*												
Published Source Data																	
State or Federal Agencies			13.								17.		*		18.	17.	
Other				14.													
Administrative Records or Permits of State/Federal Agencies																	
ODEQ										*							
ODOT																	
ODSL																	
Army Corps of Engineers																	
Other																	
Field Interviews or Observations																	
Interviews with Local Agencies																	
Interviews with State or Federal Sources																	
Interviews with Private Sources																	
Field Observation Required																	
Survey Research Required				15.			16.										

TABLE VI-4 (continued)

Data Source	Data Items by Goal Area: Transportation			Estuarine Resources		Coastal Shorelands					Beaches and Dunes	
	12-1	12-5	12-8	16-11	16-16	17-4	17-5	17-6	17-13	17-14	18-2	18-4
Local Planning Records												
Building Permits					*	*		*		*		
Land Division Approvals												
Zone Change Approvals					*	*		*		*		
Conditional Use Permits					*	*		*		*		
Plan Amendments					*	*		*		*		
Capital Improvement Projects					*	*		*		*		
Other Local Sources												
Business Licenses												
Police Department												
Public Works												
School District												
Other		20.										
Assessor's Records												
"Percent Good" Records												
Published Source Data												
State or Federal Agencies	19		19.			24		28		28		35
Other												
Administrative Records or Permits of State/Federal Agencies												
ODEQ												
ODOT											32	36
ODSL						25		25		25		
Army Corps of Engineers						26		26		26		
Other						27		27		27		
Field Interviews or Observations												
Interviews with Local Agencies				21			21					
Interviews with State or Federal Sources				22			22		29		33	
Interviews with Private Sources									30			
Field Observation Required				23			23		31		34	37
Survey Research Required												

Table Notes on Sources Matrix for Newport

1. For data on planned federal and state road improvements an annual call to responsible agencies may be required.

2. Annual interview with State Highway Division about the cubic yards of rock retrievable at their quarry.

3. Annual interviews with private quarry operators.

4. "State Parks User Statistics" from ODOT, Parks and Recreation Division.

5. Interviews with local Parks Division personnel may yield more detailed data.

6. Interviews with major tourist attractions which charge admission have guest registers or maintain visitor counts.

7. Published results of State Marine Board's survey of boating use.

8. This will require either a periodic survey or interviews with a sample of hotel/motel facilities. Data may be difficult to collect.

9. Any increase in supply will require, at minimum, a permit from the Corps. Planning will be notified automatically.

10. Requires either interviews with operators of marinas or simply periodic observation of vacant slips or moorages.

11. The various publications of the Oregon Department of Human Resources, Employment Division, are sources for this data but only on the county level.

12. Special requests for computerized data on the city level must be made and a fee paid for this data to the State Employment Division.

13. Data on vacancy rates which is available from private utilities, the HUD Rent and Vacancy survey are available through the State Housing Division.

14. The Benjamin Franklin Savings and Loan publishes data on the average selling costs of new and existing homes by zip code in Oregon.

15. Data on rental rates will require a systematic monthly perusal of classified advertisements.

16. Will require survey research to plot trends if data beyond the 1980 Census of Housing data on vacant units held for occasional use is desired.

17. Health Division, Office of Health Facilities Services.

18. Portland State University Center for Population and Census.

19. ODOT Motor Vehicle Division Reports.

20. Airport operations manager.

21. Periodically interview local Port District personnel for assistance in considering status of designated disposal sites for both estuarine and shoreland areas.

22. Periodically interview COE representatives concerning current suitability of designated dredged material disposal sites.

23. Periodically inspect dredged material sites to determine status. May need assistance from Port District and COE personnel.

24. COE Section 10 and 404 permit summaries and reports or studies of proposed facilities.

25. Fill, removal and riprap permits; leases of submerged and submersible lands; reports of discovery and investigation of permit violations.

26. Sections 10 and 404 permits and reports of discovery and investigation of permit violations.

27. State and federal facility construction plans (primarily ODOT and COE).

28. COE Section 10 and Section 404 quarterly permit summaries and reports or studies concerning proposed COE facilities (e.g., jetty extensions and wing dams).

29. Obtain information from representatives of ODOT, DOGAMI, COE, FEIMA on extent of flooding.

30. Interview private property owners concerning flooding insurance.

31. Inspect flooded areas at time of or shortly after flooding.

32. "Zone line" and beach front erosion investigation reports.

33. Obtain information concerning offshore sand movement from COE studies by interviewing representatives; consult ODOT representatives on erosion reports.

34. Periodically investigate beach and dune areas to identify occurrences of significant erosion and vegetative damage.

35. ODOT Summary of Ocean Shore Improvement permits.

36. Ocean Shore Improvement Permits.

37. Periodically inspect beach front structures authorized by ODOT to estimate negative impacts on visual quality, public access, adjacent property and erosion.

VII. AUTOMATED APPROACHES TO COMPREHENSIVE PLAN MONITORING

In designing systematic techniques and procedures for comprehensive plan monitoring, consideration should be given to the adoption of computers for storing, quantifying, classifying and summarizing of data. Recent surveys indicate that all but seven counties and nearly all of the cities over 5,000 population have automated many of their activities involving processing of information (BGRS 1982). Twenty nine counties have completed or are in the process of automating their assessment and taxation files in addition to budgeting and accounting records. The principal applications of computers for cities are in budgeting and accounting. Only two cities (Eugene and Medford) and three counties (Lane, Jackson and Josephine) indicated that computers were being used for processing of land use or zoning data at the end of 1981.

There are undoubtedly a variety of reasons for this apparent scarcity of automated planning data bases, including insufficient quantities of data to justify automation, costs of conversion from manual to automated records, inadequate knowledge concerning computer processing, and administrative or organizational barriers limiting access to computer facilities by planners. However, in view of significantly decreasing costs of hardware and software, the increasing need for better data to be provided to local policy makers, and declining public agency budgets, it is becoming more and more important that planning professionals be knowledgeable about the potentials and limitations of computerized processing of data for planning purposes.

Feasibility

The principal advantages of computers are their ability to handle large quantities of simple or complex data, to perform various transformations or manipulations of the data (i.e., comparisons, mathematical calculations, selection, sorting), to produce printed reports and maps from the data according to user specifications, to store large quantities of information in very small space in an easily accessible form, and to execute instructions given in the form of programs with extreme speed and accuracy.

The feasibility of converting all or parts of a manual planning analysis and monitoring system of data processing to an automated system cannot be established by the application of any simple formulas. While the factors to be considered by each city or county are similar, the evaluation and conclusions will necessarily vary. Some of the more important factors

in the conduct of a feasibility study for automating specific plan monitoring or other planning data files are:

a. The number and nature of source records to be converted to machine readable form--i.e., cards, tabular, maps, files already automated by other agencies.

b. The types of manipulations and output products desired from the system--cross-tabulations, quantifications, summaries, maps, etc.

c. Costs and time involved in converting manual records to automated form.

d. Costs of processing data.

e. Procedures necessary for editing and updating data files.

f. Availability of technical data processing personnel.

g. Availability of hardware facilities.

Basically a decision to automate all or parts of local planning data bases depends on an evaluation of the costs and anticipated benefits. Planners who have not used automated systems may need the assistance of a data processing professional to estimate the time and cost involved in converting manual to automated systems. In general, it is not feasible to utilize machine processing when the number of records to be automated is less than 200-300 per year, and perhaps in some instances less than 1,000.

It is unlikely that any planning agency would find it feasible to automate the published data items for plan monitoring described in Chapter V because, except for the census data which are available in machine readable form, the quantities of information relevant for any local jurisdiction generally are too small to justify machine processing.

In some instances automating building permit files may be feasible. Such automation would involve writing certain data extracted from each permit on a computer file, which would then be used for summarizing permit activity. Such a file would be particularly useful if the number of records processed each year is large, and if the desired analysis is relatively complex, for example extensive cross-tabulations by location, land use or housing type, date, or combinations of such variables. In addition, planning staff would need easy access to computing facilities, although this particular application would be simple and could be done on a small computer. The format for data entry would be similar to the example presented in Chapter VI which illustrates a manual approach to this same monitoring activity. In the case of most municipal and county jurisdictions in Oregon, however, manual approaches seem adequate unless a more comprehensive automated data system, based on assessor's data, is developed.

The establishment of the apparent feasibility of using automated methods does not necessarily imply that a planner must be a data processing

technician, have direct access to a computer, or produce the source data for automation. Activities involving data entry, editing, programming and processing could be performed by planning staff, data processing staff, a service bureau or a consultant; the input data might be generated by the planning agency or by some other agency; it might be in mapped, manually coded or automated form; the computer could be located in the planning office, a centralized facility in the city and/or county, or at some remote location; transmission of instructions could be made directly to the computer by console or remote terminal from the planning office or by written or verbal communications with persons responsible for the performance of specific automation activities. While specific technical competence is not required for using automated systems, a knowledge of the data to be put into the system and what is needed from it is essential.

Implementation

The automation of manual data files involves three basic steps: 1) conversion of manual records to machine readable form; 2) writing computer programs containing instructions for reading the data, performing desired manipulations on the data, and generating output according to prescribed specifications; and 3) computer execution of the program using the machine readable data records as input.

To convert written or typed records to machine readable records all that is necessary is to give the manual records to someone with data entry equipment (key punch, some word processors, or data entry terminal), and have them convert the records to punch cards, magnetic tape records, or disk storage records. Conversion of mapped data to numeric values for computer use involves digitizing (either manual or mechanical) positions on a map to translate them to grid coordinate values.

The nature of the input data and the complexity of the output desired will determine the investment in time and money necessary for computer programming. However, once a program is written it can be used repeatedly for processing additional data with little or no modification. The programs should be written with full understanding of the computer with which they will be used.

The execution of the programs with the data can be accomplished using an in-house computer, common data processing facilities, or by contract with an outside agency or consultant.

Conclusions

It appears likely that only a few local planning jurisdictions in Oregon may be able to justify automating individual components of a plan monitoring system (e.g., land use, zone changes, building permits). However, if any county and the cities in that county joined in a cooperative effort to develop a multi-jurisdiction, multi-purpose automated monitoring system based on existing automated files containing thousands of administrative records, it is probable that such a system would prove economically feasible.

A Suggested Manual/Automated Monitoring System

The use of automated techniques for plan monitoring does not preclude the inclusion of non-automated data as part of a total monitoring system. The system described below should also include all of the data from published sources as described in Chapter V which should be tabulated and summarized manually. The development and maintenance of manual systems for monitoring indicators of change that are not included in the suggested automated system (e.g., zone changes, conditional use permits, subdivisions, plan amendments) is also important as part of a total monitoring system.

With the exception of ten counties and the cities in those counties, all jurisdictions in Oregon currently have the potential of developing a relatively useful and inexpensive automated plan monitoring system based on real property records of county assessors' files. Seven counties (Jefferson, Harney, Morrow, Wallowa, Sherman, Gilliam and Wheeler) do not have their assessment and taxation files automated so the system could not be used for jurisdictions in these areas. Multnomah and Harney counties do not use the map reference techniques recommended by the Department of Revenue, and Marion and Klamath are in the process of converting to this system so these additional counties cannot presently use the process described below. However, with sufficient cooperation between local jurisdictions, other cities and counties in the state could have the proposed system operating in total or in part in a relatively short period of time.

The system is based on the fact that assessors real property records contain key data items that are required by statute, by Department of Revenue Administrative Rules, or are approved and recommended by the Department of Revenue. The numbers of records in the assessment roles varies from about 2,000 to 200,000 from county to county, but is not an unmanageable size when processed by a computer. In general, counties under 30,000 population have 2,000 to 10,000 ownership parcels, those with a population of 30,000 to 60,000 have 10,000 to 40,000 parcels and those with a population over 60,000 have 40,000 to 200,000 parcels.

Most of the data items included in the real property records are not directly transferable to a plan monitoring system, but with appropriate recoding procedures they can be used as planning data. The relative accuracy of the planning information has been tested, as described in Appendix B, by recoding approximately 18,000 Lane County real property records and comparing summarized data with information contained in the Lane County Regional Information System. This proposed system for re-coding of real property data can provide information on land use, housing units, value of housing, and zoning. The information can be summarized for counties, cities, approximate urban growth boundaries, and sub-areas from a section to a sixteenth-section.

The nine specific variables from the assessors' files that form the basis of the system are:

1. Tax Lot Number. Some unique identification for each real property record is required by statute. For the 32 counties currently using the numbering system recommended by the

Department of Revenue this is a 13 digit number consisting of township, range, section, quarter-section, sixteenth-section, and a 5 digit parcel number within the map. Depending on the density of development the number can represent all of the parcels in a sixteenth-section up to an entire section. Most cities are mapped as sixteenth-sections (a scale of 1"-100') and the sum of all the properties on such a map represent about 40 acres. The city of Cottage Grove has 44 such sub-unit maps, the city of Bend would have 45-50, and a city the size of Newport would have approximately 25. These map designations in the tax lot number are the geographic sub-units for data aggregation in the proposed example system. While they are not designed for planning analysis, they do provide a uniform and fixed geographic system to which the data are already geocoded.

2. Property Class. A property class coding system is prescribed by administrative rule and is required to be included in all assessment roll records. This consists of a three digit code designating the appraiser's evaluation of the "highest and best use" of the land, and whether the parcel has any improvements or development on it. Although not required, the Department of Revenue has approved the use of the middle digit to identify urban, rural, suburban, ocean frontage, river frontage, or lake frontage.

3. Tax Code Area. A system for the identification of all taxing districts must be developed for each county and included in the assessment roll records. This code defines whether any parcel is inside a city, school district, special district, etc. The code can be used as a geographic designator in the proposed system to aggregate data by jurisdiction.

4. Acreage. The total acreage of parcels are required by statute to be included in real property records unless they have been divided into blocks and lots.

5. Statistical Class. The Department of Revenue has approved and recommended a coding system to describe specific types of improvements on a parcel, but such a code is not a requirement. A review of all county ratio studies filed with the Department of Revenue for 1981 indicates that a majority of counties use the recommended coding, at least for residential properties.

6. Tax Exempt Status. An indication of tax exempt properties must be included in property records, either as a separate variable or as part of the statistical classification system.

7. & 8. True Cash value of Land & True Cash Value of Improvements. An appraisal of the value of land and improvements, as adjusted by studies of ratios of appraised value to sales values, is required to be included in each real property record. These values are used to compute average value of housing.

9. Year Structure Built. This variable is not required, but if it is included in assessors' records it can be used directly to indicate change during any given year, which is a necessary component of a comprehensive plan monitoring system.

Three additional variables, not included in the test described in Appendix B, are usually included in assessors' real property records and may be desirable to include in the generated data base for use by local planning agencies.

1. Owner Address. The address to which tax notices are to be mailed must be included in real property records. It may be a mortgage company or the title holder, but a listing of these names and addresses might be useful for planning agencies in mailing notices of hearings.

2. Site Address. Inclusion of the address of the parcel is not a requirement and is not possible if an address has not been assigned. If included, it can be sorted and used to derive an address to map number index for manual or automated geocoding of administrative records containing address to maps, cities, urban growth boundaries, taxing districts, etc.

3. Percent Good. This variable is not required, but when included is based on a combination of the age and condition of a structure. It may be used by planners as an indication of structure condition, but should be used only with an understanding of how the values are derived.

The initial implementation of this suggested automated planning data system would require several steps, but once established the repetitive updating of the data should require a minimum of time and expense. A sequence of actions that should be followed to establish the system are:

1. All planning agencies within a county should jointly agree to determine the feasibility of establishing and maintaining such a system.

2. Meet with the county assessor or some person with knowledge of the automated coding and formats of real property files for that county, and determine which of the above described variables are included in their records and which are in machine readable form. Variables 1 through 6 must be included for implementation of a system within the proposed framework. The other described variables are desirable, but not essential to the implementation of the system.

3. Make provisions (contract, agreement, pay) for a programer, probably in the county assessment department, or a consultant supporting some turn-key system for assessment records, to write a program to extract the above variables from the assessor's records and create an intermediate data set with a specified format containing the selected data items for all

ownership parcels in the county. Several counties have common processing systems for processing assessment and taxation records so one program for each of these could be used by all having the same formats. Such counties include Douglas and Coos; Baker, Malheur, Union and Grant; Crook and Lake; Lane, Linn and Benton; Lincoln, Wasco and Curry. Once such an extraction program is written it can be used in successive years with little or no modification.

4. Arrange with or pay the assessor's office to run the selection program using the county's real property files as input, and create the intermediate output automated data set.

5. Define average lot size for platted parcels and urban growth boundary designations to be assumed for each map area. These two variables are important for a planning data base but are not included in assessment roll records. The procedures described in Appendix B (see "Parameter Assignments") define a method for adding these data items to real property records on the basis of assumed values provided by the planning agency. The process involves the visual inspection and analysis of each map in the built up areas. The subdivision designations, boundary delineations and dimensions included on assessors' maps provide a basis for estimating the number of platted lots, their area and the variations in their size. A judgmental decision must be made of what appears to be an average acreage of those parcels that do not have an area determined by the assessor. The results of the application described in Appendix B indicate that a majority of parcels in the urban areas will have their area allocated by such assignment. Therefore, it is important that the estimated average areas be as accurate as possible. Also, a decision must be made as to whether each map is to be considered inside or outside of the urban growth boundary. A list must be made with an entry for each map containing the map number, the average lot size to be assumed for platted lots, and the urban growth boundary designation.

6. Write or contract for writing a program to read the above intermediate data set, add land use summary codes based on the interpretation sequence of assessor's codes as described in Appendix B, add number of housing units, add urban growth boundary designation, add assumed acreage if not included in assessor's records, and generate a new data file to be used for summarizing planning and monitoring data in a form specified by planning agencies. Some modification of the coding equivalencies used for Lane County will be needed to accommodate specific local conventions and coding practices adopted by each county assessor. Once this program has been written and tested it can be reused each year with data from a new intermediate data set.

7. Determine what specific summaries and tabulations of the data now contained in the generated data base can be used to fulfill particular planning analysis and monitoring needs.

8. Produce the desired tabulations (contract, agreement or in-house) using the generated planning data base and some report generating program. No new programs should be needed to produce summary reports since most computer facilities have available one or more general purpose software packages which can be used to produce summaries and tabulations. However, for some smaller hardware configurations some additional report generating programs may have to be written.

The generated new data base would have one record for each ownership parcel in the county and each record should contain at least the variables shown in Table VII-1.

These are individual records for parcels and do not represent aggregated data. Therefore it is possible to cross-classify any of the descriptive attributes included in the records; for example, acres of land use by zoning, acres of land use by year structure built, housing units by type of zoning, average value of single family units. It is also possible to select and list individual records on the basis of single or combined attribute specification (e.g., list map and tax lot number of parcels with year structure built = 1982, list map and tax lot number of parcels classified as undeveloped having over 10 acres and having a property class of industrial). Finally, one can produce aggregate summaries of data on the basis of single or multiple attribute specifications by any of the geographic designations (e.g., acres by land use category by section, housing units by type in the city, average value of single family units by groups of sections).

Quantitative measures of change in development for plan monitoring can be produced in either of two ways. If year structure was built is included in assessor's records, select and list or summarize the characteristics of parcels having a year structure built value for any specific years (i.e., list or summarize all parcels having year structure built = 1982 would indicate developments occurring during 1982). By reference to assessor's maps for locations of tax lot numbers or map numbers the data can be transferred to base maps for visual analysis of geographic patterns of change.

If year structure was built is not included in the assessor's records quantitative measures of developments can be produced by comparing two summaries of data by geographic areas which represent two points in time. The differences are the changes that occurred between the two benchmark years. These differences by geographic sub-areas can also be plotted on base maps if desired.

Specific examples of how this data base can be used to monitor plan implementation objectives are shown in Table VII-2. This table lists those data items from Chapter III which can most easily be extracted from the generated data base, plus a brief description of how the data can be applied for monitoring. In many cases the measurement of

TABLE VII-1

GENERATED DATA BASE VARIABLES

Variable	Comments
Geographic Location	
A. Map number	Township/Range/Section and Quarter-section if mapped by assessor at 1" = 200' scale, and/or sixteenth section if mapped by assessor at 1" = 100' scale
B. Tax lot number	Individual parcel identification
C. Tax code area	Cities, school districts, special taxing districts, etc.
D. Urban growth boundary	Inside or outside
Descriptive Attributes	
1. Land use code	13 categories. See Table B-2 for probable accuracy limitations
2. Tax exempt status	
3. Number of one and two family housing units	See Table B-3 for probable accuracy limitations
4. Area of parcel in acres	Calculated by assessor or assigned average lot size for platted lots
5. True value of land	
6. True value of improvements	
7. Property class:	
a. zoning	Surrogate variable based on first digit. See Table B-4 for probable accuracy limitations.
b. farm use tax deferral status	Third digit
c. parcel characteristic	Based on second digit, which is optional. Indication of urban, sub-urban, rural, ocean lake or river frontage.
8. Statistical class	
9. Year structure built	If included in assessor's records

TABLE VII-1 (Continued)

Variable	Comments
Possible Supplemental Data Items	
10. Site address	If included in assessor's records
11. Owner's address	
12. Percent good	If included in assessor's records, see "Appraisal Methods Manual" for limitations and interpretation

change involves comparing data sets for two different years, although in some cases the "year structure built" variable can be used to identify specific parcels as well as aggregate changes which have occurred within a particular period. Also, the variables included in the data base often differ from the monitoring data item specification, implying that either the monitoring data item be changed to correspond more closely with the data available from the generated data base, or that additional monitoring data be added to the data base which allows a more accurate measurement of the monitoring data item.

As discussed in Appendix B, the development of a monitoring data base from assessor's records may be a useful and cost-effective means of providing for a portion of a jurisdiction's monitoring data needs, especially for urban areas. The example data system described and tested as part of this project documents the useful potential which assessor records have for plan monitoring purposes.

TABLE VII-2

GENERATED DATA BASE VARIABLES ASSOCIATED WITH PLAN MONITORING DATA NEEDS

Selected Plan Monitoring Data Items (from Chapter III)	Generated Data Base Variables (from Table VII-1)	Geographic Designation (from Table VII-1)	Method of Application	Comments
(3-1) Number of acres added to or subtracted from EFU zones.	1,4,7b	C,D	Summarize by area.	Includes EFU in farm use only.
(3-3) Development and land use actions approved on EFU zoned land and on property adjacent to EFU zoned land	1,7b,9	A,B	List, plot and overlay.	Includes EFU in farm use only.
(5-1) Development occurring on or immediately adjacent to designated and inventoried Goal 5 sites.	1,9	A,B	List, plot and overlay.	
(5-2) Acres added or subtracted from the open space inventory.	1,4,9	A,B	List, plot and overlay.	
(7-2) Type and location of developments and type of safeguards required.	1,9	A,B	List, plot and overlay.	
(9-3) Amount and location of recent land development.	1,4,9	A,B,C,D	Summarize by area; list and plot.	
(9-5) Amount and location of developable commercial and industrial land.	1,4,7a,9	A,C,D	Summarize by area.	
(10-1) Number of housing units added to or subtracted from the total housing supply by type and size of unit.	1,3,4,9	A,C,D	Summarize	Does not include apartments.
(10-2) Number of acres zoned or planned for residential development by type and maximum densities.	4,7a,9	A,C,D	Summarize by area.	Maximum densities not indicated.

TABLE VII-2 (Continued)

Selected Plan Monitoring Data Items (from Chapter III)	Generated Data Base Variables (from Table VII-1)	Geographic Designation (from Table VII-1)	Method of Application	Comments
(10-4) Housing costs by type.	3,6,9	A,C,D	Summarize	Average or median value (not cost). Apartments not included.
(10-5) Condition of housing stock by geographical area.	3,12,9	A,C,D	Summarize	See "Appraisal Methods Manual" for limitations and use. Apartments not included.
(12-2) Development affecting traffic demand or hindering future capacity expansion.	1,4,9	A,C,D	Summarize by area.	
(14-1) Development approved by type and geographic area in the urban growth boundary.	1,4,9	D	Summarize	
(14-2) Development by type within the urban growth boundary and available urbanizable land by zoning and characteristics within city limits.	1,4,7a,9	C,D	Summarize	
(15-1) Type and location of development, activities and land use actions.	1,4,9	A,B	List, plot and overlay.	
(16-4) Developments and activities by type, area, location and impact.	1,4,7c,9	A,B	List, plot and overlay.	
(16-8) Type, location and extent of developments and activities creating discharges, sedimentation, or reduced stream flow.	1,9	A,B	List, plot and overlay.	
(17-2) Type, size and location of developments and land use actions allowed in "natural" shorelands.	1,7c,9	A,B	List and plot.	

TABLE VII-2 (Continued)

Selected Plan Monitoring Data Items (from Chapter III)	Generated Data Base Variables (from Table VII-1)	Geographic Designation (from Table VII-1)	Method of Application	Comments
(17-11) Location, type, extent of developments and activities affecting riparian vegetation.	1,9	A,B	List, plot and overlay.	
(18-6) Type, extent and location of developments and land use actions approved for beach and dune areas.	1,7c,9	A,B	List, plot and overlay.	

APPENDICES

APPENDIX A
MONITORING SYSTEM CONCEPTS AND EXAMPLES

I. Monitoring Concepts

This appendix discusses and illustrates various approaches to planning data collection, storage and application which are pertinent to comprehensive plan monitoring. It focuses on planning data systems which have been developed and implemented in Oregon and for which documentation is available. Systems on several levels of complexity are included, from relatively simple manual systems to complex computer-based land data systems.

In all cases but one these "systems" consist of planning data collection and storage activities which 1) are readily identifiable but which constitute only a portion of the planning data collection and application activity of the jurisdiction, 2) are general plan data systems which address a range of data needs in the jurisdiction and which were not designed exclusively for comprehensive plan monitoring, and 3) do not address all comprehensive plan monitoring needs of the jurisdiction because of limitations imposed by their design or scope. Examining these systems in light of plan monitoring data needs provides insight on how monitoring fits with other planning activity and on how a planning data system might be designed if monitoring is to be an important application.

Important Monitoring System Output

In order to be useful for plan monitoring purposes a planning data system must be capable of providing several types of information:

1. State of the region or community--This output describes the conditions of a population or geographic area at a particular point in time. Examples include residential or industrial vacant land or housing inventories, employment levels, or measurements of resource quantities or qualities. This information in and of itself is of limited use for monitoring purposes, although it plays other important roles in a planning process.

2. Community or regional comparisons between time periods--If the information in (1) above is available for two or more time periods, comparisons can be made. This would allow estimating,

for example, changes in housing or industrial vacant land inventories, resource quality changes, or public facilities capacity changes. Locational aspects of these changes can also be analyzed by comparing the distribution at the two time points. For example, vacant residential land can be inventoried by location for each time point using the same locational boundaries and compared by location, showing changes in the locational pattern of lands which are vacant. Measuring changes over time is an important component of monitoring, and the ability to do so is fundamental to any monitoring information system.

3. Components of change--Although comparing the state of a community at two points in time allows measurement of changes which have occurred, further detail regarding the components of this change is very valuable. For example, a net increase in vacant residential land inventory generally consists of changes in zoning, conditional use permit actions, annexations, plan amendments, and other actions affecting the use and availability of land, as well as construction and demolition activity. Knowing the individual contribution of each of these components, as well as the total net effect on the land inventory, is very valuable for monitoring purposes, in particular for analyzing policies and procedures in the plan which affect land inventory changes. Components of change information in other planning policy areas is similarly important.

The sections below which review examples of planning information systems in Oregon describe how these informational needs are met.

Several format options are available for reporting monitoring information, each with its particular advantages and application. Mapping is particularly useful for showing the state of a community at a time point, and if separate maps or overlays are available for multiple time periods, additional maps can be produced showing changes which have occurred. For situations where the mapped information is not very complex and change is relatively slow this system can be quite satisfactory. Its major shortcoming is its inability to easily show quantitative summaries at either particular time points or of changes between time points. Unless the maps are augmented with the necessary data--such as parcel sizes or the number of housing units--and the maps contain information on more than one characteristic--such as zoning and plan district as well as land use--preparing quantitative summaries is difficult. Mapping also does not show components of change information well because of its complexity, although summary maps of such information can be prepared, if desired. An example might be a map showing new residential construction by type of unit.

Tabular formats are particularly useful for summarizing monitoring information, and can take a variety of forms depending on the data display needs. Such tables also can be augmented with mapped display of selected information to show distributional patterns.

Monitoring data may also be maintained in the form of files which can be accessed for analysis as desired. An example might be a file prepared from building and demolition administrative records which summarizes pertinent data and which can be accessed in order to prepare tables and/or maps showing the characteristics of this activity over the time period which the file covers. The preparation of files such as this reduces or eliminates the need to scan basic permit records more than once, yet maintains the option of repeated data analysis. In many cases the use of a computer for storing and managing such files is beneficial, although manual approaches can also work if the file content is not large.

Geocoding Options for Administrative Data

Geographic coding and reporting of planning data is necessary for nearly any monitoring application. Mapped information is the simplest form of such coding, where parcel, land unit, administrative action and other information is recorded and displayed using an underlying map as a reference system. Many monitoring (and other) plan data applications require data aggregation in tabular form, however, often associated with a geographic reference system so that distributional characteristics are illustrated. Therefore it generally is necessary to include geographic references (geocodes) in any assemblage of data gathered from administrative records.

A variety of options are available for coding data with respect to location. Each of the plan data systems described below have elected certain alternatives. The following are the primary choices available.

1. Township/Range/Section (TRS)

This is the most traditional method of identifying the location of tax parcels for taxation and other recordkeeping purposes. Its strength lies in its use within a wide variety of situations, but in particular as part of all tax record systems. The most detailed form locates parcels to the quarter of a quarter of a section level, which represents a land unit approximately 1320 feet square.

It is common, however, that the boundaries of sections and section components do not correspond with political, administrative and geographic units, and thus can be of only limited use for representing these areas. In addition a unit of quarter/quarter section size is still somewhat large for purpose of planning data aggregation in metropolitan situations, although for broad planning and monitoring application it can be useful, as discussed in the body of this report.

2. Census Districts

Census districts include tracts, enumeration districts and block groups, as well as the other large census districts which are aggregations of these smaller units. Although these districts commonly are used by planners who utilize census data they often are not used for geocoding other planning data. Building permit

records, for example, generally do not include tract or other census location.

Using the smaller census districts would have certain advantages in relating planning data to census data. Blocks, block groups and enumeration districts are small enough to serve as useful units for aggregating and reporting data, particularly the sub-tract districts, and have boundaries which tend to be relatively stable over time. Census tracts also have fairly stable boundaries, although changes do occur from census to census, particularly in urbanizing areas.

3. Political or Administrative Boundaries

Political or administrative districts include school, fire, improvement or other districts, electoral districts, districts established by individual service agencies (such as the police department), or a variety of other forms. Examples which are central for planning include the urban growth and service districts, and plan units such as comprehensive planning or transportation districts. Most or all of these districts are too large, and/or the boundaries too fluid to be of much use for monitoring data geocoding. An exception might be a planning district system which is established and maintained for purposes of geocoding planning data. Transportation planning districts are sometimes identified in this manner.

4. Address

Addresses are very useful for geocoding purposes for parcels and for housing, commercial or industrial units in that each unit has a unique address which can be located exactly (or nearly so). Addresses in and of themselves are of limited use unless they are aggregated into larger districts, however. Their strength lies in the flexibility by which they can be aggregated into nearly any other geographic districts if some means of identifying addresses with these districts is available. Addresses are included on a wide variety of planning-related administrative records which relate to actions on a particular parcel for a particular housing or other unit, such as building permits or variances.

Addresses are not always available for rural parcels, however, or for individual parcels within a subdivision which is not platted, limiting the usefulness of addresses as geographical locators of parcels in outlying or urbanizing areas.

5. Zip Code

Postal zip codes are one form of address geocoding aggregation which have the advantage of being part of the addresses themselves. There are major disadvantages for using ZIP ocdes for geocoding purposes, however, except in the case of applying available data. ZIP code boundaries are established for purposes of organizing mail

delivery and often do not correspond to geographical districts which are relevant for planning analysis. ZIP code districts are also fairly large in suburban or rural districts.

Certain available data can easily be aggregated by ZIP code, however, and under some circumstances this approach can be very expedient. An example is employment data by industry, available from the Oregon Department of Human Resources as a listing of firms with addresses and employment and payroll counts. Aggregating these data by ZIP codes can be done relatively quickly, compared to the process of using the addresses to aggregate to other geographic districts.

6. State Plane Coordinates

The State Plane Coordinate system is established for purposes of identifying geographical locations with great accuracy and is excellent for planning geocoding purposes except for the difficulty of assigning coordinates to parcels. The two largest plan data systems in Oregon both assign coordinates to individual land parcels, and these coordinates are subsequently used within these data systems to locate and aggregate parcels and to assign other variable values to each parcel.

Like an address, however, coordinates are useful primarily in that they allow parcel aggregations to larger districts of the planner's choosing. Aggregating in this manner requires some means of assigning parcels to the proper districts, and is practical only on mechanized systems. Moreover, coordinate values must be associated with all parcels and parcel actions which the system includes, such as building permit actions. The former is generally mechanized, and the latter requires either a mechanized or complex manual approach since coordinates are not a part of the administrative records which are important for monitoring purposes.

7. Grid Systems

Grid systems rely on a geographic reference net which is overlaid on a map, thereby identifying map units of uniform size and which can be readily identified and related to any parcels or other units on the underlying geography. Their advantage is that they can be uniform and stable and serve to organize the aggregation and organization of a wide variety of planning data. Certain land resource analysis systems use a grid reference system, and grids have often been used for large-scale transportation planning analysis.

Grids have the disadvantage of not relating to the geographic, administrative and other districts which are of interest to planners, although if grid size is small enough then these districts can be approximated by grid aggregations. Grid locations are also not included on planning-related administrative records, requiring that grid locations must be assigned in some manner. This is a complex procedure if the number of grids is large.

The use of quarter/quarter sections as geocoding districts is a modified form of a grid system where grid lines were established for purposes of land division and record keeping for tax purposes. Although applying this grid system shares the problems of any other, it has the advantage of the grid location being a widely used locator for parcels and administrative actions relating to parcels. The use of these grids is discussed in Appendix B.

II. Examples of Monitoring Applications

The following sections describe selected examples of planning data systems from Oregon county and municipal jurisdictions and discuss how these systems can be used for plan monitoring purposes. The intent is to illustrate how a variety of different types of data systems--from sophisticated computer-based systems to relatively simple collections of administrative record data which are processed manually--can be adapted and applied to plan monitoring needs. Each section contains a brief description of the system, followed by a discussion of what data are included and how they are stored. The application of the system for monitoring purposes is then discussed, including a review of the system's strengths and weaknesses for this application.

Columbia River Estuary (CREST) Permit Monitoring System

A. Overview

CREST was formed to assist in resource management and planning relating to the Columbia River estuary. The project includes representation of county, municipality and port jurisdictions at the mouth of the Columbia. Beginning in 1980 CREST began collecting administrative records relating to all permit actions in the Columbia Estuary area and preparing regular reports which summarize this activity. These administrative records derive from a variety of agencies, including federal (e.g., Corps of Engineers) and state (Division of State Lands). Although this activity is limited in scope and purpose it is included here to illustrate how administrative records can be used for monitoring purposes. CREST also systematically collects research materials, media reports and other published information pertaining to the Estuary and makes its collection available to a variety of users.

B. Data Included

The primary monitoring data collection and the reports which derive from it consist of file materials and logs of permit actions in the Estuary. A file on each permit is maintained, referenced by permit number, and a summary log prepared each month which includes the permit application, date of application, a permit reference number, a brief description of the permit request, and a summary statement about CREST action with regard to the request. This summary is included in a monthly report to DLCD. No

additional analysis is regularly performed on these data, although the files and logs are maintained for additional use if desired.

Additional material is gathered and maintained as a library, including data on water quality measurements, other research on resources quality, habitats or other important features of the Estuary, media reports on a variety of topics relating to planning and resource management, research materials from other locations which relate to local planning needs, and a variety of other materials. Approximately 30 to 40 acquisitions are added to the library each month. At one time a computer-based indexing system was used; currently a manual card catalog serves this purpose.

C. Data Storage

Storage is as files, reports and materials collections, and logs of permit actions. Manual methods are used throughout.

D. Data Access for Monitoring Purposes

Access to primary data on permit activity in the Estuary area is simple in that files, logs and other materials are comprehensive and readily available. Conditions of important resources can be summarized to the extent that research and other data are included, and the level and type of permit activity can be summarized from the permit logs. CREST's resource management specialization is reflected in its data management, however, so many broader aspects of planning are not represented.

Analyses of changes in the area, such as changes over time in resources quality or development activity, can be prepared to the extent that data are available, but doing so requires manually recording and analyzing data from the sources which CREST maintains. The permit logs can be analyzed, for example, to review the type, location, applicant and other characteristics of changes occurring in the Estuary. CREST does not regularly prepare summaries such as this.

Components of change information can also be gathered from CREST's data sources to the extent that permit files and other materials include the information necessary. As in other cases, however, the extent of analysis is limited by the scope of the material available and by the limitations of manually accessing and applying a primary data collection.

E. Primary Advantages for Monitoring Applications

CREST has succeeded in establishing a system by which nearly all administrative actions relating to the Columbia Estuary area are monitored and recorded, including administrative actions which do not involve public decision-making bodies. Primary material on these actions is maintained, with a summary log for reference purposes. In addition research and other materials are regularly collected and made available. This collection of materials represents a very useful source of primary monitoring data which can be applied to a variety of needs.

F. Primary Weaknesses for Monitoring Applications

The rather narrow topical focus and the limited amount of ongoing analysis restrict the monitoring applications of this information.

Geographic Land and Data System (GLADS)

A. Overview

This project was initiated in 1977 primarily to develop a new map base for Salem and Marion County, using a computer-based mapping system. The system also has the capability of storing and retrieving non-graphic data associated with mapped land units, greatly enhancing its capability for plan monitoring purposes.

Currently the system is oriented primarily to completing a 1:100 map base sufficiently accurate to satisfy assessment and taxation map requirements and the needs of public works departments. Existing maps are digitized and additional material, including new survey information, is added, reviewed and corrected in several steps until sufficient accuracy is achieved. Once an individual map has been approved for assessment and taxation purposes, additional map features can be added, as well as non-graphic information such as parcel characteristics.

The system allows users to specify the information which is desired on a map it produces. For example, one can request utility location information on a parcel base map. The system also has the capability to produce tabular summaries of information associated with mapped land units, although this capability is currently not well developed.

User involvement in system design, development and ultimate application has been ongoing. Although taxation and engineering departments are currently the primary users, a wide variety of city and county departments are expected to participate. Ultimately it is intended that each department will have the responsibility for updating and otherwise maintaining those portions of the data files which pertain to their operations, which is a much more decentralized approach to file maintenance than is commonly seen.

Currently between 40 and 50 percent of the Salem metropolitan area maps have been completed. When the entire metro area is covered the project will move on to other urbanized areas in the county and to the county's rural lands.

B. Data Included

The system is capable of including a wide variety of information which can be associated with mapped land units (such as individual land parcels) and reported either in a map format or as tabular summaries. Currently only a limited portion of this capability is used, however, and it is unlikely that much attention will be given to it until basic mapping

activities are completed. Table A-1 shows a selection of the variables included in the file structure for each tax parcel. A wide variety of additional information on other file components, such as roads, survey points and boundaries, and public facilities is also part of the file organization.

The tax maps, once prepared, are updated by monitoring administrative records showing tax lot, boundary, and other changes. A cooperative administrative system among city and county departments has been developed for purposes of processing this information.

The system is maintained in an up-to-date state, with changes entered on the map base on an on-going basis. No maps or tabular summaries are generated and saved for particular time points other than for backup data-set security purposes, although they could be if desired.

C. Means of Data Storage

The entire GLADS system is based on a CALMAgraphic system purchased on a turnkey basis. The system includes a computer and disk storage devices, as well as the digitizing tables, monitors and keyboards, and other devices necessary to input data and produce the desired maps and other output. The procedures by which data is entered, stored and accessed is determined by the system's software packages, and is oriented towards map preparation and production.

D. Data Access for Monitoring Purposes

Specific means by which the GLADS system can be utilized for monitoring purposes are difficult to discuss with any specificity because of the limited system development to date and the emphasis on tax map preparation. At present the system can easily produce parcel and other maps and describe at least limited parcel characteristics, depending on the parcel information which has been entered. The ability to sort parcels other than on map geography is not developed, however, limiting the usefulness of the system for preparing inventories and other related products.

The system's lack of historical structure is also a serious drawback for monitoring applications, although a series of "snapshot" summaries as time goes on can be prepared and saved which would allow for monitoring-related data comparisons. As with the LCOG system these comparisons would be made between summaries representing identifiable time points. Whether the GLADS system would allow such comparisons to be made as a computer application is not ascertained. Finally, components of change information is not available on this system, although it could be gathered from the stream of administrative records involved.

E. Primary Advantages for Monitoring Purposes

This system has considerable potential as a monitoring data base, although little has been developed to date. It can include a wide variety

TABLE A-1

GLADS Primary Parcel Data File Contents

(PARCENT file)

TAX COLLECTORS NUMBER
RESERVE NO 2
SPECIAL INTEREST
SEE PARCEL SUPLEMENT
ASSESSOR MAP NUMBER
PARCEL NUMBER
STREET ADDRESS (SITUS)
HOUSE SUFFIX
STREET NAME
STREET TYPE
DIRECTION PREFIX
DIRECTION SUFFIX
APARTMENT NUMBER
LAST 3 ZIP CODE NUMBERS
SUBDIVISION NAME
BLOCK NUMBER
LOT NUMBER
LOT SIZE IN ACRES ONLY
BUILDING-STAT CLASS
LAND VALUE
YEAR LAND APPRAISED
IMPROVEMENT VALUE
TOTAL VALUE
YEAR IMPROVEMENTS APPR.
APPRAISED BY NUMBER
PERCENT GOOD
CONDITION
APPRAISAL SUBZONE
PRIMARY ZONING
MULTIPLE ZONING
PRIMARY SCHOOL DISTRICT
MULTIPLE SCHOOL DIST.
CITY CODE
PRIMARY FIRE DISTRICT
MULTIPLE FIRE DIST.
PRIMARY SEWER / WATER DIST.
MULTIPLE SEWER / WATER DIST
SPECIAL TAX DISTRICTS
PROPERTY CLASS
PRIMARY DEED VOLUME
DEED PAGE
SELLING PRICE
DATE OF SALE

SALE REJECT CODE
YEAR CONSTRUCTED
EFF. YEAR CONSTRUCTED
BUILDING SQUARE FEET
CONSTRUCTION CODE
AC
LAND USE CODE CD
LAND USE DESIGNATOR CD
COMP PLAN DESIGNATOR CD
RESERVED

TAXLOT NUMBER
ZONING NUMBER 1
ZONING NUMBER 2
ZONING NUMBER 3
ZONING NUMBER 4
VARIANCE I.D.
ADJUSTMENT ID
CONDITIONAL USE I.D.
CONDITIONAL USE
ZONE CHANGE
CHANGE FROM
CHANGE TO
CONDITIONAL ZONE CHANGE
CHANGE FROM
CHANGE TO
SUB. TO APPR. OF SITE PLAN
CHANGE FROM
CHANGE TO
SCHOOL DIST. 1
SCHOOL DIST. 2
SCHOOL DIST. 3
SCHOOL DIST. 4
FIRE DIST. 1
FIRE DIST. 2
FIRE DIST. 3
FIRE DIST. 4
SEWER / WATER DIST. 1
SEWER /WATER DIST. 2
CODE SPECIAL DISTRICTS
RESERVED

of useful parcel and boundary information which can be summarized in map and tabular form and compared between time points if a historical record is maintained.

F. Primary Disadvantages for Monitoring Purposes

The system's specialization for tax map preparation, both in structure and in data inclusion priorities, limits its monitoring applications, at least until additional data is included and further software development is completed. It is unlikely that this augmentation will take place until the primary tax map preparation process is completed, which may be some time in the future. The ultimate applicability of the system for monitoring purposes, in particular its flexibility and ease of use for this type of analysis, is untested to date.

Lake Oswego Planning Map System

A. Overview

The planning data system developed by Lake Oswego is used by a variety of city departments and others within the community and has good monitoring capability. It is a manual, map-based system which is adapted to a relatively small community with limited resources but including the necessary cartographic staff capability. The system consists of base maps at 1:200 scale for the entire community, prepared from 1:100 assessor maps, on which a variety of land and facilities data are overlaid. Maps are periodically updated using administrative records from planning and other city departments. A selection of maps are assembled as a city atlas, including an overall 1:800 map of the entire city, and made available for sale. Other map copies at 1:400 scale are used for certain public facilities and other agency use.

B. Data Included

The base and overlay maps show individual land parcels and a variety of other information as listed in Table A-2. For reporting purposes a number of overlays can be placed together for duplication.

The base map and each overlay were prepared using the available data sources, and field checked as necessary. Care was taken to record the data on the overlays in as standardized a manner as possible.

The base map and overlays are updated periodically from building permit and other records which are collected and made available by various city departments. The small size of the jurisdiction and the level of cooperation facilitate this process. Updating is done on the original mylar map copy; only a blueprint of the base map is kept.

No tabular data is maintained as part of the system; any tabular summaries desired are prepared manually by measuring and recording from the

TABLE A-2

Lake Oswego City Atlas Map Contents

1. Base and lots with streets, apartments, condominiums, plexes
2. Addresses
3. Firehydrants, schools, churches, major freeway interchanges and mile-posts, buildings, golf courses, streams, lakes, reservoirs, swimming pools, lake easements, and bridges
4. Storm sewers
5. Topography
6. City Limits
7. Streets - City and County jurisdiction
8. Natural hazard areas
9. Hydrologic features - basins
10. Sanitary sewers and pumps
11. Water lines
12. Existing land use
13. Zoning
14. Comprehensive Plan
15. Previous zoning actions
16. Water meters
17. City-owned land
18. Utility easements
19. Soil Classifications
20. Slope Percentages
21. Existing Vegetation
22. Transit routes and stops
23. Police protection boundaries
24. Subdivision boundaries
25. Location of Pressure regulators
26. Neighborhood Association boundaries
27. Parking
28. LID's
29. Census tracts

base and overlay maps. Certain city departments, including the police and fire departments, overlay a grid on the base map which is used for maintaining and reporting the information they need. The grid systems are not standardized across all departments.

C. Data Storage

The form of the system determines the data storage format, namely units recorded on maps. A separate parcel listing is under preparation, consisting of a card file which is manually prepared and accessed. The contents of the file on each parcel are shown in Table A-3, which is a copy of the two-sided card used for this purpose. The information on these cards will form the base of a computerized parcel information system at some point when the necessary resources become available.

D. Access for Monitoring Purposes

The system serves very well for displaying the state of the community at a point in time. Access involves using the maps directly, or summarizing the needed information in tabular format by recording and aggregating mapped information in the desired manner. For relatively simple summaries, this approach is not very time consuming.

Analyzing net changes between designated time periods is more complex, but can be done if copies of the base map and overlays are maintained so comparisons can be made. This process involves either preparing tabular summaries at each time point and then comparing between time points, or preparing a map illustrating the changes of interest and then preparing a tabular summary of this map. This procedure could be quite time consuming if a number of comparisons are needed.

Components of change are not recorded directly on the plan maps, although they are used for map updating. If this information is maintained in some manner, either as raw data files of permit forms and other records or as a summary file of some type, then components of change summaries could be prepared as desired. Since an administrative system has been developed to collect and use this permit and other information as part of map updating, this information should be very accessible. Both tabular and mapped summaries of the desired information could be prepared, with the latter making use of the available base maps.

E. Primary Advantages for Monitoring Purposes

The strength of the system lies in the systematic collection, maintenance and reporting of planning data. The state of the community, and to a limited extent the changes which have occurred, can be seen easily. The base data for tabular summaries is readily available, in particular for describing the state of the system and the components of changes for a chosen time period.

TABLE A-3

Lake Oswego Address File Contents

TAX SECTION _____ TAX LOT _____ SITUS ADDRESS _____

SUBDIVISION _____ LOT _____ BLOCK _____ PLAT MAP # _____

ATLAS PAGE _____ SET-BACKS _____ ACREAGE _____

SEWER MAP # _____ WATER MAP # _____ STORM SEWER MAP # _____

LAND USE — PRESENT _____ COMP. PLAN _____ ZONING _____

WIDTH OF PAVEMENT _____ WIDTH OF RIGHT-OF-WAY _____

SIDEWALK _____ EASEMENTS _____

HEARING BODY FILE #'S _____

LID DISTRICT #	TYPE	ASSESSMENT	HOW PAID

OWNER _____ PHONE NUMBER _____

OCCUPANT _____ PHONE NUMBER _____

PERMIT NUMBERS _____ BUSINESS LICENSE NUMBER _____

AGE OF BUILDING _____ NO. OF STORIES _____ BASEMENT _____ NO. OF BUILDINGS _____

SERVICE — PROVIDER		AVAILABLE	CONNECTED	DEFFERED
WATER				
SEWER				
STORM				

F. Primary Disadvantages for Monitoring Purposes

Because the data is map-based the preparation of tabular summaries is time consuming, particularly if summaries of change over time are required. Unless summaries of the administrative records used for map updating are maintained any summaries prepared from these also require considerable effort to produce.

Lane Council of Governments (LCOG) Regional Information System

A. Overview

This is the most comprehensive and sophisticated planning data system in the state, and is one of the most highly developed in the U.S. It is developed from assessor's data--parcel tax records and tax maps--but includes a wide variety of additional data which have been added from other sources. All areas of the county are covered by at least basic parcel tax data; parcels in the Eugene/Springfield metropolitan area and the other smaller communities in the county are covered in the greatest detail. The system's files are maintained on disk storage and are accessed by the LCOG computer. The various files are used by many city and county departments, as well as by users in the community, and are a primary source of planning data throughout the county. The system includes on-line access through a network of terminals, although most complex planning analysis utilizes batch output from a high speed printer.

B. Data Included

The system consists of seven primary files, plus other more specialized files, and the software necessary for data entry, editing, analysis and reporting. All land parcel boundaries are recorded and associated with individual parcel data, allowing plotting of parcel boundaries in conjunction with individual parcel information such as zoning, land use or assessed values.

The content, source and primary use of each of the seven files are summarized in Table A-4. The first four files--the Assessor's, Parcel, Boundary and Address files--constitute the primary sources of information within the system. Each is derived from tax assessor, boundary or other data by accessing and editing available files, digitizing available maps, or conducting field checks and other forms of original data collection. Verification is done as necessary to assure that the data entered is as accurate as possible.

Files are updated annually so as to maintain a data system which is accurate at the end of each year. Typically this update is completed approximately nine months to a year after the reference date. A comprehensive system of collecting and analyzing administrative records has been developed as part of this updating process. Essentially any action which affects parcel characteristics is monitored and fed into the updating procedure. Given the size and complexity of the county and the municipalities it contains this requires considerable coordination.

TABLE A-4

LCOG Data System File Structure

File	Example of Content	Source	Primary Use
Assessors	Parcel list including tax codes, tax lot number, owner name and address, assessed values, etc.	Assessment and Taxation Department	Primary source of parcel descriptive information
Parcel	Tax lot number, land use code, number of units, site coordinates, area and centroids, etc.	Digitized from tax maps, with additional data added. Area and centroid calculated. Matched and checked against assessor's file.	Primary source of boundary coordinates and parcel centroids
Boundary	Coordinates of area boundaries useful for reporting and analysis, eg., census tracts, zoning and plan districts, school districts.	Digitized from appropriate boundary maps	For locating parcels within boundaries and assigning location codes, using point-in-polygon software.
Address	Site address, map and lot number, land use, census tract, address coordinates, etc.	Derived from parcel file	On-line address information; assigning coordinates to parcel addresses in other files.
CAPTAPE	Summary geographic information. Includes contents of parcel file, assessor file and boundary files, less coordinates. Contents listed in Table A-5	Derived from constituent source files	Primary source for parcel analysis; can be accessed using standard analysis software.
VARREF	CAPTAPE contents plus parcel coordinates	Constituent files	Plotting source file
Superfile	CAPTAPE contents plus address file plus owners name and address	Constituent files	Matching parcel information to address lists

The three files at the end of Table A-4 are summary files derived from the preceding source files. These are used for most planning analysis purposes. Each is designed for efficient use for specific purposes; most planning analysis makes use of the CAPTAPE file for parcel analysis and the VARREF file when plots are desired. CAPTAPE contents are shown in Table A-5.

C. Data Storage

Primary storage is as parcel records, with coordinates of boundaries and centroids of parcels and other map units included which allow producing a wide variety of plots. Disk storage is used for most data, although tape storage was used for the larger files in the past.

A variety of plots are prepared on a periodic basis for counter and other reference use. Summary parcel reports are also prepared and maintained which include data commonly needed for various planning purposes.

D. Access for Monitoring Purposes

The system is highly accessible, and the flexibility of use allows nearly any data application. Since the system is based on a parcel file it consists of a "snapshot" of the county at a certain time point, and hence is extremely valuable for purposes of describing existing conditions, preparing parcel inventories, or conducting other planning analysis which does not depend on measuring change over time.

Analyzing net changes between designated time points involves comparing files from the two time points. This is relatively simple if the necessary data at each time point can be summarized from the respective data files, and then the two summaries compared as desired. This form of analysis is commonly conducted by LCOG and other system users. Standardized files are maintained back to 1976, and files can be edited to achieve boundary and other compatibility, if desired. As long as files are maintained which represent past time points this procedure can be used relatively easily.

The data system itself does not allow easy analysis of the components of change. Although the administrative records and other data are methodically collected and used for file updating, this is a more or less continuous process which does not involve preparing a comprehensive summary of change components. Where these components are analyzed by a city department--for example by the Eugene Planning Department when preparing their quarterly developable residential lands summaries--the necessary administrative records are accessed and analyzed directly, although the results of this process can be checked against the current parcel file content. If a summary file of change components information were maintained as part of the updating process a very thorough monitoring analysis would be possible, at least of those data items included in the system.

TABLE A-5

Lane Council of Government Planning Data System

(CAPTAPE contents)

MAP TAXLOT
RECORD TYPE
LAND-USE
USE-CODE
UNITS
FLOOR
ACREAGE
STREET
VALUE
TAX CODE
TAX CODE SPLIT
SCHOOL DISTRICT
PROPERTY CLASS
STATISTICAL CLASS
OWNER
OWNER OCCUPIED
PARTIALLY OWNER OCCUPIED
YEAR BUILT
PLAN USE 2000
CITY
YEAR ANNEXED
ZONING
SCHOOL ATTENDANCE AREAS
NEIGHBORHOOD GROUP
PARK DISTRICT
WATER DISTRICT
FIRE DISTRICT
SOIL TYPE
SOIL CATEGORIES
FLOOD PLAIN
GREENWAY
1980 CENSUS TRACT
URBAN GROWTH BOUNDARY 2000
OLD MAPLOT
1980 TRANSPORTATION ZONE
1980 BLOCK GROUP AND ENUMERATION DISTRICT
NUMBER OF STATISTICAL CLASSES
YEARS BUILT
REGION
COORDINATES

E. Primary Advantages for Monitoring Purposes

The comprehensiveness of the system, and the thoroughness with which data is collected and included as part of the updating process, make this system a highly valuable source of monitoring information. The ability to specifically select parcels in designated areas, such as within the urban growth boundary but outside city limits, or within designated neighborhood areas, which can then be analyzed for land use, density, parcel size, housing density, or other characteristics, is particularly valuable, more so if this analysis is conducted for different time points and the results compared as a means of measuring net changes. Few systems anywhere have this much capability.

The wide variety of geocoding options is important to the system's flexibility. Traditional township/range/section and map and tax lot identification is possible, as well as census tract, political and administrative boundaries, state plane coordinates, and geographic boundaries such as floodplains and agricultural and resource land districts. This capability allows the user to select nearly any combination of parcels desired which can then be analyzed as necessary.

F. Primary Disadvantages for Monitoring Purposes

The lack of change components information is a disadvantage from a monitoring perspective, although the administrative system developed for updating purposes makes this data available if further applications are desired. In addition the system does not include all information necessary for certain important monitoring data--local economic data in particular--but these data are available from other sources.

The costs of the system, both for initial development and maintenance, are considerable and beyond the current means of most jurisdictions. System development required many years of effort and expenditure of local funds, plus limited federal support during the early development stages.

APPENDIX B
AN EVALUATION OF THE POTENTIAL USE OF REAL PROPERTY RECORDS FOR COMMUNITY PLANNING PURPOSES

Introduction

The collection, editing and updating of data for comprehensive plan monitoring may prove to be time consuming and expensive for many local planning agencies. A relatively simple and inexpensive means of utilizing existing automated administrative records for planning purposes would be very beneficial for monitoring, as well as for other planning applications. The county assessors' files have frequently been suggested as a potential source for some of the information needed for plan monitoring, but research to determine methods for utilizing these files for planning purposes has been limited.

As part of the development of a comprehensive plan monitoring system, a specific study was conducted to determine the feasibility of using Oregon county assessors' real property files as data sources for continuing planning and plan monitoring.

Study Objectives

The development and maintenance of real property records in Oregon is the responsibility of the county assessor of each county. While the form and content of these records varies from county to county, all counties are required by statute and by State Department of Revenue administrative rules to follow certain specific procedures in maintaining real property files. Some of these procedures define data items to be included and coding systems that must be used. Additional procedures and coding systems are approved and recommended but are not required.

Since the primary use of the real property files is for the assessment of property values, the content and coding of the files are designed primarily to accommodate that use, and critical problems arise if attempts are made to summarize data directly from these records for land planning purposes. However, it has been hypothesized that with some recoding and assignment the assessors' data could be used as a data base for planning analysis and monitoring.

The primary objectives of this study are:

1. To develop a system for reclassification and assignment of selected variables common to all or most county real property files to generate a data base that can be used for various planning purposes, including comprehensive plan monitoring.

2. To establish probable ranges of accuracy that could be expected from summaries of different types of data included in the generated data base.

Study Design

It was assumed that as a minimum the use of the proposed system should make it possible to produce summary tabulations of:

1. Total acres by general land use category.
2. Total number of housing units by type.
3. Average value of housing units by type.
4. Annual change in acres by general land use category.
5. Annual change in number of housing units by type.

The system should provide capabilities for producing summaries of these data by at least incorporated areas, unincorporated areas inside the urban growth boundary, and unincorporated areas outside of the urban growth boundary. In addition, it would be highly desirable to be able to cross-classify the above data by zoning category and to summarize the information by smaller geographic subdivision of the areas.

The development of a system for the conversion of real property codes to meaningful planning classifications began by selecting specific variables contained in property records. Nine variables were selected as having the highest probability of producing the types of data necessary. These variables were: 1) tax lot number, 2) property class, 3) tax code area, 4) acreage, 5) true land value, 6) true improvements value, 7) tax exempt status, 8) statistical or building class, 9) year structure built. Various code conversions could then be applied to a data file containing only these selected variables to create new variables with codes and values appropriate for planning use directly.

In order to establish relative accuracies of summaries derived from the property files, it was necessary to compare quantitative results using the proposed system with the same summaries from a separately developed data base having proven high accuracy. The Lane County Regional Information System is the most sophisticated and accurate continuing land use planning data system in the state and contains the types of data needed to make the desired comparisons so Lane County was selected for the tests and comparisons performed in the study.

In view of the large number of real property records in Lane County (over 110,000) it was decided to select specific geographic areas within the county that represented different types of development for use in the study.

Specific steps followed in the conduct of the study were:

1. Selection of variables for defined test areas from the Lane County Assessor's real property file. Generate a new file.

2. Selection of records from the Lane County Regional Information System for the same defined test areas.

3. Development of a recoding and assignment system to generate new planning variables and codes from property record variables.

4. Assign new codes to assessor's variables and summarize according to various areal and classification specifications.

5. Summarize Regional Information System records by the same data types for the same areas and sub-areas.

6. Quantify and compare the differences in the data from the two sources.

Study Data

Assessors' Real Property File

The assessor of each county in Oregon is required by statute to maintain an assessment roll of all taxable property in the county. In Lane County the real property file also includes tax exempt properties, but does not include street rights-of-way. Each assessor is also required to maintain a set of maps of the county indicating the boundaries and description (e.g., tax lot number or account number) of every ownership parcel.

Many data items are included in these real property files but only nine, which are common to most counties, were selected for use in this study.

1. Tax Lot Number. Some unique identifying description must be attached to every real property record. While various systems are permitted, a tax lot numbering system recommended by the Department of Revenue is used by all but four counties in Oregon, and two of those four are currently converting to the recommended system. This system consists of an eight digit map number indicating the township, range, section and if needed the quarter-section and sixteenth-section where the parcel is located. The number corresponds to a map in the assessor's set of maps on which the boundaries of the parcel are drawn.

For all counties using this system all parcel records are automatically coded to geographic subareas no larger than a section. In cities they are normally geocoded to sixteenth-sections (40 acres), parcels in suburban areas are usually identified within quarter-sections (160 acres) and rural areas are coded by section.

Using data records which include this geographic sub-area coding provides substantial potentials for the identification and quantification of patterns of uses within a community. A possible limitation is that ownership parcels are not necessarily co-terminus with section or sub-section boundaries and the map number assigned in the tax lot number only indicates the location of a major portion of the parcel. However, this consideration is not likely to be a significant limitation in built up areas.

2. Property Class. A property class designation is required to be included in the assessment roll, and the codes to be used are prescribed by Department of Revenue administrative rule. The purpose of this designation is to indicate what the assessor considers to be the "highest and best use" of the property. Since it does not necessarily represent current use it cannot be used directly as a land use code for planning analysis purposes.

The code prescribed is a three digit number, the first and last of which are defined by the Department of Revenue. The first digit represents the assessor's judgment of the highest and best use: 1 = residential, 2 = commercial, 3 = industrial, 4 = tract (other than farm, range or timber production), 5 = farm or range, 6 = forest, 7 = multiple housing (5 units or more), 8 = recreation (recreation homesites). For all but farm and forest classes the third digit of the code indicates whether the property is improved or unimproved. For farm class the third digit indicates the farm use tax deferred status: 1 = not tax deferred, 2 = all or part farm use tax deferred within an exclusive farm-use zone, 3 = all or part farm use tax deferred but not within an exclusive farm-use zone. For forest class the third digit indicates if part of the parcel is assessed at other than forest land value.

The use of the second digit of the code is optional, but the Department of Revenue has approved a coding system to be used to indicate if the parcel is urban, suburban, rural, has ocean frontage, has river frontage or lake frontage, and if farm class whether the parcel has a commercial orchard or is irrigated.

3. Tax Code Area. The assessor is required to establish a system of code areas, identified by code numbers, which represents all the various combinations of taxing agencies in each county as of June 30 of each year. Each parcel record includes this code, which makes it possible to aggregate data records specifically to any taxing district--e.g., city, school district, sewer district, etc. If an ownership parcel is split by a tax district boundary, two records may be created having the same tax lot number but with different tax code area designations.

4. Acres. The number of acres is required to be associated with an ownership parcel unless it is subdivided into blocks and lots. Acres of platted lots are not normally included in assessment rolls.

5. & 6. True Cash Value. Estimates of the true cash value of the land and the true cash value of improvements (all structures) must be included in each parcel record.

7. Tax Exempt Status. Each county assessor must submit to the Department of Revenue an annual summary of the true cash value of specially assessed and tax exempt real property. Therefore their records must contain some file or indication of parcels having tax exempt status. The Lane County assessor includes all tax exempt properties, including a tax exempt status code, in the real property file.

8. Statistical or Building Class. This code is not required, but the Department of Revenue has approved a coding system to describe specific types of buildings or improvements. If the approved codes are used this code can be used to identify single family units, duplexes, 3-6 unit apartments, commercial buildings, special purpose buildings, industrial buildings, and types of tax exempt properties. In Lane County if there are multiple uses on a parcel, two or more records may be created having the same tax lot number, the same acreage, different statistical classes and an improvement number in a separate field of data. A review of all county ratio studies (required annually of each county assessor to establish ratios between assessed values and true cash values) filed with the Department of Revenue for 1981 indicates that a majority of counties use the recommended coding, at least for residential properties.

9. Year Structure Built. The age of a structure is not a required data item for the assessment roll. However, it is a valuable component for use by assessors in completing required property tax ratio studies. The ratio studies for 1981 indicate that most counties include the age of structure, especially for residences. This is a convenient but not essential variable for monitoring annual changes in the use of property.

Lane County Regional Information System

The data set of the Lane County Regional Information System (RIS) which contains land use and zoning data is maintained and updated annually by the Lane Council of Governments. These data have been in use for over ten years and the procedures that have been developed and refined to capture and edit the data make it a very flexible and accurate planning data base. The variables selected from these records for use in this study were:

1. Record Type. The file contains three different types of records as indicated by a one digit number--a record for every ownership parcel on which there are multiple land uses, a separate record for each of the uses of the multiple use parcel, and a record for which the boundaries of the ownership and land use are the same.

2. Tax Lot Number. Included in all records. Matches the tax lot number contained in the assessor's real property file.

3. Land Use Code. A four digit numeric code describing the land use of each parcel or sub-parcel. The coding system is based on the Housing and Home Finance Agency/Bureau of Public Roads "Standard Land Use Coding Manual," January, 1965. The land use code has been determined from field observation and from building permits. The code is included only in the second and third types of records described above.

4. Housing Units. The number of housing units, as determined from field observation and building permits, is included in all three types of records.

5. Acres. The boundaries of all ownership and/or parcels have been digitized (positions on a map translated mechanically into machine readable numeric coordinate values) from the assessor's maps, converted to universal state plane coordinates and the area calculated using the coordinate values. The resulting acreage is included in all three types of records.

6. Zoning. The zoning category is included in all records. The specific alphanumeric codes vary from jurisdiction to jurisdiction, but aggregate general classes can be defined that are comparable.

Study Areas

Five separate areas in Lane County, each representing a different type of development, were defined for selection of data for this study. Street rights-of-way and water area are not included in the real property records.

The River Road test area (six sections) is a suburban district north of Eugene. It is entirely unincorporated and is divided by the urban growth boundary. Uses of land in this area are principally residential, undeveloped and agricultural.

The North Springfield test area (four sections) is partly within the corporate limits of Springfield and partly unincorporated. It is also divided by the urban growth boundary. There is a mixture of all types of uses within the boundary of this study area.

The South Willamette test area (four sections) is a densely built up district entirely inside the city limits of Eugene. The development in this area is primarily high and medium density residential, commercial and public uses.

The Crow test area (five sections) is rural agricultural land entirely outside of the urban growth boundary of the Eugene-Springfield area.

The Cottage Grove test area (parts of six sections) includes all property inside the city limits of Cottage Grove (1982 population 7,190).

The number and types of county assessor's property maps used to describe the location of the parcels in these areas is indicated in Table B-1.

TABLE B-1

Number of Maps by Type by Study Area

Type of Map	River Road	North Springfield	South Willamette	Crow	Cottage Grove
Section	6	3	0	5	2
Quarter-Section	8	2	0	0	2
Sixteenth-Section	11	36	61	0	40
Total	25	41	61	5	44

Methods and Procedures

Both the Lane County real property file and the Regional Information System data bases are fully automated and all data manipulations for this study were done using automated techniques. Specific computer programs were written to perform the special data handling operations needed to accomplish the study objectives.

Data Preparation

Based on the township, range and section designations in tax lot numbers, records of properties within the five defined test areas were selected from both the assessor's real property file and the Regional Information System file. A new data file of 17,423 records was created, each record containing only the desired variables from the real property file. A total of 18,409 records were selected from the RIS file and written to a separate data set. Of these, 15,988 were records whose type indicated that the boundaries of ownership and land use were the same, 648 were ownership records for parcels having multiple land uses, and 1,733 were records of sub-parcels which were split because of multiple uses.

The data of the RIS file was January 1981 and the data of the assessor's file was January 1982. In order to make the two comparable the selected data sets were matched on tax lot numbers and single records containing data from both the RIS and assessor's records were written for matched parcels. This resulting data base was used for the re-coding and assignment process. A total of 1,417 records were deleted from the

assessor's file and 1,772 were deleted from the RIS file because of no matching tax lot numbers. Examination of these deleted records indicated that most of the mismatches were a result of the difference in effective dates of the two data sources. In the period between the two dates the assessor had added more detailed maps for some areas and this added a quarter-section or sixteenth-section designation and a new lot number to the tax lot number. The tax lot numbers, but not the boundaries, were changed in most cases.

Parameter Assignments

Two components essential to the generation of a land use planning data base were not contained in the assessor's data: a code indicating whether a parcel was inside or outside the urban growth boundary, and the area of platted parcels. A technique was designed to permit local planners to provide assumed or average values to be used for these variables on a map by map basis in the re-coding and assignment process. For the study, visual analysis of subdivision lot boundaries and the distribution of lot sizes provided the basis for estimating and averaging platted lot sizes for each tax map. Separate assumptions were made for each of the 176 maps included in the study areas. Specifically, a separate parameter record was created for each map indicating what average area should be assigned during the re-coding and assignment projects to platted lots in that map and whether the entire map area should be considered to be inside or outside of the urban growth boundary. The re-coding and assignment program read these parameter records and created the essential missing variables for each record on the basis of the assumed values.

Re-Coding and Assignment

The generation of a planning data base for the study areas was essentially an iterative process. Initial assumptions were made regarding the land use categories that the parcels were to be assigned to, the sequence of assignments of land use and housing codes, and specific code conversion combinations from assessor's codes to land use codes. A program was written to assign land use codes, housing units, acres (when not included as a real property variable) and urban growth boundary designation to each record on the basis of the selected variable values and the assumed values from the parameter records. The detailed land use codes in the RIS records were also converted to the same generalized land use coding system.

The resulting values were summarized, analyzed, and modifications and refinements to the re-coding combinations were programmed and run. This process was repeated several times until what appears to be an optimum re-coding system was developed.

The final coding system provided thirteen general land use classifications: single family residential, two family residential, apartments, mobile home parks, recreation homesites, commercial and service, industrial and warehousing, education, religious and charitable, other private non-profit uses, government (four sub categories), undeveloped (including agriculture and forest) and other.

The sequence of steps and the final code conversions and procedures used in the re-coding and assignment process for each real property record are described below. An "X" in one of the assessor's codes indicates that any single digit numeric value is acceptable in that position. Conversions based on statistical class codes assume the coding system recommended by the Department of Revenue. Different codes adopted and used by various county assessors for comparable types of structures may be substituted for conversions in any specific county.

Each real property record was processed according to the following steps:

1. Assign urban growth boundary designation to record on the basis of parameter provided for each map--e.g., "I" = inside urban growth boundary, "O" = outside urban growth boundary.

2. If acreage value is blank assign area from parameter provided for each map.

3. If stat class = "81X" or other comparable exempt code, assign to "Government--County Owned."

4. If stat class = "82X" or other comparable exempt code, assign to "Government--State Owned."

5. If stat class = "83X" or other comparable exempt code, assign to "Government--Federal Owned."

6. If stat class = "84X" or other comparable exempt code, assign to "Government--Other Ownership."

7. If stat class = "85X" or "86X" or other comparable exempt codes, assign to "Religious and Charitable."

8. If stat class = "87X" or other comparable exempt code, assign to "Education."

9. If stat class = "88X" or other comparable exempt code, assign to "Other Private Non-Profit."

10. If property class = "5XX," assign to "Undeveloped." Also assume one farm homestead, create new record having one acre if parcel is greater than two acres or half the parcel size if it is less than two acres. Add one housing unit to new parcel and classify as "Single Family Residential." Subtract new parcel acreage from original.

11. If the property class = "6XX," then assign to "Undeveloped." If the first digit of the stat class is greater than "0" then create a new record having one acre if the area of the parcel is greater than two acres or half the parcel area if it is less than two acres. Assign land use code to the new parcel

on the basis of stat class code conversions described in steps 15-20. Subtract acreage of new parcel from original.

12. If the property class = "4XX" assign to "Undeveloped." If the first digit of the stat class is greater than "0" then create a new record and code as described in step 11.

13. If the property class = "8XX" or "8X1" assign to "Recreation Homesites." Also if the first digit of the stat class is "1" assign one housing unit. If the first digit of the stat class is "2" assign the number of housing units indicated in the third digit of the stat class.

14. If the property class = "XX0" or "0XX" or the first digit of the stat class is "0" then assign to "Undeveloped."

15. If the stat class = "1XX" then assign to "Single Family Residential" and assign one housing unit.

16. If the stat class = "2XX" and the third digit is "2" then assign to "Two Family Residential" and assign two housing units. If the third digit is greater than "2" then assign to "Apartments."

17. If the stat class = "3XX" then assign to "Undeveloped."

18. If the property class = "7X1" or the stat class = "42X" then assign to "Apartments."

19. If the stat class = "40X" then assign to "Mobile Home Park."

20. If the stat class = "4XX" or "5XX" or "6XX" except for "42X" or "40X" or if the property class = "2X1" then assign to "Commercial and Service."

21. If the property class = "3X1" or the stat class = "7XX" then assign to "Industrial and Warehousing."

22. If the record has not been coded to any land use classification by steps 3 through 21 then assign to "Other.

An attempt was made to classify agricultural and forest uses separately from undeveloped land, but no satisfactory code conversions could be developed. Differences in definitions and difficulties of classifying these uses from visual inspection seem to be the principal contributing factors hindering the separation of these uses in the tax files. For assessment purposes "farm use" must be identified to qualify land for farm tax deferral and several criteria may be used, including gross sales. The agricultural land use classifications in the RIS file was determined from visual inspection initially and no systematic continuing procedures for updating these classifications has been established. The difficulties of classifying agricultural uses from visual inspection is apparent because of

the variations in visible evidence of use from season to season and from year to year. Similarly the definition of what constitutes forest use is neither clearly defined nor uniform between the assessor's applications and the RIS visual determinations.

An additional major coding problem involved the use of "government" as a use classification. This is basically an ownership rather than a use classification. Parks, government buildings, maintenance shops, etc. were all assigned to this class. Interpretation and evaluation of data for this class must be made with an understanding of its limitations.

Finally, no satisfactory coding scheme could be found to classify group quarters (rooming and boarding houses, dormitories, etc.), or utilities (railroad rights-of-way, electric sub-stations, utility district properties, electric transmission rights-of-way, etc.). Perhaps specific counties have some combinations of codes that can be used to identify these uses or further research may be needed to establish methods for including them in the coding system. Most of these types of uses were coded by the conversion program to "government" (because the Department of Revenue, not local assessors, assesses utilities an exempt code was included in the record) or to "undeveloped" (because they had a statistical class of "000").

The product of the recoding and assignment process was a data set of real property records containing all of the input variables plus assigned values for land use code, acres, number of housing units, and urban growth boundary designations. A total of 15,219 parcels were processed, of which 138 were new parcels created by the parcel split procedure of the program. Only 1,345 of the input parcel records contained acreage from the assessor's records so 13,736 parcels had area added from the parameter assumptions.

Summary of Findings

Land Use

The summary of acres of land by land use category for each test area is shown in Table B-2. The data were also summarized by section and by sixteenth-section. There was little or no land in the mobile home park and recreation homesite categories for the test areas so the acreage for these uses was combined with the category "other" for this summary. Also, except for the Cottage Grove test area, the amounts of land in the "commercial and service" and "industrial and warehousing" may not be indicative of proportions of these uses for larger jurisdictions.

In all but the Crow test area the differences between the assigned acres and the RIS acres for "single family residential" use was less than 3 percent. In all but the Cottage Grove test area the differences in acres in the "Undeveloped" category were less than 5 percent. These two uses combined account for 65 percent or over of total acreage in each test area (River Road - 92 percent, North Springfield - 80 percent, South Willamette - 68 percent, Crow - 97 percent, Cottage Grove - 65 percent). Two family uses account for another 1-4 percent of total area and the differences for this use were less than 10 percent.

TABLE B-2

Summary and Comparison of Land Use Areas
Area in Acres by General Land Use Categories by Test Area

	ASSIGNED ACRES	RIS ACRES	OF TOTAL	DIFFERENCE	PERCENT DIFFERENCE
RIVER ROAD					
1 FAMILY RESID.	426.76	428.27	13.97	-1.51	-0.35
2 FAMILY RESID.	6.65	6.18	0.20	0.47	7.61
APARTMENTS	0.00	0.00	0.00	0.00	0.00
COMM. & SERVICE	0.46	14.72	0.48	-14.26	-96.87
IND. & WAREHS.	3.38	12.23	0.40	-8.85	-72.36
EDUCATION	33.04	33.31	1.09	-0.27	-0.81
RELIG. & CHARITY	0.46	4.55	0.15	-4.09	-89.89
OTH. EXEMPT-PRIV.	0.00	0.00	0.00	0.00	0.00
GOVERNMENT	174.76	140.60	4.59	34.16	24.30
UNDEVELOPED	2425.30	2403.93	78.44	21.87	0.91
OTHER	0.00	21.02	0.69	-21.02	-100.00
TOTAL	3071.31	3064.81	100.00	48.58	1.59
NORTH SPRINGFIED					
1 FAMILY RESID.	693.32	675.86	40.11	17.45	2.58
2 FAMILY RESID.	61.12	61.20	3.63	-0.08	-0.13
APARTMENTS	14.67	24.94	1.48	-10.27	-41.18
COMM. & SERVICE	58.90	61.85	3.67	-2.95	-4.77
IND. & WAREHS.	0.20	2.01	0.12	-1.81	-90.05
EDUCATION	72.09	71.05	4.22	1.04	1.46
RELIG. & CHARITY	6.79	11.47	0.68	-4.68	-40.80
OTH. EXEMPT PRIV.	0.00	0.00	0.00	0.00	0.00
GOVERNMENT	86.90	55.78	3.31	31.12	55.79
UNDEVELOPED	646.93	665.70	39.50	-18.77	-2.82
OTHER	0.30	55.32	3.28	-54.52	-98.55
TOTAL	1641.71	1685.18	100.00	-42.18	-2.50
SOUTH WILLAMETTE					
1 FAMILY RESID.	986.06	1004.28	56.15	-18.22	-1.81
2 FAMILY RESID.	67.14	70.83	3.96	-3.69	-5.21
APARTMENTS	78.19	49.64	2.78	28.55	57.51
COMM. & SERVICE	32.92	45.46	2.54	-12.54	-27.58
IND. & WAREHS.	0.00	0.35	0.02	-0.35	-100.00
EDUCATION	75.50	64.16	3.59	11.34	17.67
RELIG. & CHARITY	14.23	21.79	1.22	-7.56	-34.69
OTH. EXEMPT PRIV.	0.00	21.69	1.21	-21.69	-100.00
GOVERNMENT	215.88	154.14	8.62	61.74	40.05
UNDEVELOPED	228.70	218.48	12.22	10.22	4.68
OTHER	10.32	137.63	7.70	-127.31	-92.50
TOTAL	1708.94	1788.45	100.00	-90.43	-5.06

TABLE B-2 (continued)

	ASSIGNED ACRES	FIS ACRES	% OF TOTAL	DIFFERENCE	PERCENT DIFFERENCE
CLOW					
1 FAMILY RESID.	184.25	119.04	3.93	65.21	54.78
2 FAMILY RESID.	3.46	2.55	0.08	0.91	35.69
APARTMENTS	0.00	0.00	0.00	0.00	0.00
COMM. & SERVICE	0.00	0.00	0.00	0.00	0.00
IND. & WAREHS.	0.00	1.30	0.04	-1.30	-100.00
EDUCATION	0.00	0.00	0.00	0.00	0.00
RELIG. & CHARITY	0.71	0.20	0.01	0.51	255.00
OTH. EXEMPT PRIV.	0.00	0.00	0.00	0.00	0.00
GOVERNMENT	40.00	41.64	1.37	-1.64	-3.94
UNDEVELOPED	2956.13	2819.16	93.01	136.97	4.86
OTHER	0.00	47.04	1.55	-47.04	-100.00
TOTAL	3184.55	3030.93	100.00	-132.04	-4.36
COTTAGE GROVE					
1 FAMILY RESID.	496.65	493.03	46.67	3.62	0.73
2 FAMILY RESID.	14.67	13.37	1.27	1.30	9.72
APARTMENTS	35.25	21.63	2.05	13.62	62.97
COMM. & SERVICE	96.73	115.90	10.97	-19.17	-16.54
IND. & WAREHS.	19.68	21.66	2.05	-1.98	-9.14
EDUCATION	50.33	55.79	5.28	-5.46	-9.79
RELIG. & CHARITY	12.02	15.05	1.42	-3.03	-20.13
OTH. EXEMPT PRIV.	0.00	0.00	0.00	0.00	0.00
GOVERNMENT	84.98	80.62	7.63	4.36	5.41
UNDEVELOPED	217.81	192.30	18.20	25.51	13.27
OTHER	4.83	47.03	4.45	-42.20	-89.73
TOTAL	1032.95	1056.37	100.00	-27.29	-2.58

In areas inside the urban growth boundary the differences for "single family residential" use averaged 2-10 percent at the section level and 5-15 percent at the sixteenth-section level (3-10 acres difference out of totals of 70-275 acres). Outside the urban growth boundary the differences averaged 10-25 percent.

In areas outside the urban growth boundary the differences in "undeveloped" acres averages less than 10 percent at both the section and sixteenth-section levels. Inside the urban growth boundary the percent differences for this use varied more widely--from 5-25 percent.

Other principal uses--government, education, commercial, industrial--had greater percent differences but lesser acreage differences. The same general increase in percent differences with increasing levels of geographic detail were indicated for these uses as for the "single family residential" and "undeveloped" categories.

Housing Units

The summary of single family units and duplexes by test areas is shown in Table B-3. The number of apartment units could not be determined from any variables in the assessor's records.

Except for the Crow area, where almost all of the units were assigned on the basis of farm homesites, the differences between the assigned single family units and the RIS units were less than 3.6 percent. The differences for two family units ranged from 0 to 9 percent.

Unlike the land use acreages, very little change in these ratios was indicated in summaries by section and sixteenth-section. The procedures for assigning single family and two family units in urban and suburban study areas produced results having a relatively high degree of accuracy.

Urban Growth Boundary

Only two of the test areas included land both inside and outside of the Eugene-Springfield urban growth boundary. For the River Road test area, the technique of assigning all of specified maps either in or out of the urban growth boundary resulted in a difference of approximately 140 acres (4 percent) in the areas assigned inside and outside the boundary as compared to the actual acreages from the RIS data. For the North Springfield area, the difference was 225 acres (12 percent).

However, these areas represent only a fraction of the maps for the area that are split by the boundary, and the maps that are split are only a fraction of the total maps for the area. The relative accuracy of the technique should increase if all of the maps that are totally inside or totally outside were included in the summary.

Zoning

A summary of RIS acres by general zoning category by the first digit of assessors' property class was made to evaluate the feasibility of using

TABLE B-3

Summary and Comparison of Number of Housing Units
Type of Unit by Test Area

Test Area/ Type of Unit	Assigned Units	RIS Units	Difference	Percent Difference
River Road				
Single Family	1,135	1,177	-42	- 3.6
Two Family	50	50	0	0.0
North Springfield				
Single Family	3,089	3,117	-28	- 0.9
Two Family	600	646	-46	- 7.1
South Willamette				
Single Family	5,374	5,323	51	1.0
Two Family	744	818	-74	- 9.0
Crow				
Single Family	50	76	-26	-34.2
Two Family	2	4	- 2	-50.0
Cottage Grove				
Single Family	2,004	2,007	- 3	- 0.1
Two Family	138	142	- 4	- 2.8

the property class as a surrogate for zoning. The results are shown in Table B-4.

If the acreage in tract, forest and farm property classes are combined in relatively undeveloped areas, and if the tract and residential classes are combined in developed areas, an approximation of areas zoned for agriculture and residences might be made. Commercial property class and commercial zones seem to have relatively good correlation. With the exception of Cottage Grove, industrial zoning and industrial property class are related. However, more extensive analyses of these relationships are needed using larger areas with more variety of types and sizes of uses before any definitive conclusions can be indicated.

Value of Housing

Since the number of housing units for single and two family housing resulting from the assignment procedure is relatively accurate, the use of these numbers in the calculation of an average value of housing for these types of units by map # should be justified. These average values can be computed by summing the true cash value of improvements by types contained in the assessors' data, by map or maps, and dividing by the numbers of assigned units by type by map or maps.

Measurement of Change

Using the techniques described for this study the measurement of change, necessary for monitoring the comprehensive plan of a community, may be accomplished in either of two ways, or a combination of both.

While the assessors' office in Lane County reappraises property visually only periodically (apprxoimately every six years), the assessment roll must be as accurate and as complete as possible as of January 1 of each year. New construction during any year is included in the real property file prior to January 1 and the year the structure was completed is added to the record of the parcel. For counties that add the construction data to real property records (if only for residences) measures of change may be developed annually by selecting and summarizing records from the generated planning data base that have construction dates of the preceding year.

If the date of construction is not included in the real property records the differences in totals of acres of land uses and of housing units between succeeding years can be used to measure change. To monitor changes using this method it is necessary to establish a process for periodically updating the generated data base.

Conclusions

This test indicates that the techniques and procedures developed and applied in this study for the use of county assessors' real property files for generating a planning analysis and monitoring system have sufficient validity to justify further application and documentation.

TABLE B-4

Comparison of General Zoning Categories with Assessor Property Class (Area in Acres)

Zone	Assessor Property Class							
	Residential	Commercial	Industrial	Tract	Farm	Forest	Apartment	Total
River Road								
Agriculture	263	0	0	1,106	987	0	0	2,357
Commercial	0	0	0	0	0	0	0	0
Industrial	0	0	22	0	0	0	0	22
Residential	237	1	0	36	0	0	0	274
Total	500	1	22	1,142	987	0	0	2,653
North Springfield								
Argiculture	132	0	0	305	119	0	0	557
Commercial	1	96	0	8	0	0	0	105
Industrial	0	0	21	0	0	0	0	21
Residential	759	5	0	55	0	0	12	830
Total	892	101	21	368	119	0	12	1,513
South Willamette								
Commercial	0	39	0	0	0	0	1	40
Residential	1,271	6	0	141	0	0	95	1,512
Total	1,271	45	0	141	0	0	96	1,552
Crow								
Agriculture	250	0	0	2,658	0	282	0	3,190
Total	250	0	0	2,658	0	282	0	3.190
Cottage Grove								
Agriculture	0	0	0	0	0	0	0	0
Commercial	4	107	2	0	0	0	0	112
Industrial	4	4	55	0	0	0	16	80
Residential	662	14	1	141	0	0	17	835
Total	670	125	58	141	0	0	33	1,027

Some questions that should be explored and answered are:

1. Do local planning administrators consider the relative levels of reliability of data generated in Lane County acceptable for planning purposes in their counties?

2. What difficulties may be encountered in extracting real property data from the files of different county assessors?

3. Are the specific coding and assignment procedures used in this study transferable to other counties with a minimum of change?

4. What are the costs of initial implementation and continuing operation of a system similar to the one described in this study?

5. How useful are the data produced by the suggested system to local planners and decision makers in the planning and plan monitoring process?

The only method of answering these questions is for one or more counties to implement the methods used in this study on a trial one or two successive year basis for their counties and record and share their conclusions with other counties.

BIBLIOGRAPHY

This listing and annotation includes published materials which discuss plan monitoring and evaluation and design aspects of planning data systems which relate to monitoring applications. Materials which include monitoring data are listed in Chapter IV rather than here.

Allen, Susan, 1980. "Land Supply and Demand Monitoring: King County Washington." Urban Land. April, pp. 5-13.

King County's land supply and demand monitoring system is described and reviewed in this article. Steps for developing a land supply inventory are presented followed by the components of the land demand analysis (population, employment, and housing projections). Comparisons are made between land supply and demand for King County, and limitations and problems of the analysis are identified. Finally, improvements to the system and areas for future research are discussed.

Brooks, Kris and James R. Pease, 1978. Geographic Information Systems: A Review. Corvallis, Oregon: Oregon State University Extension Service, May.

This publication provides a good foundation for understanding the characteristics of a geographic information system. The functions and processes of the system are clearly explained in everyday language. Profiles of selected geographic information systems in the United States are presented. These include: the Lane County Geographic Data System in Eugene, Oregon; Gridded Resources Inventory Data System (GRIDS) in Olympia, Washington; METLAND/COMLUP in Amherst, Massachusetts; Multiple Input Land Use System (MILUS) in Pasadena, California; Natural Resource Information System/ Illinois Resource Information System (NARIS/IRIS) in Urbana, Illinois; Polygon Information Overlay System (PIOS II) in San Diego, California; PTOLOMY in Richland, Washington; and Oak Ridge Regional Modeling Information System (ORRMIS) in Oak Ridge, Tennessee. The profiles provide brief descriptions, costs, contact people, and comments on each system.

The bibliography includes concise annotations of readings related to geographic information systems.

Bureau of Government Research and Service, 1982. Data Processing Survey: Oregon Cities and Oregon Counties, University of Oregon, Eugene.

These studies document the extent of computer applications in Oregon's county and municipal governments. A significant finding is that a very large proportion of local government units now have computer capability, including many small jurisdictions throughout the state.

Catanese, Anthony J., 1979. "Information for Planning," in So, Frank S., et al (editors), The Practice of Local Government Planning, International City Management Association, Washington, D.C.

This chapter reviews a variety of planning data, provides examples of how it can be applied in a planning process. The discussion of data collection techniques and methods for analysis are most useful for monitoring purposes.

Chapin, F. Stuart Jr. and Edward J. Kaiser, 1979. Urban Land Use Planning, Third Edition. Urbana: University of Illinois Press.

This is a widely used land use planning text which includes several chapters focusing on planning data needs and data systems.

Chapter 4 outlines the general scope of an information system by identifying necessary data files, spatial elements common to all files, and design considerations established as guidelines for users of such a system.

Chapter 16 defines evaluation as a method of assessing economic, social, environmental, and fiscal implications of alternative plans in order to determine the extent objectives are achieved. Included in this chapter are requisites for an evaluation methodology, notes on selecting a methodology, and three approaches to land use plan evaluation (Indicators, Goals-Achievement, and Planning Balance Sheet approaches).

Economic Consultants Oregon, Ltd., 1980. Evaluating the Performance of the Oregon Coastal Management Program: An Analytical and Administrative Framework, Eugene.

This report, prepared for DLCD, focuses on means by which the state can evaluate the performance of the OCMP and the state plan. Although focused on the coast it includes discussion and examples which are germain statewide. Included are a) a good discussion of the need for evaluation on the part of the state and local jurisdictions, b) a useful review of the state goals, their interpretation for purposes of evaluation and the important issues relating to this interpretation, and c) discussions of how each goal can be evaluated, including the primary questions to be investigated and sources of information which are available for doing so. An example plan evaluation for a municipality and a county are also included, illustrating how the proposed system can be applied.

Environmental Systems Research Institute (ESRI), n.d. A Sketchbook of Experiences: Geographic Information System, Redlands, California.

This monograph uses text and graphics to explain the terms, techniques, and processes of a geographic information system, in particular visual images and varieties of computer output. A flow chart in the beginning of the sketchbook sets up the relationships among the different components of the information system. Proceeding pages graphically display the contents of each component.

Hatry, Harry P., et.al., 1977. How Effective are Your Community Services: Procedures for Monitoring the Effectiveness of Municipal Services, Urban Institute, Washington, D.C.

Although this work focuses primarily on monitoring which relates to public services it offers some useful general discussion and a variety of specific ideas about how monitoring data can be collected and analyzed. Data collection techniques discussed include performance data collection from administrative records, surveys, field observations, logs of citizen input, and interviews. A variety of example survey instruments and other information collection guidelines are included as appendices.

Honeycutt, Dale M., Kristina Brooks and A. Jon Kimerling, 1980. Geographic Information Systems: a Review of Selected Operational and Functional Capabilities, Geography Department, Oregon State University, Corvallis.

This is a clear and concise discussion of the characteristics of geographic data systems and of their development, maintenance and application. System design is reviewed (e.g., choices available for geocoding and data structuring) as well as procedures used for data storage, updating and applications. Four examples of data systems are reviewed. A glossary of terms and a bibliography are also included. This report overlaps to some extent with Brooks and Pease (1978), but emphasizes general discussion rather than the review of specific data system examples.

International Business Machines Corporation (IBM), 1978. Geographic Data System Aids Land Use Planning in Eugene, Oregon. Application Brief, GK20-1148-0 (11/78).

This publication begins with a historic overview of the Lane Council of Governments Geographic Data System, followed by a description of the system's capabilities. These capabilities include the production of tabular reports (summaries, listings, and cross tabulations), maps of any scale, correlation or aggregation of selected information for specific areas, and visual display of selected data on a screen. The benefits of the system are elaborated upon, and the applications of the system by various municipal departments are explained.

Lichfield, Nathaniel, Peter Kettle and Michael Whitbread, 1975. Evaluation in the Planning Process, Pergamon Press, Oxford.

This text reviews the role of evaluation in planning and describes a number of planning projects, highlighting their evaluation components. Although "evaluation" is a more inclusive activity than "monitoring" as used in this handbook, certain portions of the discussion provide useful background and perspective, in particular on how monitoring data collection and analysis fits with an overall comprehensive planning process. Chapter 1 discusses the role of evaluation in planning. Chapter 2 outlines the basic steps in planning processes, highlighting the identification of goals and objectives and their role in establishing the framework for evaluative analysis. Chapter 3 discusses evaluation in more detail and provides examples of how it relates to making planning and policy choices. Subsequent chapters discuss evaluation methodology in more detail; only a limited portion of this material relates to the comprehensive planning context of Oregon communities.

Schneider, Devon M. with Syed Amanullah, 1979. Computer-Assisted Land Resources Planning. Report No. 339, Planning Advisory Service. Chicago: American Planning Association.

This is a helpful report to planners who are looking into the possibility of acquiring a computerized information system. The report is based on interviews with planners of ten agencies who are utilizing such systems.

Chapter 1 suggests a way to research the alternatives of setting up a computerized system and briefly describes the various systems reviewed in the report.

Chapter 2 covers some planning applications of the systems. This information will help planners to understand the capabilities of the systems and to judge whether their agency needs such kinds of analysis.

Chapter 3 focuses on the technical aspect of the information systems. Included in the discussion are the process of selecting a system, developing its data base, and operating it. This chapter defines relevant computer terms and provides the planners with enough technical knoweldge to enable them to ask intelligent questions of consultants and of their agency.

Chapter 4 presents the lessons learned by planners who have already completed the process of selecting and developing a system. Also included in this chapter are basic funding needs, staff and time requirements, suggestions for promoting the system's use, and other management topics.

Finally, the appendices provide specific information on how the ten agencies developed and used their systems. Annotated bibliographies and contacts for more information are also included.

Wilson, Paul M., n.d. Geoprocessing Systems: BASIS Case Study. Auerbach Publishers, Inc.

This article provides a brief explanation of BASIS, the San Francisco Bay Area's geoprocessing system. BASIS is a grid cell system which can run on a minicomputer or a microcomputer. It is designed to provide geocoded environmental data on the region. A fundamental concept in the BASIS development is the shared data base which is available to any organization involved in planning related activities.

Some BASIS applications include hazardous solid waste facility location, industrial siting, seaport siting, and earthquake mapping. Summaries of these and other applications are presented.

The author stresses that the key to BASIS successful operation lies in its data base. An explanation of the development, management, manipulation, and display of the data base is provided.

Wunderlich, Gene, 1979. Computer-Assisted Land Information System for a Rural County-RAPLI-II. Agriculture Information Bulletin No. 406. Washington, D.C.: U.S. Department of Agriculture Economic Research Service.

This report describes a relatively inexpensive, simple, and flexible computer-assisted land information system designed for rural counties. The system is considered computer-assisted or semi-automatic because some tasks, such as transcribing information from reports to computers, are done manually.

Data stored in the computer are gathered from several different county offices to form the data base. The general components of the system include a geographic locator and three computerized data files on land ownership, transfers, and physical features. A detailed description of the data files is presented.

Various applications and reports derived from the system (land use inventory, transaction report, etc.) are described. Finally, an evaluation of the system in terms of cost and applicability is presented.

U.S. Department of the Interior, 1977. Comparison of Selected Operational Capabilities of Fifty-four Geographic Information Systems, Biological Services Program, Fish and Wildlife Service, Washington, D.C.

This document discusses the means by which geographic planning and land management systems can be described and evaluated, lists 54 such systems which have been developed throughout the U.S. and Canada, and reviews certain important characteristics of each. Although the report is now somewhat dated it offers a useful summary of how geographic data systems have been conceptualized and developed, and in particular of certain specific characteristics such as the type of data included, means of geocoding, hardware and software used, including the computer size and other characteristics, and a person or organization to which inquiries can be directed.

GLOSSARY OF ABBREVIATIONS

STATE AGENCIES

ODOA	Department of Agriculture
ODED	Department of Economic Development (Economic Development Division)
ODOED	Department of Education
ODOE	Department of Energy
ODEQ	Department of Environmental Quality
ODFW	Department of Fish and Wildlife
ODOF	Department of Forestry
DOGAMI	Department of Geology and Mineral Industries
OHD	State Housing Division
ODHR	Department of Human Resources (Employment Division)
DLCD	Department of Land Conservation and Development
OMB	Marine Board
ODC	Oregon Data Center
OCPRC	Center for Population Research and Census
ODSL	Division of State Lands
ODOT	Department of Transportation
ODWR	Department of Water Resources
EFSC	Energy Facilities Siting Council

FEDERAL AGENCIES

USDA	Department of Agriculture (Extension Service)
COE	Army Corps of Engineers
BPA	Bonneville Power Administration

USDC	Department of Commerce (Bureau of the Census, Bureau of Economic Analysis)
USFWS	Fish and Wildlife Service
USFS	Forest Service
USGS	Geological Survey (Water Resources Division)
BLM	Bureau of Land Management
FERC	Federal Energy Regulatory Commission
HUD	Department of Housing and Urban Development
USDA	Department of Agriculture

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