

Alternative futures in Puget Sound: The Chico Creek project as a model of integrated land use planning and resource protection

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Executive Summary

The Chico Creek alternative futures pilot project was initiated as a demonstration project to better integrate land use and watershed planning. The project applied ecosystem analysis to several future land use scenarios within a public process to define the preferred land use scenario. Kitsap County and federal, tribal, state and local partners met challenges of communicating technical and scientific information to watershed residents through innovative uses of Geographic Information System techniques, a watershed training academy for the citizens participating in the process, and the development of analysis tools that targeted key relationships between land use changes and resource impacts. Kitsap County plans to consider the results of the Chico Creek project as a subarea plan amendment of its comprehensive plan. In addition, the County will transition to a "Planning by Watershed" approach by applying the alternative futures model to subarea planning in other high priority watersheds. The County found the alternative futures model to be a unifying process that integrates land use planning with multiple regional processes such as watershed planning, salmon recovery planning, clean water plans, and other initiatives under various state and federal mandates. The lessons learned and methods applied in the Chico Creek project will be further tested and refined as the County moves forward with the Planning by Watershed approach.

Introduction

The Environmental Protection Agency (EPA) provided funding in 2000 to the Puget Sound Action Team (PSAT) staff to select a jurisdiction for a model community planning process in the Puget Sound basin to consider the effects of alternative development scenarios on water quality and biological resources. After consultation with the EPA and other state agencies, the PSAT selected Kitsap County as the jurisdiction for the project. In consultation with EPA, PSAT and the Washington Department of Community, Trade and Economic Development (CTED), Kitsap County selected the Chico Creek watershed as the site for this project. In April 2001 the Chico Creek alternative futures demonstration project began as a land use planning process based on scientific watershed analysis and community planning principles. A number of local, tribal and state agency partners contributed funding and staff time to the project. Work on the demonstration project was completed in 2003.

In January 2001, PSAT identified the following objectives of the proposed demonstration project:

1. Integrate multiple planning decisions and requirements into a comprehensive planning approach.
2. Visually represent choices, tradeoffs, and risks of alternative paths to decision makers.
3. Bring environmental constraints into growth management, population and capital facilities planning.
4. Involve the public in designing the alternative future scenarios.
5. Explore a range of state of the art data analysis techniques and approaches.
6. Conduct work within a 2-3 year time frame.
7. Document the process as a model that is easily shared.
8. Use the results in local decisions.
9. Maintain leadership within local communities and broad involvement of stakeholder interests and agency staff.

The alternative futures approach is intended to help local governments simplify the task of integrating numerous land use planning and resource protection objectives into a more coherent community-based vision of the future. It is a valuable tool for evaluating cumulative effects in a more ecosystem-oriented context.

Resource managers throughout Puget Sound recognize the importance of integrating land use planning and natural resource management to sustain watershed integrity. The population of Puget Sound doubled from 2 million to 4 million people between 1960 and 2000, and is projected to grow by another 1.5 million people by the year 2020 (Washington Office of Financial Management, 2003). Planners and resource managers have called for integrated watershed and land use planning to address the impacts of growth and to align the goals of land use planning with long-term ecosystem health. The alternative futures focus on long-term ecosystem health stands in contrast to current planning approaches that are based on population projections for a planning horizon of 20 years.

Puget Sound communities are required by the Washington Growth Management Act to determine where future growth will be located. Environmental protection is provided primarily through Critical Areas Ordinances that map environmentally sensitive areas (wetlands, geologic hazards, fish and wildlife habitat, aquifer recharge areas, and flood hazard areas). Resource protection is accomplished by overlaying these various maps on the zoning map during the comprehensive planning process to inform zoning decisions. After the zoning maps are developed, the ordinances apply prohibited uses, buffers and other regulatory mechanisms to provide varying levels of mitigation and protection on a parcel-by-parcel basis. Somewhat more restrictive regulations may be applied to projects in the shoreline management zone. In addition, stormwater regulations are applied to individual projects. This planning process has many benefits, but it does not integrate ecosystem-based evaluation tools that look at cumulative watershed effects, nor does it resolve the lack of common objectives among the scientists, the planners, the public, and the elected decision-makers.

Kitsap and other Puget Sound counties have a history of community-based watershed planning to prevent nonpoint pollution under the *Puget Sound Water Quality Management Plan*¹ and subsequent processes for watershed planning under Washington's 1998 Watershed Planning Act. Watershed plans result in a list of recommended actions agreed to by the responsible parties, whether they are local, tribal or state governments, utility districts, or private parties. Watershed plans often include recommendations that cities and counties adopt specific land use measures to protect watershed functions and biological resources. However, watershed plans have not provided alternatives to the existing land use planning approach.

The Alternative Futures Model

The alternative futures approach provides an innovative framework to develop land use scenarios based on the impacts to ecosystem functions. Using the watershed boundary as the subarea

¹ The *Puget Sound Water Quality Management Plan* was originally adopted by the Puget Sound Water Quality Authority in 1986 and most recently revised in 2000. It is a regional multi-jurisdictional plan to protect and restore the water quality and biological diversity of Puget Sound. In 1991 it was adopted by the US Environmental Protection Agency as the Comprehensive Conservation and Management Plan for Puget Sound under the National Estuary Program authorized under section 320 of the Clean Water Act. The Puget Sound Action Team staff, as a program in the Office of the Governor, maintains the plan and works to implement it through a biennial work plan of coordinated state actions and budgets.

planning boundary, the alternative futures approach results in a land use plan that includes a zoning map and associated land use regulations. A preferred alternative is developed by: 1) Conducting a technical assessment of current conditions, 2) Involving citizens and others with an interest in the watershed's future in developing and selecting scenarios, 3) Testing future land use scenarios using technical tools and analyses, and 4) Making informed decisions to develop a preferred land use scenario. Because there is an intensive level of community involvement, the alternative futures approach promotes public understanding and acceptance of final land use decisions.

The Chico Creek alternative futures project was based on the alternative futures planning process developed in Oregon's Willamette Basin, also funded by EPA (Community Planning Workshop and Institute for a Sustainable Environment, 1994, and Hulse, 2002). The Willamette Basin project extended over six-years in duration at a cost of several million dollars. In that planning process, EPA scientists and academics from Oregon State University conducted a public process to develop and test five land use scenarios ranging from a "high development" to a "high conservation" scenario for the year 2025. As an academic study, it informed planners but was not adopted by the local land use authorities.

In order to bring the alternative futures model to Puget Sound, PSAT, the EPA and CTED formed a team to find a local jurisdiction with the resources and willingness to apply it to a local watershed. The intent was to transfer the academic model to a planning process led by a local government with the legal authority to make land use changes as a result of the project.

The Regional Context of Multiple Processes and Mandates

The Chico Creek demonstration project grew out of regional discussions to develop a strategy for landscape assessment and planning tools in February 2001, when Region 10 EPA and PSAT co-sponsored a Watershed Practitioners Forum in Port Townsend, Washington. Practitioners from British Columbia and Puget Sound discussed how to achieve more sustainable development by integrating planning with watershed processes. Participants drafted a list of tools needed to begin to change the way that governments plan and manage land use in Puget Sound, including a call for demonstration projects to address the multiple mandates and processes underway in the region². Those processes include:

Growth Management Planning

The regional context for the project included a state Growth Management Act (GMA) adopted in 1990 (Chapter 36.70A Revised Code of Washington) and implemented by local governments in Puget Sound with varying levels of conflict and success over the next decade. The law required that urban areas be designated for future growth, that forest, agricultural and mining lands be conserved and protected for resource uses, that critical areas be mapped and protected from improper development, and that capital facilities and infrastructure precede or accompany growth as urban areas expand. In rural areas, counties used a 1997 GMA amendment to recognize areas of more intense development that existed prior to 1990, and to allow infill in those areas. The law mandated that growth occur in urban growth areas designed to expand in an orderly and planned manner.

² Information on the forum is available on the PSAT website with a link to forum documents at www.psat.wa.gov/Programs/LID/LID_PT_workshop.htm

Watershed Planning

Another element of the context for the project was the Watershed Planning Act of 1998, (Chapter 98.70 RCW) which initiated large-scale watershed planning to address water supply and optional issues of water quality, habitat, and instream flows. Local watershed planning groups were given state funding and a four-year deadline to assess conditions and develop watershed plans. These plans would be adopted and implemented by the state and by local governments and other stakeholders, but the time and resources provided by the state did not allow for sub-basin land use planning. The scale of this planning process extends beyond Kitsap County to include the entire Kitsap Peninsula and involves several cities, Indian tribes, and parts of three adjacent counties.

Salmon Recovery Planning

In 1999, the Puget Sound fall chinook and Hood Canal summer chum salmon were designated as “threatened” under the federal Endangered Species Act (ESA). By 2001, salmon recovery “lead entities” funded by the state were assessing conditions and ranking projects for salmon restoration. There were questions as to who would write regional salmon recovery plans, how that process would be organized, what the plans would look like, and how the plans should address development in a region where salmon habitat under the protection of the ESA includes urban streams and shoreline areas.

Water Quality Protection Laws

Collaborative local, tribal, federal and state processes were also developing Cleanup Plans based on Total Maximum Daily Load studies (TMDL) to correct problems for water bodies with impaired water quality under Section 303(d) of the Clean Water Act. State law related to polluted shellfish growing areas closed to harvesting required that local jurisdictions develop restoration strategies and form Shellfish Protection Districts (Chapter 90.72 RCW). Resource managers were observing a geographic pattern suggesting links between water quality declines and areas of urbanization.

Long-term Trends for the Puget Sound Ecosystem

At the same time, the Puget Sound Ambient Monitoring Program and other researchers evaluating data to identify long-term trends in the health of Puget Sound were drawing attention to results suggesting that Puget Sound as an ecosystem might be showing early signs of collapse. Severe declines in the reproductive rates of some groundfish, in the populations of some marine birds, in orca whale populations, in eelgrass beds in some areas, and other data such as high levels of PCBs in the tissues of marine mammals, raised questions about the overall health of the larger Puget Sound ecosystem.

Recent scientific findings on urbanization and watershed health

Regional studies at the University of Washington examining the effects of urbanization found a correlation between land cover changes with increased impervious surface and declines in the biological health of streams in Puget Sound (Booth et al, 2002).

Authorities at all levels were seeking an approach to integrate the requirements of these complex, interrelated processes and recent scientific findings into land use plans at the local level.

Demonstration Project Site Selection

The EPA-PSAT-CTED team selected Kitsap County for the project based on the following criteria:

- The willingness of elected officials and staff to take on an innovative project.

- A set of strong technical abilities in the county's Natural Resources Department and Geographic Information Systems staff and a willingness to commit that staff to this process.
- A readiness to proceed. The county and local partners had been meeting for a year to develop an approach to watershed planning to apply in Chico Creek. The subbasin had been identified as a high priority watershed due to a significant salmon run and growth pressures from surrounding areas.
- A local community of municipal and tribal governments, technical, education and environmental agencies and groups with a positive history of collaboration. Sub-basin watershed planning in the 1980s and 1990s under the state Nonpoint Pollution Watershed planning process helped develop working relationships and a common understanding of local resource issues.
- The availability of data primarily from: 1) previous and current work in watershed planning and salmon recovery planning; 2) a United States Navy project to develop a risk-based model for water quality prevention and correction in the larger Dyes/Sinclair Inlet (ENVVEST project); 3) the Suquamish Indian tribe's years of data on stream conditions and salmon habitat; 4) a collaborative countywide Groundwater Management Plan developed in the 1990s; and 5) a strong local water quality program through a partnership among the Kitsap County Storm and Surface Water Program, the Kitsap County Health District, and the Kitsap Conservation District.

The County selected Chico Creek as the study area for several reasons. The County and the Public Utility District were concerned that the groundwater supply in the rural portion of the watershed was inadequate for growth that was platted and vested prior to the GMA, and wanted to quantify those limits before allowing further growth. The Suquamish Tribe and environmental groups wanted to protect the habitat of the most productive salmon stream in eastern Kitsap County. In early 2001 these concerns led to a consensus among local partners, including development interests seeking certainty in regulation, that resolving future land use and watershed management questions for the Chico Creek watershed was a high priority for the county.

Kitsap County had two reservations about entering into the demonstration project:

- 1) How to integrate the timing and availability of data for the Chico Creek subbasin with salmon recovery and watershed planning, the U.S. Navy study of Dyes and Sinclair Inlets as a possible basis for TMDL analysis, and required updates to growth management plans and ordinances and Shoreline Master Programs. Unless the project added value to these multi-scale processes, the County was reluctant to agree to the project.
- 2) Whether the Chico Creek process, projected to cost over \$250,000 in grant and in-kind funding, would result in a model that the County could replicate in other subbasins. The County wanted to avoid developing a process that would not be economically feasible to apply to other subbasins.

County staff compared timelines for the various processes and found that deliverable dates were aligned to incorporate information and decisions resulting from the Chico Creek project into other processes. They also compared the watershed processes with respect to scale, and demonstrated that the Chico Creek project was reasonably "nested" within the other processes taking place in the county to allow each to inform the others appropriately. County officials recognized that the alternative futures process allowed them the flexibility to frame the project to satisfy the requirements of multiple resource protection mandates. By designing the project assessment and analytical tools to answer the habitat, water quality and water quantity questions posed by the

multiple mandates, and by anticipating adoption of project results as a subarea plan in the county's comprehensive land use plan, the project actually unified all the land use requirements of the various mandates.

In order to develop a transferable model, the project was designed to develop and evaluate tools and analytical techniques that as much as possible fell within the budget capacity of a local government planning process. PSAT also provided additional EPA funding for a University of Washington graduate student to produce a report demonstrating the transferability of the technical model to other watersheds, and later added funding for another student to evaluate a rapid stream assessment technique developed during the study (Roberts, 2003 and Segura-Sossa, 2003). This also met the PSAT objective that the demonstration project result in tools appropriate for replicating the process in other Puget Sound jurisdictions.

The Chico Creek Watershed

Kitsap County is on a peninsula that lies between Puget Sound on the east and Hood Canal on the west. The western slope of the peninsula is primarily in commercial forestry uses, while the eastern slope has experienced considerable urban growth and development in the past few decades. Many residents commute to work across Puget Sound to the east in Seattle and Tacoma by ferry and auto. Eastern Kitsap County has four cities, the Kingston and Silverdale unincorporated urban growth areas and several United States Navy facilities, including a naval shipyard in Bremerton.

Kitsap County's population increased by 22 percent between 1990 and 2000, from 189,731 to 231,969 people, and is estimated at 234,700 for 2002 (Washington Office of Financial Management, 2003). The watersheds draining into Dyes Inlet experienced considerable urbanization as a result of that growth. With the urban growth areas of Silverdale on the north and Bremerton on the south, the forested stream reaches of Chico Creek appeared destined to experience the pressure of urban growth.

Chico Creek drains a 16.3 square mile watershed with 68 stream miles and 17 miles of spawning and rearing habitat available to anadromous fish. Land uses are primarily rural, with 70% of land cover forested, most of which is in large holdings belonging to timber companies. There is scattered rural development in several sub-basins, including more intense development of small parcels around Wildcat and Kitsap Lakes. In 2001, the City of Bremerton was in the process of annexing a large forested parcel near Kitsap Lake for conversion to a 1000-home and mixed residential and light industrial development. The lower reaches of Chico Creek pass through the City of Bremerton, an urban growth area that includes a major highway corridor.

Project Goals and Structure

Kitsap County formed a Chico Action Team (CAT) to act as a steering committee for the project. The CAT included County policy and project managers, key local partners and the PSAT, EPA and CTED representatives. The County also developed a watershed vision: The Chico watershed will sustain a healthy environment for the people, wildlife and plants that inhabit this unique place. It will be a place that is known for its natural beauty, abundant natural resources and healthy communities.

The mission statement adopted by the County was: The Chico Watershed Planning Project exists to 1) bring about the sustainable stewardship of the Chico watershed through science-based and

community-based watershed management; and 2) to serve as a model for future efforts in other watersheds.

Three sets of goals accompanied these statements:

Assessment Goals

- Understand existing conditions in the Chico watershed.
- Determine existing needs for restoration.
- Identify existing buildable lands and development needs.

Analysis Goals

- Create alternative futures.
- Assess parameters necessary to support desired watershed analysis.
- Manage and analyze data to support planning and adaptive management.

Planning Goals

- Protect and restore watershed function.
- Establish a predictable pattern for development.
- Develop an effective community planning process.

To structure the project, the CAT set up five subcommittees:

1. The Education Work Group (EWG) was established to plan and implement a campaign to raise public awareness about the project and to educate a core group of citizens and provide them with the technical and planning tools to participate in the process. The lead for this project was Washington Sea Grant, a local partner that was funded for this purpose by EPA's Nonpoint Education of Municipal Officials program (NEMO).
2. The Public Involvement Work Group (PIWG) was the successor to the EWG. When the education campaign ended and the alternative scenarios process began, Kitsap County staff assumed responsibility for presenting scenarios and facilitating decision-making for the citizen group acting as the Watershed Advisory Committee.
3. A Technical Work Group (TWG) met to plan, direct, and assist with data gathering, modeling, and analysis.
4. A Restoration Work Group was formed to address issues specific to salmon habitat restoration.
5. A Watershed Advisory Committee (WAC) was established of residents and non-residents of the watershed, a tribal representative, interest groups with sometimes opposing positions on growth management, and some individuals who were previously active and others without previous involvement in civic land use issues. This committee evaluated the alternative scenarios and developed the preferred scenario.

Public Education Campaign

The EWG, led by local staff from the Washington Sea Grant program, included educators from several County agencies, the U.S. Navy, the Suquamish Tribe, the Kitsap Public Utility District, the Kitsap Conservation District, Washington State University Cooperative Extension, EPA and PSAT.

The group developed an education plan (Kitsap County Natural Resources, 2003) with the following goal: Local residents and elected officials will have the knowledge and understanding of watershed processes to create their vision, and participate in the development of a strategic watershed resource protection plan.

Educational activities to increase public awareness included a community dinner with a speaker from the Willamette Valley project, newspaper articles, watershed kiosks with interpretive signs and fact sheets, a website with information on the process and a virtual tour of the Chico watershed, and two open houses within the watershed. Education messages included photos and information on the history of the Chico Creek watershed. In addition, citizens were invited to participate in restoration projects, workshops, and a county Stream Team volunteer stewardship program. The EWG designed these activities to bring citizens forward who might be interested in participating in the alternative scenarios planning process.

The EWG was successful in recruiting 26 people for a nine-week Watershed Academy to provide them with the technical and planning tools to participate in the process. The weekly classes were open to anyone, but were mandatory for those preparing to participate in the planning process. Classes covered topics related to watershed hydrology, habitat, ecosystem function, land use planning and low impact development stormwater techniques. Approximately half of the citizens who attended the classes agreed to participate on the Watershed Advisory Committee (WAC).

Public Involvement Process to Determine a Preferred Alternative Scenario

The culmination of the public education campaign was the formation of the Watershed Advisory Committee of citizens to participate in the alternative futures process. Key lessons and issues for application of this model emerged as listed below.

Need for Facilitation

Kitsap County hired a facilitator for this phase of the project to maximize the productive interaction of the Watershed Advisory Committee. The committee established ground rules to guide the meetings and adopted the goals previously drafted by the Board of County Commissioners as criteria for decisions. Reports by Nelson (2003) and Parametrix (2003) provide detail on the goals of the process, the development of the planning scenarios, and the selection of the preferred scenario. With the assistance of the facilitator, the WAC developed Principles of Agreement, and while the group did not reach consensus on all issues, there were clear areas of agreement and options with “pros and cons” to carry into the County’s subarea planning process.

Setting a Planning Horizon

A key question for the project was whether to project land use scenarios out to full build-out or whether to evaluate scenarios for a 50-year population projection. On the one hand the County saw the value of full build-out of the scenarios so that the ultimate impact of a zoning decision could be evaluated. At the same time, there was concern that it would be difficult for citizens to envision the future beyond 50 years. The issue was resolved in favor of full build-out by applying population projections to the existing land use zoning and full build-out under current zoning was determined to be 65 years.

Determining Alternative Scenarios

An interesting outcome of the process was the decision by the WAC to diverge from Oregon’s academic model of five scenarios ranging from High Conservation to High Development. As a first step, the Chico Creek project evaluated the impacts of the Planned Trend scenario, or build-out under current zoning, and after an initial technical analysis, decided that it resulted in so much watershed degradation that they would consider it as the most highly developed scenario. They did develop a Conservation scenario, but their options for significantly reducing densities were limited by the number of existing small parcels outside the urban growth area that were platted and vested prior to the Growth Management Act in 1990.

The Moderate scenario and options were developed to balance this reality by minimizing the impacts on natural resources and hydrology while allowing for growth in some areas. However, even the Moderate scenario assumed the County would purchase development rights to transfer elsewhere, and that future development would use low impact techniques. The WAC's decision not to create more extreme scenarios not only reflected a practical application of the model, but it also saved time and resources and supported the project objective of a model that can be replicated in other subbasins. It drew attention to the limits to rezoning and the need to develop realistic scenarios that recognize vested property rights.

Tailoring the Technical Design

Defining the questions to be answered in the analysis required that the technical committee make choices and set priorities. Initially, as described by Roberts (2003), the group developed a list of over 100 metrics for consideration, yet there were time and funding limitations to what could be assessed and evaluated. The questions to be answered were defined based on the multiple mandates and watershed conditions. Technical analysis tools of varying levels of complexity and quantification were used to evaluate water use, runoff from impervious lands, water quality, and large woody debris recruitment potential for salmon habitat for the three scenarios. An analysis of terrestrial habitat by the Washington Department of Fish and Wildlife led to incorporation of recommendations for a habitat corridor into the preferred scenario (Linders and Wilhere, 2003). The rapid stream assessment was used to evaluate the impacts of the scenarios on aquatic habitat (Segura-Sossa, 2003 and Nelson, 2003).

The partnership with the University of Washington Center for Water and Watershed Studies faculty and graduate students had the benefit of combining scientific expertise with the needs of a practical, time-limited, on-the-ground application. The resulting evaluation of analytical tools in the Chico Creek project contributes to the advancement of ecosystem planning regionally. The tools are likely to be improved as they are adapted to different watersheds in the future.

Recognizing the Role of GIS

Citizens involved in using scientific information relied on the ability to visualize its application to the landscape. Thus a critical component of the project was the technical and analytical skill of the county Geographic Information Systems staff (GIS). Developing and overlaying natural resources data and technical analysis layers over land use maps and creating the alternate scenarios required GIS staff that understood the process and could work with scientists to develop analysis tools. The role of GIS analysis and the adaptability of staff in creating the scenarios were paramount to the success of the project.

Improving Technical Work Group and Watershed Advisory Committee Interaction

The County reported that the process could be improved by earlier and more consistent interaction between the TWG and the WAC. The TWG required time to gather data and identify metrics, and the entire project required upfront time to build a common understanding of the project among partners. As a result, the time for the TWG to present the analysis to the WAC and work with them on the scenarios was limited.

Discussion of Regional Implications

Planning by Watershed in Kitsap County

Kitsap County produced a preferred scenario that will be considered through a subarea planning process as an amendment to the comprehensive land use plan. As a result of the project, Kitsap

County has initiated a process called Planning by Watershed to implement in priority sub-basins where growth pressures are high.

The Chico Creek preferred scenario was developed as a pilot process outside the county's formal planning process. The County was particularly pleased that it achieved its goals in a public process in which citizens with differing views were able to reach consensus on most issues. Under the new Planning by Watershed approach, county planners will use the alternative futures model to develop subarea plans for other priority sub-basins. As each subarea plan is adopted by amendment to the comprehensive plan, it will become the land use plan for that watershed, and may include special development regulations such as low impact development techniques to address watershed conditions. State Environmental Policy Act (SEPA) requirements to document and consider the impacts of various development alternatives will be met by the public planning process for alternative scenarios.

The County and PSAT have secured state funding to assist the county in the transition to this new approach to land use planning. An additional grant from the Department of Ecology will support the planning effort and the concurrent implementation of a Pollution Identification and Correction program for the watershed by the Kitsap County Health District and the Kitsap Conservation District. An alternative futures process that will serve as the formal subarea planning process for Barker Creek began gathering data in July 2003. The project will demonstrate:

1. The transferability and adaptability of the technical and public process models to other basins. The more urbanized Barker Creek watershed will provide a useful comparison to Chico Creek.
2. The cost-effectiveness and efficiency of the process as a routine planning process in comparison to the pilot project.
3. The usefulness of the approach for satisfying mandates such as watershed planning, salmon recovery, Clean Water Act plans for impaired water bodies, and responses to shellfish area closures to harvest.

Kitsap County is leading the way to a new planning approach by applying the science-based and community-based model from the Chico Creek project to other watersheds in its jurisdiction. With population growth and urbanization threatening the health of Puget Sound, the project is a model for developing an involved and informed public and giving them the tools and the forum to participate in making planning decisions.

Regional Applications of the Chico Creek Model

The Chico Creek model also provides Puget Sound communities with a method to address multiple environmental laws that require protective land use measures. This approach changes the timeframe of local planning from a horizon of 20 years to a long-range, fully built out vision of the community. It evaluates that vision by using technical tools to test the alternative land use scenarios. It integrates watershed priorities such as fish and wildlife habitat, water supply, stormwater from developed areas, and water quality as a dynamic ecosystem responding to land use changes.

Watershed and salmon recovery planning groups in Puget Sound are looking for models to integrate land use and shoreline planning with watershed and salmon recovery planning processes. Application of the Chico Creek model would begin with watershed planning groups prioritizing subbasins most likely to be affected by urbanization but still retaining at least some natural watershed functions and flexibility for conservation and restoration. The larger-scale regional watershed plan would include a commitment by planning authorities and local partners to apply the alternative futures approach in these key subbasins as a means of addressing land use

impacts to biological resources and watershed functions. The prioritization criteria might include salmon habitat, shellfish closures, water quality violations, wildlife corridor fragmentation, hydrologic responses to land cover changes, or water use conflicts. The process for each subbasin could be adapted to comply with the land use requirements of the multiple mandates and specific watershed concerns.

The alternative futures planning approach provides citizens and local governments with information to make choices about the future based on some knowledge of the effects of those choices. This proactive approach unifies the multiple state and federal processes that require local governments to address land use effects on resources. The Chico Creek project is an example for other jurisdictions in Puget Sound where leaders are asking questions about how to fit together processes with differing mandates and multiple scales and integrate them with growth management planning. By bringing the land use requirements of each mandate together in a subarea land use plan that includes both zoning and associated regulatory changes, local governments can align the requirements of the separate mandates for consistency in implementation, monitoring and a unified approach to adaptive management.

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