Public Information

Chehalis Basin Watershed Planning Issue Paper

What is the purpose of this issue paper?

The Chehalis Basin Partnership (Partnership) is committed to voluntary rather than regulatory methods for achieving the mission, goals and objectives it identified for Chehalis Basin watershed planning. Therefore, basin residents need information on how their activities impact water and what they can do to protect this vital resource now and in the future.

The purpose of this issue paper is to

- explain the need for public information about water resource issues;
- propose methods for raising awareness of citizens and stakeholders; and
- recommend approaches to inform the public and to get them involved in solutions.

What is the background?

As the population of the Chehalis Basin expands, the water necessary to support growth will come from the development of new resources (potentially) and new infrastructure to capitalize on existing water rights. To minimize negative impacts on stream flows, these approaches must be augmented by conservation measures, including "water-wise" land use practices (also known as Best Management Practices or BMPs). These conservation measures should be the primary focus of public information.

Conservation, as used here, refers to using less fresh water, primarily through technology improvements and landscaping practices. Water resources saved through an effective conservation plan can be used to reduce the impact of withdrawal from hydrologic systems to help maintain base flows in streams and to delay the development of more costly water sources. Local water and land use plans must incorporate conservation as part of their way of doing business.

What information should be presented to Chehalis Basin citizens?

Information is needed to improve the general public's understanding of water issues in the Chehalis Basin. Basic concepts about water, watersheds, the needs of people, fish and wildlife, and how the various uses affect other uses/users — all need to be explained in simple, clear terms. Information about water resources and the role of individual water users must be readily available, easy to understand, credible and presented in ways that capture public interest.

What issues need to be addressed in public information materials?

Consistent, focused messages should be used throughout the basin to assist public and private water users to understand the need for responsible management of water resources. An overarching message is that basin residents can take simple, inexpensive and effective measures to ensure there is sufficient water in the Chehalis Basin for human and fish needs. The issues that should be addressed in a public information strategy include:

- Non-point sources of pollution
- Illegal diversions of water
- Riparian zone management
- "Best management practices" for irrigation, development, etc.
- Water conservation
- Recycling/reuse of wastewater
- Desirability of partnerships for coordinating water projects and efforts
- Strategies to improve habitat conditions for aquatic species
- Flooding issues, including the benefits of meandering and side channels

Who needs to develop and implement a public information program?

Local government agencies and stakeholders alike can play a leadership role by taking responsibility for developing and disseminating public information. For example, when a public utility mails its bills to customers during dry summer months, a small insert or attractive information blurb can be included to raise awareness about water supply and stream flow issues. The Citizens Advisory Committee of the Partnership, which played a significant role in public outreach during development of the watershed plan, could continue to play a key role in developing a public information plan and identifying key messages for the overall effort.

What outreach approaches are likely to be effective?

Personal Contacts

The rural nature of much of the Chehalis Basin lends itself to informal, personal contacts. Attendance at meetings held in the spring of 2002 as part of watershed planning demonstrated the importance of personal invitations to neighbors and colleagues.

The Internet

The internet is a tool that can make information easily available over a wide geographic area. The Chehalis River Council website (http://www.crcwater.org/) already provides information about Chehalis Basin issues. The Partnership should consider how this website, or its equivalent,

will be supported in the future because a concentrated, coordinated effort is needed to create, maintain and publicize a site that can inform interested parties about stream flow levels, water supply issues, fish runs, etc.

Existing Efforts

Public information on Chehalis Basin water issues must build on efforts currently underway. These include the *Drops of Water* newsletter and articles in *The Chronicle*. Additional public information efforts might include some or all of the following:

- Chehalis Basin Partnership website
- Informational materials (flyers, fact sheets, brochures)
- Series of articles in local newspapers
- Use of existing mailings
- Press releases publicizing meetings, events, activities and opportunities
- Briefings to local governments
- Briefings about water issues to groups in the watershed
- Information centers
- Publicity of events and activities via public access TV
- Fliers posted at popular community locations
- Op Ed Articles in the Aberdeen *Daily World,* the Lewis County *Chronicle* and the *Olympian* in Thurston and Mason counties.
- Piggybacking on existing events

OTHER USEFUL INFORMATION can be found on the Grays Harbor County site at http://www.co.grays-harbor.wa.us/ and the Thurston County site at http://www.co.thurston.wa.us/. Basin residents and water resource agency staff may also be interested in real-time stream flow data, available at http://waterdata.usgs.gov/wa/nwis/rt

What actions are recommended?

1. Develop "talking points" on water resources for all CBP members to have on hand to spread the word.
2. The Citizens Advisory Committee of the Chehalis Basin Partnership could take a leading role in developing a plan for public information, including specific roles and responsibilities. The Citizen Advisory Committee would make recommendations to and be guided by the Chehalis Basin Partnership.
3. Member agencies of the Partnership should consider what outreach techniques are a good fit for their resources and assist accordingly. The Citizens Advisory Committee should recommend options for information and involvement to the Partnership that the group feels will best meet the goals they have identified.
4. Initial efforts must focus on the water resource issues deemed most vital by the Partnership; they should begin as soon as the Plan is adopted.
5. Make clear in all communications that meetings of the Partnership are open to interested members of the public.
6. Develop eye-catching informational materials such as a "Chehalis Basin Water 101" brochure

7. Revise public informational materials and efforts over time to reflect what proves to be more/less effective.
8. Create a brochure that portrays the Chehalis River basin as a destination for recreating and living; this brochure will also convey the message that protecting our resources is the key to our quality of life

How can the recommendations be implemented?

If possible, the Citizens Advisory Committee should guide development of public information and involvement efforts. It must be recognized that individuals on this Committee are volunteers, and, while they can help develop materials, their time and resources for implementing outreach techniques are limited so Partnership agencies must assist.

The Citizens Advisory Committee could:

- Make suggestions on public information materials (formats, content, appearance, distribution);
- Review draft informational products before they are finalized;
- Offer advice on opportunities for public involvement on water resource decisions (advance publicity, meeting formats where appropriate, and alternative methods for interested citizens to provide ideas);
- Assist in outreach efforts, along with Chehalis Basin Partnership member organizations, to recruit participation in the Partnership, organize events, and spread the word about the need for careful management of Chehalis basin water resources; and
- Strategize on cost-effective ways to provide public information, including options for using resources available through Partnership member organizations and the community.

Land Use

Chehalis Basin Watershed Planning Issue Paper

What is the purpose of this issue paper?

This issue paper describes land use as it is applied by local governments (cities and counties) and then illustrates a correlation between land use, watershed management planning and the basin water resources.

What is the issue?

Each of us lives in a watershed and we need to recognize how our actions affect the watershed. Each land use action has an effect on the water that flows across or under the land on its way to a river or the Pacific Ocean.
The issue of land use was raised throughout the development of the watershed management plan. First documentation occurred in the plan's mission statement: "A management plan that will result in effective, economical, and equitable management of the water in the Chehalis Basin to sustain viable and healthy communities and habitat conditions necessary for native fish."
Stakeholders raised the issue of land use during several public meetings. The comments included:

- Are there plans to develop parks, water access or interpretive trails?
- Natural vegetation draws up a lot of water, not just irrigation.
- Concerns about stormwater runoff
- Many comments related to flooding that suggested floodplains and floodways are still being impacted by development.

The Steering/Technical Committee of the Chehalis Basin Partnership also provided input into this issue. Their comments supported further consideration regarding enforcement of existing regulations to protect water resources, protection or establishment of riparian buffers, streamside planting, management of stormwater runoff, and protection of land not inclusive of the latter.

The Watershed Management Act, Chapter 90.82 RCW, suggests that it is important to identify the policies and actions of local land use plans and development regulations to ensure consistency with water resource strategies. It is important to note that Chapter 90.82 RCW directs the work of developing the plan to include assessing existing regulations. Chapter 90.82.120 RCW specifically states that the plan shall not change existing local ordinances or existing state rules or permits, but it may contain recommendations for changing such ordinances or rules.

The issue of land use affects the entire Chehalis Basin.

What is the background to this issue?

Local governments administer land use in the Chehalis Basin. They are also responsible for providing the infrastructure to support development and have oversight regarding mitigation to minimize the impacts of development. Therefore, the success of this watershed plan will rely on prudent land use decisions and capital facilities investments.

Land use planning creates policies that guide how the land and its resources will be used. The social, cultural, and economic interests of stakeholders direct planning. Land use plans typically include a vision for community development, resource and land management strategies, cultural and traditional land use areas, land use and protected areas, and monitoring and review processes.

The intent of land use planning is to guide the development of better communities by providing quality decisions and information related to land use, building safety, and environmental protection. The State of Washington authorizes local government to engage in land use planning through one of four enabling laws. These laws appear in the Revised Code of Washington:

- Chapter 35.63 entitled Planning Commissions,
- Chapter 35A.63 entitled Planning and Zoning in Code Cities,
- Chapter 36.70 entitled Planning Enabling Act, and
- Chapter 36A.70 entitled Growth Management (GMA) - Planning by Selected Counties and Cities.

Land use planning generally falls into one of two categories: long-range or short range (current). Long-range planning includes preparation of comprehensive land use plans, Growth Management Act (GMA) compliance, and the preparation of land use and environmental regulations.

Current planning programs include the review and approval of subdivisions of land; mobile home parks; shoreline management permits along many rivers, streams and lakes; critical area permits (when adopted as required by GMA); infectious waste facilities; and environmental impact reviews.

In 1990, the State removed the optional provision for counties and cities to engage in planning under the auspices of the first three enabling laws, except for several rural communities. The final of four enabling laws, the GMA, directs counties and cities to prepare and implement comprehensive plans. The development of a Comprehensive Plan, the purpose of which is to provide for the orderly physical development of communities, serves as a prerequisite to the enactment of zoning regulations.

GMA directs cities and counties to address water resources in a variety of ways. It also gives them the responsibility and authority to plan for water quality and water systems through comprehensive plans and development regulations.

The GMA requires all cities and counties in the state to ensure that:

- Development regulations, including shoreline master programs,[1] are consistent with and carry out the comprehensive plan.
- Building permits are conditioned on evidence of an adequate quantity and quality of water.
- Subdivisions are approved only after findings of an adequate quantity and quality of water.
- Natural resource lands[2] and critical areas[3] are designated and protected using best available science.

In the Chehalis Basin eight counties, together with their respective cities, have land use plans that guide the development of the communities.

What technical information is available?

State law mandates that each county have certain land use policies/regulations (Chapters 35.63, 35A.63, 36.70, and Chapter 36A.70 RCW). Each county, and the cities within that county, typically have a unique set of land use plans, or code, that are indicative of how development should occur in that jurisdiction. Most land use plans include:

- A comprehensive land use plan,
- A zoning ordinance,
- A subdivision ordinance,
- A shoreline master program,
- A critical and sensitive area ordinance, and
- State Environmental Policy Act (SEPA) ordinances for environmental review,

What are some possible solutions?

Accept the status quo approach because existing land use and water resources laws and regulations provide an acceptable level of protection. Currently all counties, regardless of GMA, must designate resource lands and protect critical areas, accomplished through Ordinances. Existing comprehensive plans contain many elements that affect local or regional needs and actions involving water resources.

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1. RCW 36.70A.480 Shorelines of the state. (1) For shorelines of the state, the goals and policies of the shoreline management act as set forth in RCW 90.58.020 are added as one of the goals of this chapter as set forth in RCW 36.70A.020. The goals and policies of a shoreline master program for a county or city approved under chapter 90.58 RCW shall be considered an element of the county or city's comprehensive plan. All other portions of the shoreline master program for a county or city adopted under chapter 90.58 RCW, including use regulations, shall be considered a part of the county or city's development regulations

2. Natural Resource lands include agricultural, forest, and mineral resource lands as described in Chapter 36.70A.170 RCW.

3. Critical areas include the following areas and ecosystems: (a) Wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas. (Chapter 36.70A.030-Definitions).

Suggest modifications to the land use plans to consider impacts to the natural environment, availability of water resources, and lessening of wastewater and stormwater. Water resource strategies examined and developed through other issue papers should be reviewed for consistency with the local land use plans. Any inconsistency should be flagged and addressed with the participation of the respective local jurisdictions(s).

Recommend development standards that encourage low impact development[4] in the Chehalis Basin. Key components of this recommendation would include improved water conservation, better stormwater management, minimization or mitigation for development near riparian zones, and development of water resource monitoring plans. Some of the components are already in place, such as the flood plain management regulations,[5] shoreline regulations, and critical areas ordinances. Some regulations are subject to periodic updates. The watershed planning process could provide information for inclusion into such updates by providing access to technical resources and historical knowledge that might not be as readily available to some local jurisdictions.

Encourage the development of standardized data management and monitoring. This would involve consolidating the documented impacts of development and water use on water quantity, water quality, instream flow, and habitat into a common database. This option provides a framework for managing data and monitoring water resources in the basin.

What does analysis indicate about these possible solutions?

It is essential to establish a nexus between the use of land and the function of the watershed. A disconnect between these two elements of the environment may result in development activities at cross-purposes with the environment or conflicts between community-based goals, policies, and plans.

Land use is one of the major determinants of the quality of water resources. The Chehalis Basin is predominantly in forestlands, and that is an advantage from a water resource perspective. Forestry is a land use that provides the best water resources while, by contrast, urban areas and the associated land uses tend to affect water resources negatively. In terms of the relationship between land use and water resources, a rough continuum from good to poor is probably forest, agricultural, rural residential, suburban, urban. For that reason, water resource managers have the opportunity to protect the quality of the resources if they can successfully encourage landowners of forested property to keep the land in forest and farmers to continue farming.

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4. Low Impact Development (LID) is an innovative stormwater management approach with a basic principle that is modeled after nature: manage rainfall at the source using uniformly distributed decentralized micro-scale controls. LID's goal is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. www.lid-stormwater.net/intro/background.htm#1

5. The Flooding in the Chehalis River Basin issue paper contains information describing the flood hazard management regulations for Thurston, Lewis, and Grays Harbor Counties.

In June 2001, the Washington State Forest Practices Board adopted changes to its regulations to meet the requirements of the Clean Water Act and the Endangered Species Act. The new regulations, known as the "Forest and Fish Rules," include significant restrictions on timber harvest in riparian areas across the state. The regulations would apply to activities on forest lands owned by state, county, municipal, and private landowners. It is the intent of the new rules to provide positive impacts to water quality.

Although the Chehalis Basin has a high proportion of forest lands, development is concentrated in areas close to important basin streams and rivers, and this can have adverse impacts on water quantity and water quality. Although only 11 percent of the basin as a whole is in agriculture, urban or industrial uses, this figure climbs to 42 percent in those areas within one mile of the major Chehalis rivers where land uses are most intensive. These streams are the Chehalis main stem, South Fork Chehalis, Newaukum, North Fork Newaukum, South Fork Newaukum, Skookumchuck, Black, and Satsop main stem. The developed segments of these water bodies account for almost half the length of the major rivers in the Basin.

Because of the link between land use and water resources, county and other governments that want to maintain the quality of their water resources should encourage continuation of forestry and agriculture. It is also important to encourage the use of forestry and agricultural practices that mitigate the adverse impacts of timber, crop, and livestock production on water resources. For example, an area could be forested but still produce poor quality water resources if the area has a dense network of forest roads or if roads were poorly constructed or maintained. When areas are converted from forestry or agriculture, counties should consider requiring land use practices that limit adverse effects on water resources from the new, more intensive uses.

Historically, comprehensive planning tends to focus on how to promote population and economic growth and associated development. Efforts that focus on maintaining land in uses that promote water resource protection or that promote land management practices that support water resources are compatible with more traditional planning approaches. However, effective management requires attention to land use patterns. There must be a conscious effort to plan for sustainable water resources though such techniques as best management practices, riparian area management, low impact development, etc. Over the long term, water resources that are not managed for sustainability will be degraded.

Land use plans create choices that determine the pattern of growth, and the impacts of that growth/development can significantly influence the availability and quality of water resources. In the past, land use plans may not have addressed water resources. However, GMA requires planning for infrastructure by providing water-related requirements for cities and counties. The requirements include designation of urban growth areas to reduce sprawl; the land use element must review drainage and stormwater; new develop-

ment must show how to pay for capital facilities; and comprehensive plans must be internally consistent with adjacent jurisdictions.

Land use planning involves the application of regulations governing the type and scope of activities to be conducted on property. This includes controls set forth in various municipal and county codes. These codes are intended to address a wide range of specific issues associated with development, such as:

- Building lot density
- Permitted uses
- Building height
- Infrastructure improvement
- Drainage conveyance
- Land grading
- Building construction

The examination of activities conducted on land adjacent to or within shoreline areas is typically governed by more specific codes or plans, such as local government shoreline master programs that generally include a concurrent review by state of federal government, that provide a linkage between proposed land and uses.

Watershed planning should provide the community with a level of predictability that can be used in the development or updating of land use regulations, such as comprehensive plans or zoning ordinances. It will result in the acknowledgement and affirmation of a perspective that values the integration of watershed planning with land use planning.

Low Impact Development

- Preserve 60-65% of the forest in the watershed.
- Preserve intact, wide buffers along most of the length of streams down to the smallest tributaries.
- Limit road crossings of streams.
- Design and construct development so that "effective" impervious surface is held close to zero.

What actions are recommended?

- Examine land use plans to consider if the following are adequately addressed or consistently addressed by all local jurisdictions:
  - Impacts to natural environment.
  - Availability of water resources.
  - Lessening of wastewater and stormwater.
- If applicable, recommend development standards that encourage low impact development in the Chehalis Basin, such as: improved water conservation, minimization/mitigation for development near riparian zones, and development of water resource monitoring plans.
- Encourage landowners who have property in forests to keep it in forest and encourage farmers to continue to farm.
- Encourage the use of forestry and agricultural practices that mitigate the adverse impacts of timber, crop, and livestock production on water resources.
- Require land use practices that limit the adverse effects on water quality when forest and agricultural lands are converted to more intensive uses.

What implementation issues need to be addressed?

The Chehalis Basin Partnership should continue to examine the relationship between land use planning and the effects on water resources, both positive and negative outcomes. To date, the planning constituency has not been consistently represented. This could be attributed to limited staff resources and the technical nature of the watershed planning work to date.

To successfully implement this component of the watershed plan would require dedicated funding. As mentioned throughout the watershed plan, funding for water resources management in the Chehalis Basin is a significant issue. Without adequate funding, the Chehalis Basin will struggle to adequately manage the water resources.

What issues remain unanswered?

What is the cost associated with implementing the recommendations? Since GMA requires cities and counties to address water resources, one way to estimate the cost would be a comparison of the cost associated with GMA compliance. Cities and Counties in the Chehalis Basin expended between $20,000 and $150,000, per entity, to develop GMA documents. This cost does not include the expenses to defend the documents before the Growth Management Hearings Board.

How can land use provide protection for established uses (e.g. agricultural) when residential sprawl encroaches into an established use that may become a nuisance to the residential population? GMA requires local government to provide notice during the development process regarding the presence of sensitive or critical areas. Is this notice adequate protection?
How will the cities and counties address the legislation passed in the three water bills in 2003: (2E2SHB 1336 — Watershed Plan Implementation, ESSB 5028 — Water Pollution and Water Rights ("MVID"), and 2E2SHB 1338 — Municipal Water Rights)?

References/Suggested Reading

http://www.co.thurston.wa.us/permitting

http://www.co.lewis.wa.us/CommunityDevelopment/planning/planning.htm

http://www.co.mason.wa.us/community_dev/planning/default.shtml

http://www.co.grays-harbor.wa.us/info/pub_svcs/PlanningBuilding.htm

http://www.ocd.wa.gov/info/lgd/growth/fact_sheets/index.tpl

http://www.ocd.wa.gov/info/lgd/growth/fact_sheets/Watershed_Planning.pdf

Stormwater Manual for Western Washington
http://www.ecy.wa.gov/programs/wq/stormwater/manual.html

Planning Enabling Act - Chapter 36.70 RCW

Salmon Recovery - Chapter 75.46 RCW; RCW 90.71.005, 020, and 050

Shoreline Management Act of 1971 - Chapter 90.58 RCW

State Environmental Policy Act (SEPA) - Chapter 43.21C RCW

Watershed Planning - Chapter 90.82 RCW

Department of Natural Resources Forest Practice Division
http://www.dnr.wa.gov/forestpractices/index.html

Agriculture and Water Management

Chehalis Basin Watershed Planning Issue Paper

Why is agriculture vital to the health and sustainability of the Chehalis Basin?

Agriculture is important to the Chehalis Basin and it is an objective of the Chehalis Basin Partnership (Partnership) to support and retain our agricultural community. This was a strong message that the Partnership received from the public at regional meetings held throughout the basin in 2002. From an environmental perspective, it is important to maintain farming and to avoid the transition of farmlands to more intensive development. From a food security perspective, it is valuable to have our food produced locally rather than imported from remote locations.

Washington agriculture is incredibly diverse when compared to other states in the nation. The term "agriculture" includes not only traditional soil crops but also aquaculture, forestry, plant nurseries and greenhouses. Economically, agriculture generates $28 billion statewide, or about 12 per cent of the state's economy, and employs more than 170,000 people. Timber is the most valuable product in Washington and the state is one of the nation's leading producers. A substantial portion of timber harvest comes from farm woodlots which are included as agriculture. In addition to the traditional crops of wheat, corn, fruit, dairy, poultry and hay, Washington farmers produce mint, berries, hops, Christmas trees, potatoes, nursery specialties, fish, oysters, asparagus, garlic, nuts, and vegetable seed – over 350 different crops in all.

Many of these products are grown in the Chehalis Basin which includes large portions of Grays Harbor, Lewis and Thurston counties along with smaller sections of Mason, Pacific, Cowlitz, Wahkiakum and Jefferson counties. These counties produce timber, small grains, hay, peas, corn, specialty crops, nursery crops, berries, oysters and other shellfish, cranberries, fish, dairy, cattle, poultry, and other livestock. There are many crops that are imported into the state of Washington from other states or from abroad that could be grown in the basin given its climate and availability of water. Addressing the "import substitution" market represents a significant opportunity for the evolution of Chehalis Basin agriculture.

We estimate the economic value of agriculture for the Chehalis Basin at $150 million per year (farm gate) not including commercial timber.[1] In addition to the economic value of agriculture, the aesthetics and recreational value of open land, timber and farms are considerable. Well-managed forests, aquaculture and farming can provide wildlife and aquatic habitat, recharge

1 Brian Thompson, Vice President, Lewis County Farm Bureau, personal communication, August 2003

aquifers, afford recreational opportunities, and add to a general overall quality of life. Opportunities to buy locally produced products and the recreational opportunities provided by the clear, high quality waters in some areas of the basin add tourist dollars to the basin economy.

Farms generally provide more tax revenue than the cost of services that governments provide to farms. Thus farms generate a net tax benefit to local communities, which is generally not the case for residential development. This means that communities should seek to preserve their farming communities for fiscal as well as for aesthetic, economic, and environmental reasons.

Agriculture has a positive effect on local economies in other ways as indicated by job creation multipliers, which estimate the effects of different industries on overall employment rates. The results for agriculture are quite positive relative to some other sectors. For instance, the job creation multiplier for Livestock and Animal Production is 3.11, so for every livestock and animal production job created, 2.11 additional supportive jobs will be created. (For comparison, the federal government multiplier is 1.62; accountants,1.53; and Boeing 2.04.[2] Those counties and regions that have a strong agricultural community generally enjoy statistically lower unemployment rates.[3]

How does agriculture in the Chehalis Basin affect water quality and quantity?

Water Quality

The basin encompasses approximately 2500 square miles. Approximately 87% of it is forested upland and an additional 8% is in traditional agriculture. Most of the commercial dairy, poultry, livestock and crop farming operations are in the low-lying valleys adjacent to the Chehalis River and its major tributaries. This can be seen by reference to the map on page IV-4 of this Watershed Management Plan.

Good water quality in the basin is most likely a reflection of the extensive forestlands in the basin. Good agricultural practices are important to prevent the degradation of Chehalis Basin waters. Measures that protect the quality of the water include implementation of best management practices, erosion control, regulatory requirements for application of pesticides, dairy and poultry nutrient management and limiting livestock access to streams.

Agricultural lands also provide open space for aquifer recharge. Farm woodlots areas promote cool water conditions during the summer. Water storage options can be increased through wetland restoration and farm ponds where such storage does not prevent water from reaching streams and thus exacer-

2 Arthur Styles of Grays Harbor County Economic Development Council, Personal communication to Terry Willis, August 2003. For more detailed information on this subject go to www.bea.doc.gov/bea/dn2/i-o.htm or to www.remi.com.
3 Ibid.

bating low flows. Typically, when land use changes from agriculture to other uses, adverse water quality impacts also increase as a result of an increase in impervious surfaces, loss of shade and other stream cover, loss of wildlife and fish habitat, and contaminated storm water runoff.

Agricultural practices have the potential to degrade water quality. Such practices are generally less detrimental than more dense human populations or heavy industry, but high animal populations can have a significant effect on downstream water quality when proper protection efforts are not followed. Updated manure management practices combined with limiting livestock access to streams have proven to be effective in preventing surface water pollution. Farm plans, created wetlands, stream bank stabilization, and other management techniques also protect water quality. Government laws and regulations must balance expected benefits of protection versus costs when developing protection measures.

Rural areas that are urbanizing tend to have larger lots (one or two acres, up to 10 acres) with a single family home; many of them also have one or two animals (horses, llamas, goats, cattle, etc.). These are not technically farms since the animals are not raised primarily with a profit objective but instead are raised as pets, to provide meat for the family, or to provide enjoyment to the residents. Under these conditions, livestock can have adverse water quality impacts resulting from high animal density and poor manure handling practices. An increase in the number of very small (less than 10 acre) farms/parcels can increase the difficulty of protecting water quality because such landowners may not be aware of their impacts on water quality or they may be unfamiliar with the information regarding best management practices. Moreover, their livelihood is not tied to the land or its natural resources. In addition, small private landowners are generally not a target for county, state and federal laws and regulations governing natural resource management because it is difficult for government agencies to contact, educate, and assist the large numbers of small operators.

Water Quantity

What does the Partnership know about agricultural water uses? The Partnership derived its information on water rights in the Chehalis Basin from the Department of Ecology's Water Rights Administration and Tracking System (WRATS). According to WRATS, agricultural water rights[4] in the basin are primarily for irrigation. They constitute approximately 70 percent of the total number of rights. Excluding the Wynoochee power right, which is 1200 cfs, agricultural rights account for about 35 percent of the total authorized withdrawals in the basin (in cubic feet per second). See chart at right.

In addition to certified rights, there are approximately 8500 claims in the Chehalis Basin. Of these, approximately 3800 list either irrigation or stock watering as a purpose. No quantity information is associated with most

approximate counts and authorized withdrawals for water rights in the Chehalis Basin

Rights	*CFS*	*Number*
Total Rights	1800	2500
Rights By WRIA	900 Upper 900 Lower	1800 Upper (WRIA 23) 700 Lower (WRIA 22)
Agricultural Rights	620	1730
Agricultural Rights by WRIA	460 Upper 160 Lower	1300 Upper 430 Lower

NOTE: Authorized withdrawals (CFS) in this table do not include the 1200 CFS Wynoochee power right, which is in WRIA 22

4 This includes rights that WRATS indicates as having one or more of the following four purposes: Irrigation, Frost Protection, Stock Watering, and Dairy (data current as of August/September 2001).

of the claims in the WRATS database. Of the 8500 claims, only 89 have a quantity listed, and 82 of the 89 have stock watering or irrigation listed as a purpose. The total CFS associated with the 89 claims is just over 204 CFS; the 82 agriculture claims are for just over 187 CFS.

The Natural Resource Conservation Service assisted the US Environmental Protection Agency to compile an estimate of irrigation use in Lewis and Grays Harbor Counties. The following is a summary:

- Lewis County – approximately 4-5000 acres irrigated, which would use approximately 5000 acre feet over the irrigation season (June to August);
- Grays Harbor County – approximately 4000 acres irrigated, using approximately 3300 acre-feet.

These estimates are consistent with the findings by the Chehalis Basin Partnership Level 1 Assessment, which suggests that the total quantity of water allocated for irrigation is not being put to beneficial use. The following two quotations on actual uses vs. irrigation rights are from the CBP Level 1 Assessment.[5]

> "Irrigated agriculture appears to be in the decline in both counties [Lewis and Grays Harbor] as cropping patterns have changed. Even in Ecology's 1976 report, it appeared that the total water allocated for irrigation was not being put to beneficial use. Actual data for the watershed was, therefore, used from the 1997 Census of Agriculture report (USDA 1999) as a surrogate: 5,765 acres irrigated in Lewis County and 3,067 in Grays Harbor County. By contrast, there were 12,444 acres allocated for irrigation in WRIA 23 and 11,559 acres in WRIA 22."

> "Given the order of magnitude difference in the allocated and potentially irrigated acreage in both WRIAs, investigation into actual use of irrigation water may be a worthwhile effort. As irrigated lands decline, and the fact that there appears to be substantially less irrigation than the acreage allowed under water rights suggests, it would be useful to know which water rights were actually being used and which ones were not. Because irrigation represents such a high consumptive[6] use of water, this effort may be worth the time and cost to sort out in a Level 2 Assessment. However it would require cooperation by the farm community to be useful."

This issue paper identifies actual use of agricultural water rights as a data gap. (See pages IV–146 & 147.)

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5. Chehalis Basin Level 1 Assessment, Envirovision, December 2000, Technical Summary, p 2-12.
6. Note: Notwithstanding this language from the Level 1 Assessment, there are disagreements over the extent to which agricultural water use is consumptive, and some participants in plan development would not agree with this statement. This issue paper identifies this as a data gap for further

What are the issues?

Agricultural Economics

The economics of agriculture is a complex issue that can be simply reduced to the practical statement that growers will quit when it does not pay to continue farming or maintain timberlands. The decline in agricultural profitability is brought about by an extremely complex web of international competition for markets, increased production costs, poor economic returns, regulation, and opportunities for profit by converting the land to other uses. If commercial agriculture is to continue in the Chehalis Basin, it must be profitable to farm.

Land cost is a significant factor affecting the economic sustainability of agriculture. When development pressure drives the market price of farmland up above its value for agriculture, it becomes very difficult for farmers to invest in improvements to their agriculture businesses. Frequently these investments are in fixtures or other farm-specific fixed assets that have little or no independent value. Such investments do not make economic sense when the principal value of the farm is its value to a developer rather than to another farmer. This is especially true when the investment payoff is so long-term as to be well beyond the point when the farm is likely to be sold for development. Farm owners in this position hesitate to make such investments, and, accordingly, their farming operations tend, over time, to suffer in the competitive marketplace.

The market value of agricultural land is a function of development opportunities. Governments can adopt policies that seek to make agriculture more profitable via subsidies, cost reduction (e.g., reducing permitting costs), purchase of development rights, etc. This strategy of increasing profitability to keep farmers on the farm can be successful in some circumstances. However, there are limits to the increased profitability that such policies can achieve – probably in the range of 20 to 25 percent increase. If a farm property has a significant development opportunity, such as would occur if agricultural lands were rezoned to commercial, industrial, or residential use, the value of that farm land could rise to three or four times its value for agricultural use. In such an instance, policies to make agricultural more profitable would not be sufficient to induce the owner to continue to farm, and such land would almost inevitably be sold and converted to non-farming use.

Water Availability

Without adequate water, agriculture cannot exist. Rainfall is adequate to produce some crops such as grass hay. However, such crops are generally of low value unless growers can target niche markets that bring premium prices, such as organic livestock feed which is in very high demand in the region and nation. Higher value specialty crops generally require summer irrigation, and livestock and poultry require consistent, year-round water. Current water right laws are not as responsive as needed to adjust to market demands, which limits grower's flexibility. Management of water based on paper water rights

(versus actual use) limits the ability of growers to obtain new rights because decisions on applications are made based on an overestimate of actual use.

From the perspective of the agricultural community the current system of managing water rights in the Chehalis Basin is not sufficiently flexible and is complex to administer. A better system is needed that is sensitive to the basin's unique characteristics. This system may be different from solutions that may apply in dryer portions of the state or in areas that depend upon snow pack to maintain summer flows although some aspects of solutions that work in other areas of the state may be applicable.

The Chehalis Basin Level 1 Assessment concluded that existing agricultural water rights were probably not being used. So, from one perspective, there appears to be surplus water for agriculture. This may be a distribution problem: authorized points of withdrawal may not be in the right place, or the right may not be in the ownership that would maximize its value to agriculture, or the right may have been relinquished due to non-use.

Commercial timber and agricultural producers have a financial interest in the quality of natural resources that directly impact production, including water. As a result, they have an incentive to be good land stewards. If farms aren't economically sustainable over the long term, the ability of farmers to be good land stewards is compromised. There is an important link between economic viability and implementation of the stewardship ethic.

So long as lands remain in agriculture:

- Maintenance of agricultural drainage systems is important to the economic viability of agriculture;
- Properly designed diking systems can provide additional habitat quality for aquatic species and can slow excessive runoff for greater downstream protection from flooding;
- The application of best management practices, appropriate setbacks, and carefully managed cultivation activities in riparian areas can protect water quality, increase complexity of riparian habitat, increase shade, and improve stream temperature and aquatic habitat;
- Better management of concentrated farm animal operations can eliminate runoff that may contain nutrients, pesticides, sediment, and possibly fecal material;
- By retaining existing wetlands and, where appropriate, restoring some wetlands that have been lost, the proper functioning of the entire aquatic ecosystem can be improved.

What are some possible solutions?

The Ad Hoc Agriculture Work Group of the Partnership's Steering/Technical Committee developed several major policy level recommendations; they are

set forth immediately below. Additional detailed options that support or supplement these major recommendations are set forth in the options matrix attached to this paper.

1. Promote education to those who use the water about the effects of activities on the quality of the water
2. Encourage local agricultural production and promote local agricultural product sales
3. Promote science-based research and education to support agricultural producers by WSU Cooperative Extension and other institutions that provide these services to Chehalis Basin growers.
4. Develop an overall strategic plan for promoting agriculture that will address growth management, sustainability, the environment, and water rights issues. The plan should be consistent with the Growth Management Act, include a strategy for funding, and identify organizational responsibility for implementation.
5. Develop and implement a Chehalis Basin program for the purchase of development rights to maintain land in agriculture. As an alternative, governments could purchase agricultural water rights and hold them in trust to maintain the agricultural community.
6. Develop local programs to match and supplement funding available from state and federal agencies for agricultural land conservation.
7. Conduct a general water rights adjudication in the Chehalis Basin to establish the groundwork for water rights trading.[7]

What does analysis indicate?

The overall impact of agriculture on the Chehalis River Basin is beneficial, from the perspective of economics, water quality and water quantity. Benefits of agriculture to water quality and quantity are clear when compared with

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7 Most people are at least somewhat familiar with the battle over water that took place in the Klamath Basin in Oregon and California in 2001 which proved to be very destructive for every interest involved because of the acrimony and environmental results. Oregon State University and the University of California at Davis did a joint study of what happened [Water Allocation in the Klamath Reclamation Project, 2001 which is available at http://eesc.oregonstate.edu/agcomwebfile/edmat/html/sr/sr1037/sr1037.html.

The Report Summary (Chapter 19) concluded that

> "80 percent of the costs of the2001 water shortfall could have been avoided had water markets or other transfer mechanisms been available. Given the high value of [certain areas of] agriculture, and the presence of large areas of lower value agriculture in other parts of Klamath County, a cost minimizing approach to reducing irrigated acreage would have involved full irrigation for the Project and curtailed irrigation in other, less productive areas"

"This analysis suggests that the absence of water transfer mechanisms, such as water markets or water banks, magnified the costs of drought and ESA determinations fourfold. The cost of future water shortages could be reduced if mechanisms for transferring water rights were put in place. If water rights can be transferred, it will be possible for irrigation water to be allocated with the greatest certainty to those users with the most to lose from not getting their water. **The development of such mechanisms requires that water rights adjudication in Oregon be completed**"

the impacts that occur when agricultural lands are converted to more intensive land uses and increased impervious surface. Whether or not agriculture remains in the basin will depend on its economic viability and the political will of the local governments and citizens. It will not be possible to protect and enhance agriculture in the basin if local governments and community members do not appreciate and value their agricultural neighbors. Strategies to promote appreciation of the important role of agriculture and to foster ties between the agricultural and non-agricultural segments of the community are needed. The Partnership's mission statement mandates that a plan be developed that results in effective, economical and equitable management of the water to sustain viable and healthy communities. The Partnership considers agriculture to be an essential and desirable part of this community.

Protective measures to maintain or improve water conditions in the basin must be cost effective to preserve the economics of agriculture. At the same time, laws and regulations must be sufficiently strong to prevent degradation, and policies must be consistent over time for agriculture to continue.

What education/technical assistance is available?

The educational needs of agricultural producers and rural landowners in the Chehalis Basin are as varied as the crops and livestock they produce. Individuals living on small farms in the Chehalis River Basin need information on choosing, producing, managing and marketing a wide variety of horticultural crops and livestock either to start new farms or expand existing ones. At the same time they need to become knowledgeable in how their farming operations/practices can impact both water quality and quantity in the Chehalis River Basin. WSU Cooperative Extension has traditionally been relied upon to provide unbiased researched-based information to agricultural producers in the Chehalis Basin.[8] Outside funding to support a regional "Small Farm" WSU Cooperative Extension Agent would be very helpful in the implementation of educational programs for agricultural producers in the Chehalis River Basin. These educational programs could focus on maintaining and increasing the economic viability of agricultural operations as well as best management practices to maintain water quality and quantity.

What data gaps should be filled?

1. Actual water use
2. Hydrologic continuity between basin wells and surface waters
3. Unmet demand for agricultural water rights (i.e., individuals who want to enter agriculture in the basin but do not because they cannot obtain a water right)
4. Agricultural operations that are supplied by exempt wells
5. Landholding patterns and trends [e.g., the numbers and locations of very small "farms" (one or two acres, up to 10 acres) with a single family home and one or two animals]

8. Recent budget reductions have limited WSU Cooperative Extension staffing to serve this audience

6. Information on the extent to which various types of agricultural water use are consumptive
7. Identification of specific federal, state, and local policies that limit sustainable, economically viable agriculture in the Chehalis Basin

What institutional resources exist?

Small farms such as those that exist in the Chehalis Basin depend on institutional support to provide the research and technical assistance they need to be competitive. The following governmental agencies[9] are important in performing these and other functions needed to maintain a healthy agricultural community in the Chehalis Basin. At present most of these entities do not have adequate funding to address the needs of Basin farmers:

1. Washington Department of Agriculture's Small Farm Program
2. WSU Cooperative Extension County Agents
3. WSU Center for Sustaining Agriculture and Natural Resources
4. WSU Sustainable Agriculture and Natural Resources Research and Extension Center at Vancouver
5. Natural Resource Conservation Service District offices
6. County Conservation Districts
7. US Department of Agriculture conservation programs (CRP, EQUIP)

Other institutional resources are as follows:

- American Farmlands Trust, www.farmland.org;
- Cascade Harvest Coalition, www.cascadeharvest.org.
- WSU Small Farms Team, http://smallfarms.wsu.edu/

Agriculture and Water Management Options Matrix

I. No Action Option

Alternative Solutions	*Expected Outcomes*	*Comments*
Status Quo	• Existing right holders will probably have adequate water. • Individuals without existing rights who want to start agricultural operations in the upper basin will have difficulty acquiring rights and will be deterred from entry. • Farm lands in the basin will continue to be lost to development and the area of the basin that is residential/urban will expand. • Water management problems will be exacerbated as land use changes from agriculture to more intensive development.	Will not benefit agriculture, water quantity, water quality, habitat, or instream flows.

9. Not listed in priority order

II. Options to Improve Economic Viability of Agriculture

Alternative Solutions	*Expected Outcomes*	*Comments*
1) Promote "Buy locally grown," " From the Heart of Washington," farm produce stores, cooperatives, farmer's markets and other sales mechanisms that return higher percentages of sale dollars to growers.	• Improved market opportunities and income for farmers • Market opportunities for more diverse set of crops • Increased connection between farm community and non-farm residents will improve support for agriculture and agricultural initiatives in the basin.	Who? What organization(s) will be responsible to see that this happens? What other organization need to be involved? What will be the funding sources?
2) Expand and continue "Harvest Celebration" a farm/ community education event.	• Increased understanding and mutual support and appreciation between farm and non-farm elements of the community • Additional tourist revenue source for both agricultural and business interests	TA harvest celebration has been organized in Grays Harbor County. Don Tapio, WSU Cooperative Extension, provided important support to this effort This is a lot of work.[1] It requires a sponsoring group and probably professional support from WSU Cooperative Extension, which is having its funding cut back.
3) Support research and extension of crops that are suitable for western Washington at the WSU Sustainable Agriculture and Natural Resources Research and Extension Center at Vancouver.	• Provide additional source of technical assistance to farmers • Provide farmers with more diverse crop options and potentially higher returns • Can provide some new crops that will have reduced water demands	New crops may have different water requirements. WSU should make it a priority to dedicate research effort into new crops that have low or no supplemental water usage. Change may be difficult or impossible for some farms WSU Center has had its funds cut, along with other WSDA funding for support to small farms Fruit orchards and nuts can be an economic alternative for agriculture in the basin. Some fruit and nut trees and shrubs are adapted to the Pacific Northwest climate, may not need summer water, and could be a viable local market option.
4) Promote institutional purchasing of local food (schools, prisons, reform schools, jails)	• Expand markets for basin farmers	What entities would do this work? Is this an opportunity to improve prices by direct sales?

1. Following is a description of the level of effort and other issues involved in Harvest Celebration in Pierce County provided by Richard Hines, Communications & Development Specialist Center for Sustaining Agriculture & Natural Resources: In Pierce County, a local citizens' coalition, Friends of Family Farmers, has produced the event since 1999. It does take a considerable degree of planning and volunteer involvement, but the payoffs are seen in greater public awareness of local farming and lot of free media coverage of both the event and current issues facing agriculture. In Pierce County the Friends group has had strong support from Cooperative Extension, but the main responsibility for the event has been on volunteers. Last year, the group raised more than $10,000 in cash and $20,000 in in-kind support for the Pierce County event. We had eight farms open, as well as a main staging area at the Puyallup Research Center. We estimate attendance at 5,000, probably the highest of any county. It is an exhausting effort to produce these events, and I wouldn't go into it without a local group that is committed to seeing it happen. To get more help, and for other organizational reasons, our Friends group disbanded two weeks ago. We are becoming reconstituted as a committee of the county Grange. This has potential as a statewide model for Grange engagement in Harvest Celebrations, and this is quite a logical partnership given declining resources in Extension and the need for range to have a solid purpose that reflects its identity in the community. An overview of Harvest Celebration events, prepared by Cascade Harvest Coalition, is at www.cascadeharvest.org. In King County, a part-time county-funded staff member works on the event, and in Clallam and Skagit counties, Extension essentially spearheads the event.

Alternative Solutions	*Expected Outcomes*	*Comments*
5) Establish and support a community food-processing kitchen to promote small-scale food processing and added value enterprises.	• Expand markets for basin farmers • Provide cost effective processing capability for small growers or coalitions of growers	What entities would do this work? This may be an opportunity to improve prices by direct sales and to extend the market season. This might be done in collaboration with the Port.
6) Promote local regulations that allow alternate supplemental incomes on agricultural lands (e.g.– tourist activities).	• Expand non-agricultural income for farms	This is a major issue with growth management authorities which have sought to limit non-agricultural activities on farmlands. Non-agricultural income from farms may be essential for some farmers. Such initiatives should assure that the non-agricultural income is subordinate to the main purpose of agricultural preservation and that it is compatible with the prime agricultural purpose of the property and surrounding agricultural lands. There should be safeguards in place to assure that this is not a major avenue around protections provided by zoning.
7) Support "Open Space" tax assessment laws.	• Reduce taxes on agricultural operations as a means to increase farm income • This approach has been highly beneficial to maintaining agricultural lands.	All the Chehalis Basin Counties with significant agriculture have these. Counties should promote this strongly and assure that there are no artificial barriers to enrollment.
8) Strengthen "Right to Farm Laws" and other laws that reduce nuisance lawsuits.	• Reduce farm expenses • Improve relationship between farm and non-farm community members	Some Chehalis Basin counties have these laws. These are also governed by State Statues: RCW 7.48.300, RCW 7.48.305, and RCW 7.48.310 Skagit County is reputed to have a law of this type that is particularly effective and may be a useful model to review for potential improvements to such laws in the Chehalis Basin. Zoning laws could address this issue by segregating agricultural areas into blocks with purchase of development rights.

Alternative Solutions	*Expected Outcomes*	*Comments*
9) Encourage purchase of development rights and conservation easements or other programs that pay farmers to stay in farming.[2]	• Reduce property taxes • Provide cash infusion to farmers • Maintain land in agriculture • Makes agriculture politically more "real" for elected officials if they have invested in conservation easements	Purchasing of development rights programs nationwide has shown that purchase alone will not sustain agriculture or the environment unless there is a political will combined with citizen support to make such programs long-term.
10) Provide enhanced water rights to farmers who protect their land for agriculture with permanent conservation easements.	• Provide an additional incentive to maintaining lands in agriculture.	Security in agricultural water rights should go first to those who have committed their land forever to agriculture. Farmers hesitate to sell or donate an agricultural conservation easement because they fear they may find themselves in a really bad position if they do so and subsequently find themselves without water. This could address that concern. Such a program would have to be implemented with significant caution and safeguards to assure that there were no adverse impacts to senior right holders or instream flows.
11) Ecology should do an audit of all water rights and claims in the Chehalis Basin.	• Reduced uncertainty regarding authorized withdrawals • Improved information that should result in better water management.	Bullet these They should address claims first and eliminate those claims that do not exist from their calculations. This could allow additional rights to be issued in some basins.
13) Ecology should place a priority on the processing of requests for changes that transfer water from non-agricultural uses to agriculture and from one agricultural user to another	• Promote the transfer of water to the highest and best uses within agriculture	Ecology should not approve agriculture-to-agriculture transfers where such a transfer would render the selling property unviable for agriculture because of lack of water.
14) Reduce permitting costs and the time required to obtain a permit	• Reduce farm costs; increase farm net income	This would involve advice on where to find information, "one-stop shopping" for information on regulations, etc. We need to develop an analysis of the permits that are most costly to farmers. Agencies should reduce costs for permits on this list.
15) Investigate economics of pollution trading (carbon sequestering?).	• This could provide additional farm income.	Farmers in other areas already have contracts for carbon sequestration and are receiving some income from this source.

Alternative Solutions	*Expected Outcomes*	*Comments*
16) Investigate trading credits water rights	• In times of water shortage, this would facilitate transfers of water to the high priority uses	This probably would require an audit and adjudication of basin rights.[2]
17) Consider options for providing public sharing of the costs of using/benefiting from private land.		Example: purchase of development rights or conservations easements.
18) Improve methods of communication for education and regulation. It is too difficult to get information out to those who need it.	• Reduce time and costs to farmers to obtain information and technical assistance	This is important and should be a high priority for action. Maybe a subsidized web page for Chehalis Basin agriculture. This needs staffing also. Perhaps fund WSU Extension?
19) Provide economic incentives to maintain improvements that were developed that might otherwise be lost if farms go out of business or timberlands are converted to other uses.	• With economic incentives there is less chance that improvements will be lost if ownership or land use changes.	This would protect and/or make permanent such enhancements as created water storage, buffers along streams, preservation of open space, and preservation of forested areas
20) Promote consistency and long-term governmental policies and regulations that promote agriculture and environmental protection.	• Reduce non-farm costs and demands on farmers' time. • Encourage long-term planning.	The purpose of permitting should be to assist a landowner in doing his project correctly, not to keep him from doing it. Examples include drainage maintenance and new structures. Are there specific policies and regulations that are priorities to change? Does this differ from county to county?

2. There was a national conference on purchase of development rights in Portland 2-3 years ago. The Proceedings of this conference might be a valuable resource in the process of developing this recommendation.

III. Options for Agriculture to Maintain or Improve Water Quality and Water Quantity

Alternative Solutions	*Expected Outcomes*	*Comments*
1) Education to those who use the water about the effects of activities on the quality of the water.	• Promote voluntary actions	Work with conservation districts and WSU Cooperative Extension to deliver educational programs such as "Living on the Land: Stewardship for Small Acreages" which focuses on water quality management.
2) Provide cost share or other economic incentives to promote best management practices	• More on-the-ground pollution prevention implemented on farms	What programs already exist that provide cost share? Due to budget problems at the state level only federal cost share is available -- Environmental Quality Incentive Program (EQIP). There are also some private foundation grants available and others from time to time. There are always more projects than funds available. List types of BMPs that address water quality issues.[4]
3) Provide economic incentives to increase stream bank stabilization and shade through managed riparian buffers that can provide economic return to farmers while enhancing stream habitat	• Farmers can get an economic return and provide riparian protection simultaneously.	Currently most riparian buffer programs are "hands off" and allow for little or no economic use. It would be necessary to address this in order to implement this option. BMPs may be fences, trees, tiles, alternate water sources for livestock CRP and CREP programs do not allow alternatives that permit economic return, e.g. growth of nut pine, ginseng, or mushroom culture under alders or maples
4) Each county should set up an agricultural advisory committee for water use composed of individuals who are actually making their living in agricultural production.	• Counties would have sound advice prior to making policy that effects the agricultural community • Promote wise water use • Fairly allocate water • Encourage water conservation	Voluntary system may be workable if local interests cooperate Would require education of water users about benefits in order to get full support
5) Change surface water withdrawals to ground water withdrawals for irrigation where hydrologic studies establish that that ground water withdrawals will not impact stream flows during low flow months.	• Increase instream flows	May have unintended ecological effects (for example, reduce wetlands that are recharged from ground water levels) Withdrawals would need to come from deep aquifers that do not affect current stream levels Hydrologic studies may be expensive

4 BMPs that address water quality include the following NRCS standards among others: Animal trails and walkways, Channel vegetation, Composting facilities, Conservation Covers, Contour farming, Controlled drainage, Cover crops, Critical area planting, Filter strip, Floodways, Forest harvest trails, Grade stabilization, Grassed waterways, Heavy use area protection, Irrigation system development, Land reclamation, Nutrient management, Pasture management, Pest management, Roof runoff management. Specifications and recommendations are site specific depending on soil types, slopes, livestock type and numbers etc.

Alternative Solutions	*Expected Outcomes*	*Comments*
6) Promote use of reclaimed water for irrigation.	• Increase instream flows by not diverting surface water	May have the opposite effect and actually increase water usage without returning diverted water to streams. This would have an adverse impact on stream flows If use of reclaimed water allows right holders to withdraw "extra" quantities, this would also have an adverse impact on stream flows
4) Provide adequate funding for the work of agricultural assistance organizations such as the NRCS Districts, WSU Cooperative Extension, etc. Restore funding for the WSU Sustainable Agriculture and Natural Resources Research and Extension Center at Vancouver.	• Provide growers with practical, hands-on research results that they need to be competitive and profitable	By cutting research of this type, the state is eliminating some of the most highly informed and practical help available to growers. Support needs to come in the way of dollars. There is lots of field research going on to show water use efficiency, reducing pesticide use, and increasing the use and efficacy of cover crops in vegetable production. The WSU Vancouver center conducts significant research to develop and test production practices that conserve water and protect water quality by investigating alternatives to pesticides.

IV. Options for Education and Technical Assistance to Agriculture

Alternative Solutions	*Expected Outcomes*	*Comments*
1) WSU Cooperative Extension provides unbiased research-based information to agricultural producers in the Chehalis Basin and conducts community-based workshops.	• Clientele living on small farms in Grays Harbor, Thurston and Lewis Counties (Chehalis River Basin) need information on choosing, producing, managing and marketing a wide variety of horticultural crops and livestock either to start new farms or expand existing ones. • These growers need to become knowledgeable about how their farming operations/practices can have an impact on both water quality and quantity in the Chehalis River Basin. • Outside funding to support a regional "Small Farm" WSU Cooperative Extension Agent would be very helpful in the implementation of educational programs for agricultural producers in the Chehalis River Basin. These educational programs could focus on maintaining and increasing the economic viability of agricultural operations as well as best management practices to maintain water quality and quantity.	The educational needs of agricultural producers and rural landowners in the Chehalis Basin are as varied as the crops and livestock they produce. Recent budget reductions have limited WSU Cooperative Extension staffing to serve this audience. Other organizations that provide valuable technical education and services include NRCS, conservation districts and such local entities as county weed boards and health depts. Funding is the limiting factor for outreach. Counties with assessments for their local CDS and consistent support for extension and weed board activities will get more water quality and quantity education and technical assistance on site.

Alternative Solutions	*Expected Outcomes*	*Comments*
2) Develop funding sources and establish a position through WSU Cooperative Extension to implement the education and outreach options in this matrix, with particular focus on small landowners. (Small Farms Cooperative Extension Agent for the Chehalis Basin.)	• Provide the resources and (volunteer) personnel to go out and work on an individual basis with landowners within the basin to help them better utilize their small acreage and at the same time adopt and implement practices to promote best management practices that will result in good water and land stewardship. • Volunteers would be trained in a wide diversity of topics with the bottom line being a focus on stewardship of both land and water within the Chehalis Basin.	The individual could draw on all of WSU's expertise -- from Soils Specialists to pesticide education -- and would train a group of volunteers along the model of the Cooperative Extension Master Gardener program. Education program could address a multitude of topics on what to do with five acres, what to grow, cultural practices, marketing, etc. WSU is being being cut by the Legislature so it would think this is a good position. This would happen only if funding outside of WSU were available.

Water Conservation/Use Efficiency In the Chehalis Basin

Chehalis Basin Watershed Planning Issue Paper

What is the issue?

Watershed planning units, under Chapter 90.82 RCW, are required to consider strategies for increasing water supplies through water use efficiency. (General mandates for implementation of water use efficiency are found in the laws and rules listed in Appendix A.) This paper details existing conservation requirements and programs in the Chehalis Basin and recommends options for future conservation efforts to save money and make more water available for human and fish needs.

What is the background to this issue?

Water conservation provides an alternative to depleting nonrenewable supplies and makes more water available for various human and natural uses. Water conservation involves using water sources more efficiently and effectively and enhancing water capture through restorative grazing, farming, stormwater storage techniques, and forestry. Water conservation can mean not relying on the highest-quality water for every task, like flushing toilets and washing driveways. A host of available and emerging techniques make it possible to greatly increase the productivity of water directly when and where it is used.

Water use efficiency is good for the environment. It can also be a much cheaper. Saving water can have direct benefits like:

- Avoiding or deferring supply or wastewater treatment expansions;
- Saving energy used in the transportation, heating, and treatment of water and in pressurizing water distribution systems;
- Saving waste-treatment costs when aquatic ecosystems are supplied with enough water to perform their ecological services, i.e., allowing some focus on Waste Load Allocations (TMDLs) to be on nonpoint impacts rather than exclusively on point source controls.

The key is to balance water conservation and its attendant benefits with the costs necessary to implement water conservation programs.

This paper focuses on residential and municipal water use but includes some information and recommendations on agricultural and industrial water conservation. Most of the specific data presented on existing approaches relate to residential and municipal efforts since the scarcity of data make it difficult to quantify agricultural and industrial efforts.

What technical information is available?

In all sectors–residential, agriculture, industry, and power generation–the overall efficiency of water use has been improving since about 1980. During the years 1980–95, even as the population and the economy grew, the amount of freshwater withdrawn for use per person fell by 21%, and water withdrawn for use per dollar of real gross domestic product (GDP) fell by a startling 38 %–more than twice as fast as energy efficiency improved.[1]

What policies encourage investments in water efficiency?

Water Conservation Requirements: Water Purveyors

The Washington State Department of Health (DOH) is the lead agency for conservation program development and planning for public water systems. The Washington State Department of Ecology (Ecology) has the overall state responsibility for development and implementation of a comprehensive water conservation program that includes all water uses.

Comprehensive water system plans are required of all water systems with 1000 or more service connections and all new or expanding systems with 15 or more service connections. These comprehensive water system plans must include water conservation plans, prepared in accordance with DOH's Conservation Planning Requirements (listed in Table 1 below), for approval by DOH. Water conservation plans are also required for issuance of water rights permits for public water systems by Ecology.

The Department of Health Municipal Water Conservation Analysis and Recommendations *states:*

> *"Ensuring the efficient use of our limited water resources is a key component to the overall management of the state water resources and to salmon recovery efforts. Efficient water use benefits state natural resources by keeping as much water as possible in the natural environment. It also benefits water utilities and local governments by lowering water demands that may require costly new source development projects and by helping to ensure that water is available to meet economic and population growth consistent with local Growth Management Act planning efforts."*

DOH Conservation Planning Requirements[2]

DOH's Conservation Planning Requirements identify guidelines and requirements for public water systems, regarding water use reporting, demand forecasting methodology and conservation programs. The requirements are based on existing state statutes directing Ecology and DOH to encourage water use efficiency.

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1. Natural Capitalism, Paul Hawken and Amory Lovins, p.216
2. Washington State Department of Health's Conservation Planning Requirements: Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, written jointly by Washington Water Utilities Council, Washington State Departments of Health and Ecology.

The conservation measures are grouped into four categories:

1. Public education
2. Technical assistance
3. System measures
4. Incentives/other measures

Table 1.
Recommended Water Conservation Program for Public Water Systems

Measures	Public Water Systems			
	Large > 25,001 Customers	Medium 1000 – 25,000 Customers	Small < 1000 Customers[3]	Region
A. Public Education				
1. School Outreach	•			•
2. Speakers Bureau	•	•	•	•
3. Program Promotion (implementation required)	•			•
4. Theme Shows and Fairs	•			•
B. Technical Assistance				
1. Purveyor Assistance	•	•		•
2. Customer Assistance	•	•		•
3. Technical Studies	•			•
4. Bill Showing Consumption History	•	•		
C. System Measures				
1. Source Meters (required if requesting water rights)	•	•	•	•
2. Service Meters	•	•	•	•
3. Unaccounted Water/Leak Detection	•	•		•
D. Incentives/other Measures				
1. Single-Family/Multi-Family Kits	•	•		•
2. Nurseries/Agriculture	•	•		•
3. Landscape Management/Playfields–Xeriscaping	•	•	•	•
4. Conservation Pricing	•	•		•
5. Utility Financed Retrofit	•			•
6. Seasonal Demand Management	•			•
7. Recycling/Reuse	•			•

The conservation requirements and guidelines vary based on the public water system size, primarily the number of water customers. The measures recommended and/or required for small, medium and large public water systems are summarized below and in Table 1.

- Program promotion is required for all public water systems.
- Source meters are required for all systems requesting new water rights.
- All public water systems are required to consider the benefits and costs of installation of service meters and implementation of conservation rate structures (as required in RCW 43.20.235).
- Public water systems are required to evaluate all of the recommended conservation measures identified for their specific size category to determine whether to implement the recommended measures. They must determine the appropriate level of implementation for selected measures by considering the cost of service, cost of new supply sources, and competing demands for water and unique conservation opportunities.
- Systems are encouraged to evaluate, and implement where appropriate, conservation measures above the minimum required in the Conservation Planning Requirements. The selection and level of implementation of conservation measures is to be determined by the cost of a measure in relation to the value of the water conserved, i.e. by the relation of benefits and costs.
- All public water systems will incorporate within their water system plans an inventory of major potential sources and uses for reclaimed water. The inventory shall include as potential sources (at a minimum) – fish hatcheries, storm water impoundments, sewage treatment plant effluent, industrial/commercial process or cooling water – and potential uses or users – industries; nurseries; golf courses and other landscape irrigators; artificial recharge of aquifers; parks and parkways; agricultural irrigation; flushing of sanitary sewers; street cleaning, dust control and other washing applications; fire protection; and other appropriate uses.

Regional system measures can apply to regional conservation plans developed in conjunction with these guidelines. However, no requirement exists in these guidelines for the development of a conservation plan in regional water plans. Regional planning organizations can develop conservation plans that meet the needs of individual water systems.

What are current water purveyor conservation programs in the Chehalis Basin?

Information on water conservation programs implemented by water purveyors in the Chehalis Basin was obtained from the purveyors' comprehensive water plans and through an email survey and follow-up telephone calls.

3. Provided they must prepare a water system plan or obtain water rights

In general, water purveyors in the Chehalis Basin are following the water conservation requirements discussed above. It is not evident that any water purveyors are pursuing conservation measures beyond those required by law. Although most of the purveyors have not implemented cost-effectiveness analyses of their water conservation measures, purveyors identified the following measures as effective and feasible for the Chehalis Basin:

- Education
- Unaccounted water/leak detection
- Kits containing easily installed water savings devices: moisture sensors, flow timers, low volume sprinklers, drip irrigation, weather monitoring.
- Conservation pricing; rate setting program.
- Seasonal demand management – controls the peak seasonal demands top water users.
- During low surface water period, communicate with the residents to watch their water consumption.
- Mandatory water conservation, because voluntary does not work.

What are water conservation requirements for the agricultural sector?

To maintain a water right Washington State water law requires that the water must be used beneficially, in other words, not wasted. However, there is nothing in the law that requires irrigators to use water efficiently. It is often said that the "use it or lose it" aspect of current water law regarding water rights even discourages water conservation. Additionally, agricultural users want to assure that they have enough water available in the future to grow more profitable crops that potentially use more water.

However, farmers do not want to use more water than they need. Farmers aim to apply the exact amount of water on the specific schedule appropriate to the needs of a given crop. The costs of conveyance systems, energy to run those systems and crop needs are perhaps the only incentives for water use efficiency in the agricultural sector.

Farms in the Chehalis Basin withdraw water directly from surface or ground water on the basis of water rights or claims, or for some small uses, from exempt wells. They tend not to use ditches and/or canals in their conveyance systems.

What water conservation measures are currently implemented by the agricultural sector?

Most irrigation in the Chehalis Basin is supplemental to natural precipitation. In other words, most farms do not irrigate regularly or frequently from April through August. Most irrigate periodically June through August. Although

the amount of water used for crop irrigation is small over the basin as a whole, it does occur during the summer months when stream flows are at their lowest. The field crop irrigation that occurs in the basin is primarily via big gun and sprinkler methods, neither of which are considered particularly efficient. Additionally, future trends point toward a transition to higher value specialty crops which tend to require more water.

Livestock watering occurs year-round. These irrigation systems have auto shut-off systems when the tanks are full, providing some level of efficiency. Nursery operations generally irrigate more frequently but use more efficient irrigation techniques, such as drip tape and mist sprayers.

In short, water use for irrigation is seen in the agricultural sector as insignificant, and efficiency techniques and the potential impact of increased future use do not receive much consideration. The "use it or lose it" aspect of current water law creates a disincentive for irrigators to conserve water. In other words, irrigators who wish to maintain the full amount of their water rights for future use have to show they have used more rather than less water.

What agricultural water use efficiency assistance is available?

Under the voluntary program Agricultural Water Supply Facilities rule, Chapter 173-170 WAC, Ecology provides grants and loans to public irrigation districts to help them repair or improve existing agricultural water conveyance facilities such as ditches, pipes and other irrigation systems.

Washington State University Cooperative Extension provides assistance to farmers, including information on its web site about Scientific Irrigation Scheduling (SIS), a method of providing the right amount of water to a particular crop at the right time. Benefits include improved crop quality and yield, conservation of water and energy, and reduced fertilizer application and nonpoint pollution.

Natural Resources Conservation Service (NRCS)
Soil and Water Conservation Assistance (SWCA) provides cost share and incentive payments to farmers and ranchers to voluntarily address threats to soil, water, and related natural resources, including grazing land, wetlands, and wildlife habitat. SWCA will help landowners comply with federal and state environmental laws and make beneficial, cost-effective changes to cropping systems, grazing management, nutrient management, and irrigation.

Agricultural Management Assistance (AMA) provides cost share assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations. Producers may construct or improve water management structures or irrigation structures; plant trees for windbreaks or to improve water quality; and mitigate risk through production diversification

or resource conservation practices, including soil erosion control, integrated pest management, or transition to organic farming.

Irrigation Water Management Plans are developed by the conservation districts in accordance with the *Dairy Nutrient Management Act.* This is a voluntary program for farmers that irrigate crops with wastewater from dairies. The plans help ensure that excessive amounts of manure are not over applied to the soil.

What are some possible solutions?

The following list of available water conservation measures[4] is intended to serve as a starting point from which the Partnership can select and prioritize measures most appropriate to the Chehalis Basin.

1. **Develop and implement municipal conservation programs – such as demand management and operational efficiency measures – including:**
    - Public Education
        - — School Outreach – Education programs targeted to increase awareness of local water resources and encourage water conservation practices. Activities can include school presentations, preparation of curriculum material, and tours of water system facilities.
        - — Speakers Bureau – Seeking speaking opportunities and making speakers available to a wide cross-section of services, community, and other groups. Provide speakers with audio and visual aids for presentations. Focus on increasing public awareness of water resource and conservation issues.
        - — Program Promotion – Publicize the need for water conservation through television and radio public service announcements, news articles, public water systems bill inserts, or other means. This includes promoting efficient indoor and outdoor water usage, distribution of Ecology/ Health conservation brochures or other printed material, informing customers, builders and contractors of new plumbing code regulations requiring efficient plumbing fixtures, and other efforts.
        - — Theme Shows and Fairs – Prepare a portable display on water conservation and selected written material. Staff this display at local area theme shows and fairs.
    - Technical Assistance
        - — Purveyor Assistance – Assistance from wholesale suppliers to aide wholesale customers in developing and implementing conservation programs tailored to their needs, and in carrying out the wholesale suppliers conservation program.

4. This list is derived from the Ecology Draft EIS for Watershed Planning under Chapter 90.82 but tailored for the Chehalis Basin.

- — Customer Assistance – Provide assistance and information to customers that facilitate water conservation.
- — Technical Studies – Studies would be designed and conducted by the public water system and/or regional organization. Study objective would be to collect data and research new technology to develop programs that would produce measurable water savings. Study areas might include residential flow metering, lawn watering practices, and commercial/industrial water use patterns.
- — Bill Showing Consumption History – Billings would show percentage increase/decrease in water use over the same period from the previous year.

• System Measures
- — Source Meters – Install master source meters for all sources. Maintain periodic meter testing and repair program.
- — Service Meters – Install individual service meters for all water users. Maintain periodic meter testing and repair program.
- — Unaccounted Water/Leak Detection – Conduct a regular and systematic program of finding and repairing leaks in system mains and laterals. This includes on-site testing using computer-assisted leak detection equipment on water distribution mains, valves, services, and meters.

• Incentives/Other Measures
- — Single-Family/Multi-Family Kits – Distribute kits containing easily installed water saving devices to single-family residential homes and the owners and managers of apartment buildings and condominiums. Devices in kits could include shower flow restrictors, toilet tank water displacement devices, leak detection dye tablets, informational brochures, and other materials.
- — Nurseries/Agriculture – Encourage and/or require the application of current technology to water use practices of large agriculture/irrigation operations. Examples include nurseries and commercial agriculture. Moisture sensors, flow timers, low volume sprinklers, drip irrigation, weather monitoring, and other practices to increase irrigation efficiency could be installed.
- — Landscape Management/Playfields – Xeriscaping - Promote low water demand landscaping in all retail customer classes (private, public, commercial, industrial, etc.). Work with local nurseries to ensure the availability of plants that achieve this objective.
- — Conservation Pricing – Implement rate design techniques to provide economic incentives to conserve water. Rate setting is the responsibility of the public water system.
- — Utility Financed Retrofit – Install water efficient fixtures in existing residences and commercial/industrial facilities by: (a)

providing fixtures at no cost, (b) giving a rebate for consumer purchased fixtures, or (c) arranging for suppliers to provide fixtures at a reduced price.

— Seasonal Demand Management – Implement measures aimed at controlling peak seasonal demand. This may include use of seasonal rate structures, distributing lawn watering calendars, promoting public awareness on ways to curb peak day water demand, etc. This measure may be combined with the program promotion if materials are distributed.

— Recycling/Reuse – Examine opportunities for water reuse and recycling as an approach to providing additional water. This includes identification of potential sources of reclaimed water, identification of potential users (i.e., landscape uses, major industrial users, etc.), and contracting for delivery of reclaimed water.

Potential program areas include:

- Use of public water systems reclaimed wastewater for the irrigation of public green spaces, industrial cooling, and power plant cooling.
- On-site wastewater treatment and recycling of effluent for non-potable uses in commercial buildings.
- Utilization of gray water for non-potable uses

2. **Develop and implement agricultural water conservation and irrigation efficiency efforts** through regional or irrigation-district infrastructure improvements, including:
   - Constructing re-regulation reservoirs to optimize water use; and
   - Improving water measurement and accounting systems.
3. **Develop and implement on-farm agricultural water conservation and irrigation efficiency efforts.**
   - Replacing sprinkler systems with high efficiency drip systems, where possible;
   - Using soil moisture sensors to prevent over-watering;
   - Constructing of on-farm ponds to capture and utilize excess winter runoff;
   - Provide incentives for on-farm water efficiency measures, including in-kind services, educational programs, demonstration projects, and financial incentives, including tax incentives, low-interest loans, equipment purchase subsidies, and water charge discounts or rebates;
   - Create a regional resource center for education, assistance, guidance, grant and loan information, etc, possibly through WSU Extension, farm bureaus, conservation districts, etc.

4. **Streamline irrigation water rights review and appropriation process to get water where it is needed now.** Allow for and encourage irrigation districts that could manage water rights to the best advantage of those needing and using water while conserving and improving efficiencies so that landowners do not feel threatened by potential loss of water rights.

5. **Develop and implement industrial conservation measures, including modification to the following types of practices:**
   - Heating and cooling
   - Product washing and processing
   - Cleaning and maintenance
   - Wastewater disposal
   - Landscaping

6. **Participate, organize, fund through funding sources, such as grants, and coordinate (primarily with local governments or sewer utilities) efforts to identify, plan for, design, construct and implement reclamation and reuse facilities**. Request local governments or sewer utilities to construct and operate water reclamation and reuse facilities (e.g., reclamation plants and use areas) to reduce the consumption of potable water, provide water for beneficial uses and reduce discharges of wastewater to receiving waters. Beneficial uses of reclaimed water could include:
   - Industrial and commercial uses
   - Irrigation
   - Direct recharge of ground water
   - Discharge to wetlands
   - Surface percolation
   - Streamflow augmentation
   - Promote graywater (dishwasher, clothes washer, and bath/shower wastes) segregation and use in accordance with DOH standards to conserve potable water supplies
7. **Designate a water efficiency coordinator to**
   - Coordinate basin-wide efforts
   - Coordinate efforts among entities
   - Encourage water conservation efforts
   - Monitor statewide conservation efforts and apply relevant efforts to the Chehalis Basin

What are recommended actions?

1. The Partnership should meet with water purveyors to develop coordinated water conservation efforts that benefit all purveyors of the Chehalis Basin, especially in light of the 2003 Municipal Water Rights

Bill requirements for water conservation. Such an effort would provide an economy of scale by pooling purveyor resources and ideas into a regional approach. Provide opportunities between the Partnership and the agricultural community to consider cooperative efforts to simultaneously support agriculture and stream flows. This could lead to a coordinated effort involving farm bureaus, conservation districts, the Washington Department of Agriculture and/or individual members of the agricultural community, including a resource for technological information.

2. The current "use it or lose it" law is a disincentive to conserve water for agriculture. Therefore, the Partnership recommends considering a management system to allow the agricultural community to combine resources and "share" water rights to become more efficient. Partnership might also consider recommending a "water master" who could work with conservation districts or irrigators to use water efficiently and minimize impacts on stream flows.
3. Recommend changes to the state's "use it or lose it" law to allow saving water without losing water rights.
4. Encourage consideration of the Trust Water Rights Program as a method to preserve water rights and allow water to go to the streams.
5. Water purveyors should continue to comply with DOH requirements and any new requirements needed in compliance with HB 1338, the Municipal Water Suupply law which requires municipalities to establish water conservation programs.
6. Consider methods to measure success of water purveyors' current conservation efforts to see if adjustments are needed.
7. Consider state funding to support purveyor conservation efforts.

Appendix A

Laws and Regulations Mandating Implementation of Water Use Efficiency

RCW 19.27.170 - Water Conservation Performance Standards - Fixtures that meet Standards - Marketing and Labeling Fixtures – Low flow plumbing fixture requirements.

RCW 35.67.020 - Sewerage Systems - Authority to Construct Systems and Fix Rates and Charges - Authorizes cities/towns to consider the achievement of water conservation goals and the discouragement of wasteful practices when setting sewer rates.

RCW 35.92.010 - Municipal Utilities - Authority to Acquire and Operate Waterworks - Classification of Services for Rates - Authorizes cities/towns to consider the achievement of water conservation goals and the discouragement of wasteful water use practices when setting water rates.

RCW 43.20.230 - Water Resources Planning - Procedures, Criteria, Technical Assistance - Directs DOH, consistent with the water resources planning process of Ecology, to develop procedures and guidelines related to water use efficiency to be included in the development and approval of cost effective water system plans.

RCW 43.20.235 - Water Conservation - Water Delivery Rate Structures - Requires water purveyors who develop water systems plans to evaluate the feasibility of adopting and implementing water delivery rate structures that encourage water conservation.

RCW 43.27A.090 - Powers and Duties of Department - Directs Ecology to adopt policies to insure water is "used, conserved and preserved" for the best interests of the state.

RCW 43.70.310 - Cooperation with Department of Ecology - Directs DOH, where feasible, to integrate our efforts and endorse policies in common with Ecology.

RCW 90.03.005 - State Water Policy - Reduction of Wasteful Practices - Instructs Ecology to reduce wasteful practices in the exercise of water rights "to the maximum extent practicable."

RCW 90.03.400 - Crimes Against the Water Code - The willful or negligent waste of water to the detriment of another shall be a misdemeanor.

RCW 90.44.110 - Waste of Water Prohibited - No public ground waters that have been withdrawn shall be wasted without economical beneficial use. The department (Ecology) shall require both flowing and non flowing wells to be constructed and maintained as to prevent the waste of public ground water through leaky pipes.
RCW 90.48.495 - Water Conservation Measures to be Considered in Sewer Plans - Ecology is to require sewer plans to include a discussion of water conservation measures considered or underway and their impact on public sewer service.

RCW 90.54.020 - General Declaration of Fundamentals for Utilization and Management of Water of the State -Directs Ecology to encourage federal, state, and local governments to carry out practices of conservation. Also indicates that improved water use efficiency and conservation shall be emphasized in the management of the state's water resources and in some cases will be a potential new source of water to meet future needs.

RCW 90.54.180 - Water Use Efficiency and Conservation Programs and Practices - Provides that increased water use efficiency should receive consideration as a potential source of water in state and local water resource planning processes and stipulates that water use efficiency programs should mix incentives and regulation. In determining cost-effectiveness of alternative water sources, consideration should be given to the benefits of conservation,

wastewater recycling and impoundments. Entities receiving state financial assistance for construction of water source expansion or acquisition of new sources shall develop, and implement if cost effective, a water use efficiency and conservation element of a water system plan. State programs to improve water use efficiency should focus on areas where water is over appropriated. State agencies should educate the public concerning the wise and efficient use of water.

Washington State Constitution Article VIII, §10 (Senate Joint Resolution 8210) - Amendments to State Constitution to Encourage Water Use Efficiency (passed by voters November 1989) - Permits county, city, town, quasi-municipal corporation, municipal corporation or political subdivision of the state engaged in the sale or distribution of water to use public money to finance increased water use efficiency (does not permit state to use funds for this purpose).

RCW 90.82 (ESHB 2514) - Regional Watershed Planning Bill (1998 session) - Local planning units developing watershed plans are required to develop an estimate of water actually being used (water use), an estimate of water needed in the future (water demand forecast), and strategy for increasing water supplies through conservation, reuse, etc. (water conservation).

WAC 246-290 - Group A Public Water Systems - Water System Plans - Requires public water systems to address several elements including a "conservation program" in their water system plan. Public water systems are also required to specifically address water demand forecasting, water use data collection, and enhanced water conservation planning where water rights will be needed within 20 years.

Potential Economic Value of Recreation

Chehalis Basin Watershed Planning Issue Paper

Economic Value of Recreation

According to U.S. Fish and Wildlife Service[1], the State of Washington ranked in the top ten in spending for wildlife viewing, hunting and fishing. The Chehalis Watershed Basin is mostly rural and offers many opportunities for recreation enthusiasts. This presents the local communities within the watershed the opportunity to benefit from the demand created by recreationists for services and supplies and at the same time manage the watershed in a way that complements a natural, self-sustaining ecosystem.

What is the issue?

The geographic range or study area is the Chehalis Basin watershed. Located in Washington State, the Chehalis Basin watershed is west of the Cascade Mountain range and includes the counties of Grays Harbor, Thurston, Lewis and Mason plus small portions of Pacific, Cowlitz, Jefferson and Wahkiakum countries.

The U.S. Fish and Wildlife Service[1] reports that recreational spending for fishing, hunting and wildlife viewing in Washington State for 2001, was $2.18 *billion*. This figure includes total trip-related and equipment expenditures. Expenditures for wildlife viewing were $980 million, fishing $854 million and hunting $350 million. It is a widely held assumption that the aquatic habitats essential to salmon and steelhead have experienced many types of degradation since development and urbanization of the area have occurred throughout the region.

Recreationists are attracted to environments that attract and support many types of wildlife.[2] Management of this land to maintain and sustain wildlife habitat and to continue to attract wildlife of all types will also continue to draw recreationists to the area.[2] If the habitat is allowed to degrade and can no longer attract or support wildlife many recreation enthusiasts will find other high quality areas that allow them to pursue their pastime activities.

What is the background to this issue?

The following points were taken from a Fact Sheet dated December 2002 titled Economic Benefits of Fish and Wildlife Recreation in Washington State.[2]

1. Washington Department of Fish and Wildlife, December 2002, "Adding it up, Washington Communities Profit from Fish, Wildlife Recreation"

2. Washington Department of Fish and Wildlife, December 2002, Fact Sheet, "Economic Benefits of Fish and Wildlife Recreation in Washington State"

The following information is for the entire state of Washington.

1. Fishers, hunters and wildlife viewers spent a combined total of over $2.18 billion in Washington State in 2001.
2. Washington ranks eighth in the nation in spending by sport fishers, which totaled nearly $854 million in 2001.
3. Washington also ranked seventh nationally, in spending by wildlife-watchers. Participants spent nearly $980 million in 2001.
4. Hunters spent nearly $350 million, in 2001, pursuing their sport in Washington.
5. The survey indicated that nearly 2.5 million people, both residents and non-residents, participated in wildlife-watching activities in Washington state in 2001, while 227,000 people hunted, and 659,000 sport anglers fished.

Washington State Parks

The following numbers were collected from Washington State Parks[3] for park facilities in the Chehalis Watershed. Detailed information was not available on the intended purpose of the trip, such as, fishing, hunting, hiking, bicycling or other active or passive recreation activities.

Washington State Parks Within Chehalis Basin Camping and Day Use Participation

Number of Recreational Users - 2001

Washington State Parks	*Utility*	*Standard*	*Day Use*
Twin Harbors	9,280	35,837	184,265
Grayland Beach	32,215	80	
Westport Light			206,024
Westhaven			189,365
Rainbow Falls		7,226	85,960
Ocean City	16,849	32,077	288,271
Damon Point	147,600		
Millersylvania	16,480	22,834	480,260
Lake Sylvia	11,550	256,132	
Schafer	915	4,629	51,681
Total	**75,739**	**114,233**	**1,889,558**

3. Washington State Parks, attendance records for 2001

Department of Fish and Wildlife

The table to the right shows the number of fishing and hunting licenses sold for the fiscal year 2002 in Washington State. Data were not disaggregated to the county or regional level. According to officials at the WDFW, the majority of the charter stamps sold were probably for charters operating out of Westport as well as most of the saltwater and shell fish licenses. The WDFW fact sheet states that "razor clam diggers spent an estimated $4.6 million in 2001 in Washington coastal communities such as Long Beach and Ocean Shores, according to officials in Grays Harbor and Pacific counties."

How was the issue raised?

The Chehalis Steering/Technical Committee believes that quantifying the economic activity linked to recreation in the Chehalis Basin Watershed will provide impetus for protecting the natural resources needed to sustain that economic activity.

Who is involved?

Beneficiaries of the $2.18 billion are the sporting goods stores, bait shops and boat ramps, motels, campgrounds, grocery stores, restaurants, gas stations, charter boat operators, and equipment rental companies. Governmental units rely on the sales tax collection at the above units to operate and maintain public services, such as police and fire protection, water and sanitary service.

What regulations apply?

Hunting and fishing licenses are required by participants.

Solutions & Toolbox

Preserve and maintain existing fishing and wildlife habitat for future recreation enthusiasts. Provide an environment complementary to sustaining a vibrant and diverse ecosystem. Maintain a more natural, self-regulating environment that will lessen the impacts of severe weather conditions in the ecosystem and surrounding developed areas.

Use funding to help fund smaller level restoration projects.

Analysis

Typically the most cost effective method is to identify areas of high quality or habitat value and protect or maintain them in a sustainable manner.

What actions are recommended?

1. Money spent in the basin should be used to preserve fish, wildlife and aquatic habitat in the basin.

Department of Fish and Wildlife – Statewide

Recreational License Sales – FY 2002

Fishing Licenses	
Combination	404,593
Charter Stamps	42,703
Freshwater	381,803
Saltwater	74,458
Shellfish & Seaweed	164,579
Total	**1,068,136**

Hunting Licenses	
Bear & Cougar	4,080
Bear - Second	487
Cougar - Second	100
Deer	68,551
Elk	15,677
Deer & Elk	43,653
Deer, Elk, Bear & Cougar	40,831
Deer, Bear & Cougar	11,211
Elk, Bear & Cougar	939
Goat or Sheep or Moose	3
Special Hunt Application	96,332
Auction Licenses	5
Small Game w/Big Game	47937
Small Game	42586
Turkey 2nd & 3rd	2868
Western WS Pheasant	6618
Total	**381,878**

2. CBP recommends to State Legislature that fish and wildlife money / services in the area and associated taxes should be used for preservation of habitat in the Chehalis Basin (i.e., provide funding for small restoration or preservation projects).
3. Local governments should encourage festivals and events that support water resources and fish and wildlife in the basin (i.e., pamplet/brochure with maps describing the basin as a great place to fish/boat/recreate/live because of the natural resources).
4. Request that the Economic Development Council study the issue of recreation and the economic value in the Chehalis Basin.

References/Suggested Reading/Websites

Grays Harbor Tourism — http://www.tourismgraysharbor.com

State of Washington Tourism — http://www.tourism.wa.gov

Grays Harbor Chamber of Commerce — http://www.graysharbor.org

Grays Harbor Audubon Society — http://www.ghas.org

Bowerman Basin — http://www.ghas.org/bowerman.html

Ocean Shores Chamber of Commerce — http://www.oceanshores.org

Environmental Education

Chehalis Basin Watershed Planning Issue Paper

What is the Issue?

There is an unmet need to provide outreach and environmental education in the Chehalis Basin. A considerable amount of time and resources are expended daily by civic groups, school districts and local government independently attempting to provide environmental education. However, due to limited resources and the wealth of information to be shared and gained, this effort could realize more lucrative results if programs were more highly visible and accessible throughout the Chehalis Basin.

The objective of this paper is to highlight current or possible educational programs with the expectation that publicity will raise awareness, and that will in turn encourage further development and collaboration of environmental education programs in the Chehalis Basin.

What is the background to this issue?

There is a great need (especially in Grays Harbor, Lewis, and Mason Counties) for additional environmental education programs that are accessible for classroom teachers and civic groups. This deficit presents a two-fold opportunity to exchange information about the Chehalis Basin watershed and to strength educational curriculum.

The few environmental education programs that are available are not well known by many educators or civic groups. More effort needs to be put into outreach and informing the public regarding environmental education programs that are available and the existing curriculum they could be using.

A statewide record of schools conducting environmental education in Washington did not exist prior to 2002. To create such a record, the Northwest Environmental Education Council (NWEEC), in partnership with the Washington State Office of Environmental Education (WA OEE) and the Washington Office of the Superintendent of Public Instruction (OSPI), developed the Washington State Environmental Education Needs Assessment (WSEENA) [1].

The goals of the assessment were to examine the current status of environmental education in schools statewide, to identify the environmental education needs of specific schools, and to determine the level of awareness of environmental education resources and Washington State policy. This as-

1. The State of Environmental Education in Washington Schools: Results Examining Awareness, Implementation, and Resource Needs, 2001-2002 by and http://www.newhorizons.org/strategies/environmental/ellis_mcwayne.htm

sessment surveyed all public and private schools in Washington, including Educational Services District (ESD) 113, which includes Grays Harbor, Lewis, Mason, and Thurston Counties.

What technical information exists?

The WSEENA indicated that seventy-seven percent of the respondents were aware of the Washington State mandate that requires environmental education to be taught in an interdisciplinary manner as part of all basic K-12 subject manner (WAC 180-50-115).

- Seventy-three percent of the responding schools indicated they were aware that environmental education is being used to improve student learning aligned with the Essential Academic Learning Requirements (EALRs) and the Washington Assessment of Student Learning (WASL).
- Eighty-seven percent of the responding schools indicated they would like to receive more information regarding how environmental education can improve student learning.
- Eighty-seven percent of the respondents would like to receive environmental education lesson plans and/or technical support.
- Sixty-eight percent of the respondents indicated they are interested in receiving environmental education training for clock hours
- Sixty-one percent of responding schools indicated they did not have adequate environmental education resources. This statistic was analyzed further by grouping the responses by the appropriate geographic area. Over half of the responding schools in each ESD indicated they lacked adequate environmental education resources. Responses ranged from 51 percent in the Western region to 68 percent in the Olympic and North Central regions.

Highlights of existing efforts

- Outreach programs through local governments (Grays Harbor, Lewis, Mason, and Thurston Counties) related to solid waste, recycling, and watersheds.
- ESD 113's environmental education program provides professional development opportunities by linking the state's essential academic learning standards to environmental issues that are part of the Chehalis River watershed. The program engages school teams to provide training on performance-based assessment tasks, the use of Geographic Information Systems (GIS), nature mapping, and water-quality monitoring. The Chehalis Basin Educational Consortium was an offspring of this effort. Contact Tom Hulst, Assistant Superintendent for ESD 113 at 360.586.2966 for more information.
- WDFW Marine and Shellfish Education program conducts special clinics and programs for civic groups, clubs, and schools. The program coordinator is Alan Rammer @ 360.249.1201

- Grays Harbor Community College Model Watershed Program provides classroom visits and extension education about watersheds and water quality. This program is taught by Mark Koster, 360.538.4212 of the Washington Conservation Corps.
- Ocean Shores Fresh Water Ways and the Ocean Shores Interpretive Center offer some education programs in Grays Harbor.
- Percival Creek Habitat Education, Restoration and Stewardship program is a combination of workshops, field experiences, informational brochures, and hands-on activities, the year-long project involves Tumwater teachers, students, homeowners, and city personnel in restoration and long-term stewardship of the local watershed and salmon habitat. Contact the City of Tumwater Public Works, Cathy Callison, 555 Israel Road SW, Tumwater, WA 98501.
- Mason County Environmental Education Initiative is a cooperative effort that involves the Washington Forest Protection Association (WFPA) and the Simpson Timber Company, the Mason Conservation District (MDC) offers a means of educating teachers and district administrators about the benefits of using interdisciplinary environmental education activities in the classroom. The MDC and the partner agencies form the Mason County Environmental Education Team (MCEET) to provide training for teachers in Shelton School District. The MCEET and teachers integrate environmental education into existing curricula, such as Project Learning Tree, Project WET, Project Wild, and Forests of Washington, to meet the new Essential Academic Learning Requirements (EALR). Once integrated, the curriculum helps teachers assess environmental and ecological conditions and address specific environmental issues and problems. The work with Shelton School District will serve as a model for other districts after the project has been completed. Contact Mason Conservation District - Jeanne Campbell, 1051 S.E. Hwy 3, Suite G, Shelton, WA 98584.
- The environmental education program at WFPA has been in existence since 1978. At that time, the American Forest Council and the Western Regional Environmental Education Council developed the program called Project Learning Tree. The program includes activity guides for teachers to use in their classrooms. Through cooperative sponsorship by the Superintendent of Public Instruction, and the Washington Forest Protection Association, the program presents a balanced approach to environmental education for teachers who in turn work with their students. In the 1980's WFPA's environmental education efforts expanded to include Tree Farm tours, and a forester's speakers program responding to teacher/school district requests for forest-related information.

What are some possible solutions?

- The Northwest Environmental Education Council will be sharing the assessment database with regional networks of environmental educators to help foster partnerships with local schools to meet their environmental education needs. If you would like more information about how to join

your local EE network, please send an email to wseena_info@nweec.org, or call Erick Mc Wayne at (206) 762-1976.

- WFPA continues to offer workshops, keep curricula current with the ever changing roles of natural resource management and supports long-term partnerships with districts and ESD's committed to improving student learning through the support of environmental education leadership teams. Districts have mapped curriculum using the environment as the context for learning reading, writing, math, social studies, art, and science. The following is a list of WFPA programs.
  - Project Learning Tree uses the forest as a "window on the world" to increase students' understandings of our complex environment, to stimulate critical and creative thinking, to develop the ability to make informed decisions on environmental issues, to remain open to future information that may change their opinion, and to instill the confidence and commitment to take responsible action on behalf of the environment.
  - Forests of Washington consists of two activity guides, Forest Ecosystems and People, and Forest History along with a video and two posters.
  - Environmental Study Site Program works with teachers, parents and community members to develop activities and projects that engage students in community based authentic learning and meeting building, district and state learning requirements. WFPA's Environmental Study Site program was established in 1998. The goal of the program is to improve student learning through use of an outdoor area on or near the school grounds. WFPA can support a school's team to work with students to formulate questions on their school grounds and seek answers through research, experimentation and experience.
  - Secondary Integrated Teams (SIT) Program Teachers across Washington are developing integrated units connected to local environmental issues that address learning standards, best practices and classroom assessment. WFPA's SIT program provides critical planning time as well as professional development opportunities to support teachers using the environment as an integrating context. Units developed will be coordinated with community support and will align with the State Environment and Education Roundtable's efforts to demonstrate the efficacy of Environmental Education.

What actions are recommended?

- Provide more teacher trainings and information about existing resources.
- Involve more organizations with environmental education such as stream team, conservations districts, counties, cities, YMCA Earth Corps, WFPA, and state agencies.

- Establish a coordinator's position to form partnerships with community members and to use their expertise to create a strong program.
- Provide education on the value of salmon, salmon habitat, and stream ecology through workshops and field studies.
- Offer training in how to use biological assessment as an educational and action tool to determining the health of salmon habitat
- Teach habitat restoration skills to teachers, students, and homeowners.
- Provide teachers, students, and homeowners with a opportunity to apply the knowledge and skills they have learned to a habitat restoration project
- Push to use the environment as integrating context (combine with math, science, and English curriculum) to improve test scores, retention, and participation.

Recommendations

Chehalis Basin Watershed Plan

Recommendations from the Issue Papers are listed below by plan element (water quantity, water quality, instream flows and habitat) and other general areas. The recommendations fall into one of two categories: general recommendations, which require additional refinement, and specific actions. The Partnership developed goals[1] for three of the plan elements – water quantity, water quality and habitat – as well as for public information. These are included below.

NOTE: these are not in priority order, and are contingent on funding and formal action by the Partnership.

1. Water Quantity

General

1.1 Recommend to Ecology that the agency develop a new hydraulic continuity policy (statewide or for the Chehalis) that allows water right applicants to employ more flexible strategies for meeting their water needs given that hydraulic continuity is an issue. *[Source: Hydraulic Continuity Issue Paper]*

1.2 Address requirements of Phase 4 watershed planning related to municipal water rights by estimating quantity of water represented by inchoate rights *[Source: Municipal Supply Issue Paper]*

1.3 Regional Water Supply, or coordinated water system planning *[Source: Municipal Supply Issue Paper]*

1.4 Allow out-of-kind mitigation (watershed mitigation) for new or changed water rights, e.g. using baseflow restoration as mitigation for new right *[Source: STC]*

1.5 Request a streamlined adjudication for the Chehalis Basin *[Source: Water Quantity Core Issues Issue Paper]*

1.6 Establish a water master program *[Source: Water Quantity Core Issues Issue Paper]*

1.7 Recommend adequate funding level for water resources management (source to be determined; funding to be distributed to those entities involved in water resources management) *[Source: Water Quantity Core Issues Issue Paper]*

1.8 Continue to collect data pertaining to water resources *[Source: Water Quantity Core Issues Issue Paper]*

1.9 Increased enforcement of existing laws and regulations to support voluntary efforts *[Source: Water Quantity Core Issues Issue Paper]*

Water Quantity Goal

Bridge the gap between existing stream flows and target flows for fish, wildlife and human use.

Water Quantity Objectives

- Clarify Washington State water law to citizens.
- Conduct a water balance for the Chehalis Basin, including complete groundwater data.
- Identify what tools are available to meet this goal, e.g.
  - Existing water rights
  - (More) Conservation
  - Water storage
  - Landscape changes, including habitat improvements
  - Switch to deep groundwater withdrawals (no hydraulic continuity)
  - Adjust timing of usage
  - Buy senior water rights
  - Purchase "interruptible supply"

1. The Chehalis Basin Partnership has agreed that an overarching goal of water resources management in the Chehalis Basin is to protect existing high quality water resources, since it is much cheaper and easier to do so than to restore damaged resources.

Toolbox for Cities to Address Water Right & Streamflow Issues (see Municipal Supply Issue Paper for more information)

a. Transfer of surface water rights to ground water rights
b. Implementation of a water master program
c. Use of interruptible water rights for a portion of water supply
d. Water conservation programs
e. Water rights trust program
f. Integration of the use of reclaimed water
g. Encouraging a return of water to the rivers and streams
h. Implementation of water storage projects to serve municipal water supply needs without impacting instream flows
i. Watershed mitigation
j. Regional water supply or coordinated water system planning
k. Connecting water supply planning to growth management or comprehensive planning

1.10 Investigate the magnitude of impact from exempt wells *[Source: Water Quantity Core Issues Issue Paper]*

1.11 Develop and implement water conservation programs *[Source: Water Quantity Core Issues Issue Paper]*

1.12 Develop a toolbox for municipal water purveyors (see sidebar) to assist them in meeting their water supply responsibilities while also contributing to protection of instream baseflows. *[Source: Municipal Supply Issue Paper]*

Specific Actions

1.13 Conduct a groundwater study that provides the information necessary to address the hydraulic continuity issue. This study would provide specific information about the character of the groundwater throughout the Chehalis basin that would allow decision-makers to better evaluate whether:

- An individual water right application would impact stream flows *[Source: Hydraulic Continuity Issue Paper]*
- A strategic groundwater pumping schedule could be developed for a particular site that would delay the impact on the river until the high flow period *[Source: Hydraulic Continuity Issue Paper]*

1.14 Conduct a feasibility study to assess the possibility of closing Black Lake Ditch and re-routing that water south to Black River *[Source: STC/CBP]*

2. Water Quality

General

Water Quality Goal

Prevent degradation of, and/or improve water quality to have clean water (as defined in Washington State water quality standards) for all fish, wildlife and human uses.

Water Quality Objectives

- Consider improving water quality through increasing water quantity
- Implement current and future water quality cleanup plans
- Develop strategies to identify and prevent water quality degradation

2.1 Protect healthy waters of the basin so they do not become impaired or need TMDLs *[Source: Water Quality Impairment issue paper]*

2.2 Implement the basin-wide water quality monitoring program developed as part of this planning process, including hiring a water quality monitoring coordinator *[Source: Water Quality Impairment issue paper]*

2.3 Develop a program to clean up water quality impairments before TMDLs need to be implemented *[Source: TMDL issue paper]*

2.4 Develop programs to address nonpoint sources of pollution in the Chehalis Basin so there can be a more equitable system for improving water quality *[Source: TMDL issue paper]*

2.5 Propose a "package" of improvements to the State to address nonpoint pollution (not a single approach) *[Source: TMDL issue paper]*

2.6 Develop approaches to keep forestry and agriculture on the land. This will reduce future impairments caused by more intensive forms of land use. *[Source: TMDL issue paper]*

2.7 Develop standards for "reasonable assurance" for nonpoint source reduction so local communities know what the standard is if they want to produce programs that will take the pressure off of point sources. *[Source: TMDL issue paper]*

2.8 Set up a regional water quality board to manage water to prevent future TMDLs. *[Source: TMDL issue paper]*

2.9 Look at opportunities for pollution trading in the Chehalis Basin. *[Source: TMDL issue paper]*

2.10 Develop sources for funding water quality improvements. *[Source: TMDL issue paper]*

2.11 Plant species that are not native to this area should be eliminated or never introduced *[Source: Partnership]*

2.12 Develop and distribute public information on inspection and care of septic systems *[Source: Partnership]*

2.13 Develop a prioritized list of TMDL projects where 303d impairment listings already exist. *[Source: TMDL issue paper]*

2.14 Recommend that the Department of Ecology adopt "use-based" water quality standards for the Chehalis River basin. *[Source: Partnership]*

2.15 Reject the status quo approach because it does not provide sufficient focus on the protection of high quality waters, and reject the additional regulatory approach as inconsistent with the Partnership's goals and objectives, too costly, lacking in public acceptance, inconsistent with Ecology's current revision of their anti-degradation policy, and politically unrealistic. *[Source: Protection of Existing Areas with High Quality Waters issue paper]*

2.16 Implement the proactive voluntary approach outlined above in Alternatives and as discussed further below. *[Source: Protection of Existing Areas with High Quality Waters issue paper]*

2.17 Create an inventory of high quality waters — we must know where such waters are located if we are to be able to protect them. *[Source: Protection of Existing Areas with High Quality Waters issue paper]*

2.18 Determine which governmental entities (local, state or federal) are responsible for and best able to provide the required protection for identified high quality waters. *[Source: Protection of Existing Areas with High Quality Waters issue paper]*

2.19 Expand the scope of Partnership Water Quality Committee to add a "Good Water Initiative." The Water Quality Committee would be an ideal group to assist in developing and carrying out such an initiative. *[Source: Protection of Existing Areas with High Quality Waters issue paper]*

2.20 Raise public consciousness regarding the importance of protecting high quality waters, and to increase its priority among governments at all levels (local, state, and federal). *[Source: Protection of Existing Areas with High Quality Waters issue paper]*

Specific Actions

2.13 Develop a prioritized list of TMDL projects where 303d impairment listings already exist *[Source: TMDL issue paper]*

2.14 Department of Ecology should adopt "use-based" water quality standards for the Chehalis River basin *[Source: Water Quality Impairment issue paper]*

Habitat Goal

Prevent degradation of, and/or improve habitat in order to support healthy fish and wildlife species and to support water quality and quantity goals.

3. Habitat *[Source: Habitat issue paper]*

General

3.1 Develop a better communication and coordination structure among the various groups involved in habitat restoration within the Chehalis basin

3.2 Create a central organization to coordinate restoration activities in the basin

3.3 Support implementation of a single habitat restoration strategy (e.g., Chehalis Basin Plan for Habitat Restoration)

3.4 Develop a data, inventory and monitoring strategy for determining how effective habitat enhancement efforts have been

3.5 Inform the public about how they can best protect habitat on their own land

3.6 Identify or create a funding source for small habitat projects

4. Instream Flows *[Source: Instream Flows issue paper]*

4.1 Current regulatory flows should be retained; the Partnership wishes to preserve the 1976 priority date for those flow levels.

4.2 After analysis of new and existing information (see #5 below), the Partnership will consider recommending flow levels for streams with no regulatory minimums or adding incremental flows to existing regulatory minimums. Any new recommendations adopted by the State that are higher would carry a 1998 priority date for the additional flow increment.

4.3 Request that WDFW/Ecology, in consultation w/tribes and Partnership members, recommend instream flow levels for all control stations. In addition to current stream hydrology and IFIM results, both the historic, "natural" stream flow level and flow levels less than 100% Weighted Usable Area (WUA) for fish should be considered. Those agencies should consider the strategy of dry-year and wet-year flow numbers, as well as the possibility of "target" flows.

4.4 The Partnership adopts the following philosophy (possibly as an expansion of its existing mission, goals and objectives) for how to approach setting stream flow levels:

- Recommended new regulatory minimum instream flows in the Chehalis Basin should represent flows that provide a healthy environment for fish and other aquatic life (related to flow conditions) and that are hydrologically achievable. These flows should strive for the flow levels that occurred in the stream prior to European settlement. Definitions for the two components in this statement (healthy environment for fish, and pre-European hydrologically achievable flows) need to be formulated.
- Based on Tribal, or federally-reserved, water rights, the Chehalis Tribe and Quinault Nation retain an instream flow right necessary to protect fishing and hunting rights. The tribal right to instream flows will likely be adjudicated or settled using the IFIM methodology.
- Keep salmonids in the Chehalis Basin off of the threatened and endangered species list.
  - These flows should be measured and monitored. The results will be used to evaluate the effectiveness of the program and make necessary adjustments.
  - A focus should be placed on gauging and increasing summer-time flows into the streams and rivers of the basin. Questions to consider (documented responses from agencies/tribes would be beneficial):
    - What is a healthy environment for fish?
    - What flows are hydrologically achievable to meet the needs of people and fish?
    - What flows occurred prior to European settlement?
  - Enforcement of existing laws, rules and regulations would assist greatly in achieving flow levels that are adequate for fish and people.

4.5 In the implementation stages of the watershed planning process, the Partnership will consider recommending flow levels for streams with no regulatory minimums, or adding incremental flows to existing regulatory minimums, using information from the following:

- Partnership goals and objectives and the above instream flow philosophy
- Existing flow data
- Out-of-stream uses
- IFIM flow study results
- Estimates of pre-European flows
- Recommendations from Ecology/WDFW, in consultation with tribes
- Possible strategy of dry-year and wet-year flow numbers

4.6 Ecology/EPA/USGS should monitor flows at all sites

4.7 The Chehalis Basin Partnership prefers voluntary approaches to regulatory in attempts to make water available for stream flows.

4.8 An important focus of watershed plan recommendations and implementation should be to make more water available for instream uses, especially in the time period from roughly April through October (most important are the months from July through October)

4.9 The new flows that should be established by rule will be specified when information becomes available.

4.10 The Partnership may recommend that Ecology close certain basins from further surface water withdrawals at certain times during the year. The Partnership does desire, however, that water rights be issued for groundwater applications if the applicant can show that their withdrawals would not impact stream flows from August through October, through timing or consumptive use.

5. Land Use *[Source: Land Use issue paper]*

General

5.1 Examine land use plans to consider if the following are adequately addressed or consistently addressed by all local jurisdictions:

- Impacts to natural environment
- Availability of water resources
- Lessening of wastewater and stormwater

5.2 If applicable, recommend development standards that encourage low impact development in the Chehalis Basin, such as improved water conservation, minimization/mitigation for development near riparian zones, and development of water resource monitoring plans.

5.3 Encourage landowners who have property in forests to keep it in forest, and encourage farmers to continue to farm.

5.4 Encourage the use of forestry and agricultural practices that mitigate the adverse impacts of timber, crop and livestock production on water resources.

5.5 Require land use practices that limit the adverse effects on water quality when forest and agricultural lands are converted to more intensive uses.

6. Flooding *[Source: Flooding issue paper]*

General

6.1 Those cities and counties with comprehensive flood hazard management plans should implement them, including both

structural and non-structural options. Cities and counties should participate in FEMA's Community Rating Program.

6.2 Counties and cities with comprehensive flood hazard management plans should inform and, where possible, coordinate with each other during implementation of these plans, and should consider using the Partnership as a forum for coordination/communication between Lewis County, Chehalis and Centralia flood officials. *NOTE (from Chehalis Basin Partnership By-Laws): The Partnership was created per an intergovernmental agreement dated August 31, 1998 that designates a planning unit to pursue strategies within the Chehalis River basin including the key elements of flood reduction, fisheries, recreation, water quality and water quantity and examine their relationship to economic health and sustainability* [emphasis added].

Specific Actions

6.3 Place elevation poles and staff gages along major rivers

7. Water Storage *[Source: Water Storage report, except as noted]*

General

7.1 Establish a general program of wetland restoration: if money becomes available for wetland projects as mitigation in the basin, restoration projects that expand wet areas or reconnect the floodplain should be given additional weight.

7.2 Establish a public information program *(estimated cost over 5 years: $120,000)* including information on:

- the effects of impervious area
- how individuals can mitigate these effects
- how development costs can be reduced by implementing Low Impact Development (LID)
- the benefits of a policy of LID for new development in the basin (recommend drafting a model LID ordinance that could be easily adopted or modified by counties in the basin)

7.3 Establish a public information program to instruct agricultural landowners on the effects that agricultural drainages have on wetlands, water quality, and runoff. As part of this program, a database would be established to help track existing drainage systems, their condition, and the current land use *(estimated cost: $207,000)*.

7.4 Establish a public information program to explain the beneficial effects that beavers have on ecosystems and encourage landowners not to automatically remove beavers from an area. *(estimated cost: $170,000)*.

7.5 Continue emphasis on forest conservation. Recommend an advanced study to quantify the relationship between forest cover, infiltration, groundwater, and surface water. By quantifying the effects of forest harvesting on base flows, new regulations can be fairly developed and administered or proper mitigation can be specified.

7.6 Further investigate the possibility of expanding the storage of the Skookumchuck reservoir to the originally authorized volume of 28,500 acre-feet.

7.7 Monitor implementation of the Wynoochee Dam project to ensure that this project contributes to the goals and objectives of the Chehalis Basin Watershed Management Plan

7.8 Releases of water from existing reservoirs must be timed to support fish health and stream morphology. *[Source: Quinault Indian Nation]*

7.9 (low priority) If an aquifer storage and recovery project is to be considered, study Newaukum Artesian Aquifer: characteristics to evaluate include specific storage the aquifer might hold and hydraulic conductivity. Test wells would have to be drilled and groundwater modeling of the aquifer would be necessary before a pilot project could be established.

Public Information Goal

- Use the Citizen Advisory Committee and public education to raise awareness of citizens on watershed issues and gain input from the public in developing and adopting the Plan.
- Encourage basin residents to implement the Plan, with government support.

8. Public Information *[Source: Public Information issue paper]*

General

8.1 The Citizens Advisory Committee of the Chehalis Basin Partnership should take a leading role in developing a plan for public information, including specific roles and responsibilities. The Citizen Advisory Committee would make recommendations to and be guided by the Chehalis Basin Partnership.

8.2 Member agencies of the Partnership should consider what outreach techniques are a good fit for their resources and assist accordingly. The Citizens Advisory Committee should recommend options for information and involvement to the Partnership that the group feels will best meet the goals they have identified.

8.3 Initial efforts must focus on the water resource issues deemed most vital by the Partnership; they should begin as soon as the Plan is adopted.

8.4 Make clear in all communications that meetings of the Partnership are open to interested members of the public

8.5 Develop eye-catching informational materials such as a "Chehalis Basin Water 101" brochure

8.6 Revise public informational materials and efforts over time to reflect what proves to be more/less effective

Specific Actions

8.7 The Partnership should hold additional public meetings to gain direct citizen input on this Plan between the time it is recommended for approval and the time the County legislative authorities consider it (January-February 2004). *[Source: STC]*

8.8 Develop "talking points" on water resources that all Partnership members can have on hand to spread the word *[Source: Public Information issue paper]*

8.9 Create a brochure that portrays the Chehalis River basin as a destination for recreating and living; this brochure will also convey the message that protecting what we've got is the key to our quality of life

9. Exempt Wells *[Source: Exempt Wells issue paper]*

Statewide:

9.1 Maintain status quo, until steps below are taken

9.2 Legislature/Ecology should address exempt well use on a statewide basis following existing laws, rules & opinions

9.3 State should enforce current regulations

9.4 Evaluate current regulations on exempt wells for adequacy in protecting surface waters (quantity and quality)

9.5 Clarify science around impacts of exempt wells on surface water

9.6 State must allocate resources if local governments are to help manage exempt well use

9.7 Ecology should conduct statewide evaluation of exempt well use, using the following guidelines:

- Ecology should conduct its evaluation in an open process involving stakeholders.
- Ecology should sponsor sub-regional and regional workshops on exempt wells, leading to a statewide workshop/ forum/ task force on exempt wells to better quantify technical aspects and to identify policy and cost factors.
- Ecology should develop an educational program related to the use of exempt wells and their potential impact on instream flows and water quality.
- Ecology should develop criteria for when it will require use of deeper aquifers as a source of exempt well water. If deeper aquifers are used for household use, shallow aquifers would be available to supplement stream flows.

9.8 The Department of Health should prepare a white paper that compares use of exempt wells per parcel to the use of community systems (Class B). In particular, it should address the benefits that Class B community systems have for water quality.

9.9 The Partnership believes that a conflict exists among the 1945 Groundwater Law, the Attorney General's opinion, and the Chehalis Instream Resource Protection Program (IRPP) as to whether small withdrawals can affect surface water rights and whether they are subject to the same system of priorities as all other appropriators. The Partnership recommends that Ecology or the Attorney General's office address this conflict in the Chehalis basin.

9.10 The Partnership has discussed exempt wells and its members have widely divergent opinions on whether or not exempt wells are a concern in the Chehalis basin. Some believe that exempt wells have minimal impact while others believe that exempt wells have, or will have, an impact, especially on stream flows. Based on the data evaluation that shows that there may be concerns with exempt wells in certain sub-basins, the Partnership has agreed to recommend the following specific statement and actions regarding exempt wells in the Chehalis basin:

Statement of Concern Related to Exempt Wells in the Chehalis basin:

1. The Partnership believes that exempt wells may be a problem in specific sub-basins of the Chehalis basin where rural development and/or hydrogeologic and/or streamflow conditions create cause for concern.
2. The Partnership further believes that exempt wells may be a potential future problem in other sub-basins where future rural development combined with existing hydrogeologic and/or existing or future streamflow conditions, may create cause for concern.

Recommended Actions Related to Exempt Wells in the Chehalis basin

- Prioritize sub-basins in the Chehalis Basin based on concerns about exempt wells and conduct specific hydrogeologic studies and evaluations to identify specific problem areas. Areas of higher concern are those that have substantial human development now or projected in the future, poor hydrogeological conditions and/or hydraulic continuity, or low stream flows
- Pursue funding sources for investigating possible solutions for identified sub-basin problem areas in order to:
- Focus on these sub-basins and areas within these sub-basins in developing alternative options for exempt wells, for example, providing water purveyor service, using deep aquifers where supplemental water may improve streamflow conditions, and/or considering means to influence the timing of withdrawals to benefit stream flows
- Develop educational materials and program for informing basin/state residents, agriculture and businesses on how to use exempt wells and to lessen their impact on the environment

Specific to Chehalis Basin:

9.11 Partnership adopts the following statement of concern related to exempt wells:

- Exempt wells may presently be a problem in specific sub-basins of the Chehalis Basin where rural development and/or hydro-geologic and/or stream flow conditions create cause for concern. Also, exempt wells may be a potential future problem in other sub-basins where future rural development combined with existing hydro-geologic and/or existing or future stream flow conditions may create cause for concern

9.12 Prioritize sub-basins based on concerns about exempt wells and conduct specific hydro-geologic studies and evaluations to identify specific problem areas. Areas of higher concern are those that have substantial human development now or projected in the future, poor hydro-geological conditions and/or hydraulic continuity, or low stream flows

9.13 Pursue funding sources for investigating possible solutions for identified sub-basin problem areas in order to:

- Focus on these sub-basins & areas within these subbasins in developing alternative options for exempt wells, for example providing water purveyor service, using deep aquifers where supplemental water may improve streamflow conditions, and/or considering means to influence the timing of withdrawals to benefit stream flows
- Develop educational materials and program for informing basin/state residents, agriculture and businesses on how to use exempt wells and to lessen their impact on the environment

10. Stormwater *[Source: Stormwater issue paper]*

10.1 Focus on public information to explain impacts of impervious surfaces and stormwater on water resources

10.2 Study specific problems and develop recommendations

10.3 Voluntary implementation of stormwater programs

10.4 Build appropriate stormwater control into current planning efforts and development costs rather than deferring costs into the future

10.5 Link regulations for new development and redevelopment to planning/building codes

10.6 Encourage formation of county, city and special district stormwater utilities

11. Economic Value of Recreation *[Source: Potential Economic Value issue paper]*

11.1 Outdoor recreation opportunities should be cultivated where they can contribute to a sustainable economic revenue base.

11.2 Money spent in the basin should be used to preserve fish, wildlife and aquatic habitat within the basin.

11.3 The Partnership recommends to State Legislature that fish and wildlife money /services in the area and associated taxes should be used for preservation of habitat within the Chehalis Basin (i.e., provide funding for small restoration or preservation projects).

11.4 Local governments should encourage festivals and events that support water resources and fish and wildlife within the basin (i.e., pamphlet/brochure with maps describing the basin as a great place to fish/boat/recreate/live because of the natural resources).

11.5 Request that the Economic Development Council study the issue of recreation and the economic value within the Chehalis Basin.

12. Management Framework

12.1 For the time being, the Partnership should remain the management entity, using Grays Harbor County as the lead agency. It will be responsible for completing and recommending this Plan for possible implementation. *[Source: Management Framework issue paper]*

12.2 The Partnership should apply for Phase 4 implementation funding from the State legislature *[Source: STC]*

12.3 The Partnership should develop criteria to determine the best organizational form for managing the water resources of the Chehalis Basin over the long term. *[Source: Management Framework issue paper]*

12.4 The Partnership should investigate types of legal organizations that could best meet these criteria and coordinate basin-wide water resources management over the long term. *[Source: Management Framework issue paper]*

12.5 The Partnership should also consider special purpose organizations or other entities that can handle water resources management on a smaller scale, for example at the county or sub-basin level. *[Source: Management Framework issue paper]*

12.6 The Partnership should consider formation of an Irrigation District or other type of entity that can levy fees for water resources management. *[Source: Implementation Strategy Section]*

12.7 That the Partnership should consider staffing water resources management, such as by hiring a water quality coordinator. *[Source: Stormwater issue paper]*

12.8 Partnership should contact the Environmental Finance Center to develop and implement a funding strategy for watershed management. *[Source: STC]*

12.9 Partnership should identify and contact water resources stakeholders not already at the table for participation in management decisions. *[Source: STC]*

13. Measuring Success *[Source: Measuring Success of the Chehalis Basin Watershed Plan]*

13.1 Track what happens to implement the Plan, e.g.:

- The counties adopt the Watershed Plan.
- The CBP determines to constitute itself as a legal entity to oversee implementation of the Watershed Plan.
- Whether or not a legal entity is created to oversee implementation of the plan, participating cities, counties, tribes and water districts take actions to implement specific recommendations in the plan.
- A single legal entity (if one is created) or individual cities/counties/tribes/water districts or combinations of these entities send recommendations to state/local governments requesting actions that would benefit the basin and the agencies respond positively to these recommendations.
- Funding is obtained by either the CBP (if it becomes a legal entity) or by member agencies to implement projects that benefit water quality, water quantity, instream flows, habitat, storage and prevent flooding.
- Public outreach and information efforts raise awareness about water resources and encourage citizens of the basin to adopt behaviors that benefit water resources over the long-term

13.2 For each element of this Plan, determine first whether general/specific recommendations are implemented, then measure effectiveness of projects implemented, e.g.:

- Water Quantity: Are cities, water districts & rural communities able to meet needs without impairing stream flows?
- Water Quality: Have any water bodies been taken off the 303(d) list? Does water quality monitoring show improved water quality?
- Habitat: Is monitoring strategy complete? Has it been implemented? Does state (Fish & Wildlife) monitoring show positive results?
- Instream Flows: Are regulatory minimum flows being met?
- Flood Prevention: Has flood damage been mitigated?
- Storage: Have any recommended actions achieved positive results (e.g. less severe flood damage in winter, higher stream flows during low flow months)?

13.3 Track Implementation of recommendations using the following table:

Recommendation	*Implementation Strategy*	*Responsible Party*	*Schedule*	*Results*	*Steps to take if off-track (adaptive management)*

14. Data Needs

14.1 Gather information on the condition of Chehalis basin forestlands (e.g. the extent of harvests, replanting, regrowth, etc. *[Source: Forestlands section of "Basin Description"]*

14.2 Gather information on the ownership of basin forestlands *[Source: Forestlands section of "Basin Description"]*

14.3 Compare forest practices/requirements under current Washington forest practices rules and forestry as practiced under Habitat Conservation Plans (HCPs) in the Chehalis basin *[Source: Forestlands section of "Basin Description"]*

14.4 Gather information on the extent to which some landowners in the basin are applying practices voluntarily in addition to those that are required by Washington forest practices rules (e.g., longer rotations) *[Source: Forestlands section of "Basin Description"]*

14.5 Gather information on the extent to which harvest units within the basin are complying with Washington forest practices rules and the HCPs *[Source: Forestlands section of "Basin Description"]*

14.6 The sub-basin prioritization effort was used for initial selection of water quantity study area. The priority list should be used as the basis for future similar water quantity evaluations, starting with the Wishkah sub-basin and followed by the Black River sub-basin. Future water quantity studies should select sub-basins alternating between WRIAs based on overall priority. *[Source: Sub-basin Priorities section]*

14.7 The list should be used to inform future technical and policy efforts, understanding that there may be additional factors to consider. *[Source: Sub-basin Priorities section]*

14.8 Because of the huge size of the Chehalis basin, technical and specific policy efforts should consider using sub-basins as pilot efforts to make limited resources go further and to test techniques on a small scale. The sub-basin priority list should be the basis for selecting study areas. *[Source: Sub-basin Priorities section]*

14.9 Some forum for discussing watershed issues, such as the Partnership, should continue beyond adoption of the Watershed Plan. This is an effective forum for discussing watershed issues and for receiving briefings from scientific and regulatory staff related to new data findings or emerging regulatory trends. *[Source: Data Accessibility section]*

14.10 Expanded availability and use of the Data Viewer should be explored. In particular, it may be beneficial to develop a menu-driven front end to assist with entering and navigating through the program and additional tutorial materials to help familiarize new users with the system. Setting up public access Data Viewer stations at public libraries, schools, community centers, and other public locations should also be evaluated. *[Source: Data Accessibility section]*

14.11 Updating the Data Viewer with GIS data developed for the Chehalis Basin GIS project as part of this Watershed Plan should also be explored. This effort would continue to build the Data Viewer as a comprehensive source of information about the watershed. *[Source: Data Accessibility section]*

14.12 It will be necessary to identify a long-term custodian for the Chehalis Basin GIS project that was developed for this Watershed Plan. This could logically be one of the participating counties, since they already have GIS capabilities. Ideally, the custodian for this system would also have the resources and mandate to maintain and use the system and assist residents and stakeholders who want to access data contained within the system (which may also include establishing web-based data access capabilities). *[Source: Data Accessibility section]*

15. Environmental Education

[Source: Environmental Education Issue Paper]

15.1 Provide more teacher trainings and information about existing resources.

15.2 Involve more organizations with environmental education such as stream team, conservations districts, counties, cities, YMCA Earth Corps, WFPA, and state agencies.

15.3 Establish a coordinator's position to form partnerships with community members and to use their expertise to create a strong program.

15.4 Provide education on the value of salmon, salmon habitat, and stream ecology through workshops and field studies.

15.5 Offer training in how to use biological assessment as an educational and action tool to determining the health of salmon habitat

15.6 Teach habitat restoration skills to teachers, students, and homeowners.

15.7 Provide teachers, students, and homeowners with a opportunity to apply the knowledge and skills they have learned to a habitat restoration project

15.8 Push to use the environment as integrating context (combine with math, science, and English curriculum) to improve test scores, retention, and participation.

16. Agriculture & Water Management *[Source: Agriculture & Water Management Issue Paper]*

16.1 Promote education about the effects of activities on the quality of the water to those who use the water.

16.2 Encourage local agricultural production and promote local agricultural product sales.

16.3 Promote science-based research and education to support agricultural producers by WSU Cooperative extension and other institutions which provide these services to Chehalis Basin growers.

16.4 Develop an overall strategic plan for promoting Chehalis Basin agriculture.

16.5 Develop a Chehalis Basin program for the purchase of development rights to maintain land in agriculture.

16.6 Develop local programs to match state and federal agency funding for agricultural lands conservation.

16.7 Conduct a general water rights adjudication in the Chehalis Basin.

17. Water Conservation *[Source: Water Conservation Issue Paper]*

17.1 Meet Phase 4 requirements for conservation, if Phase 4 funding is accepted.

17.2 The Partnership should meet with water purveyors to develop coordinated water conservation efforts that benefit all purveyors of the Chehalis Basin. Such an effort would provide an economy of scale by pooling purveyor resources and ideas into a regional approach.

17.3 Provide opportunities between the CBP and the agricultural community to consider cooperative efforts to simultaneously support agriculture & stream flows. This could lead to a coordinated effort involving Farm Bureaus, Conservation Districts, the Washington State Department of Agriculture and/or individual members of the agricultural community, including a resource for technological information.

17.4 The current "use it or lose it" law is a disincentive to conserve water for agriculture. Therefore, the CBP recommends considering a management system to allow the agricultural community to combine resources and "share" water rights to become more efficient.

17.5 The Partnership should consider recommending a "Water Master" who could work with Conservation Districts or irrigators to use water efficiently and minimize impacts on stream flows.

17.6 Recommend changes to the state's "use it or lose it" law to allow saving water without losing water rights.

17.7 Encourage consideration of the Trust Water Rights Program as a method to preserve water rights and allow water to go to the streams.

17.8 Water purveyors continue to comply with DOH requirements. Consider methods to measure success of water purveyors' current conservation efforts to see if adjustments are needed. Consider state funding to support purveyor conservation efforts.