

**NORTH SANTIAM RIVER BASIN  
WATER MANAGEMENT**

**Interview Summary**

October 14, 2009

**I. Introduction**

Oregon Consensus (OC) is a program of the National Policy Consensus Center in PSU's Hatfield School of Government. OC is Oregon's official program for public policy consensus building. OC provides assessment, consensus building, facilitation, mediation and other collaborative governance services to public entities and their stakeholders throughout Oregon. The City of Salem and the North Santiam Watershed Council asked Oregon Consensus to conduct a neutral assessment of the potential for collaboration relating to water management in the North Santiam Basin. The assessment consisted of interviews with parties representing a range of perspectives on issues and concerns related to water management. The purpose of the interviews was to understand the parties' interests and concerns and their willingness to participate in a consensus-based collaborative process to address those issues and concerns. Each interview was conducted using the same set of questions to provide consistency throughout the process. Attachment A and B contain a list of interviewees and interview questions.

This report summarizes the key issues, concerns and ideas raised by parties interviewed. The report does not include every item raised during the interviews, but it represents the spectrum of the issues raised. Because interviewees had different interests, opinions and perspectives, the comments summarized in this report may be contradictory.

Seventeen interviews were conducted within the current project budget. Interviewees were selected to gain a broad cross-section of opinions.

Interviewees gave generously of their time, provided valuable information, insights and ideas, and were forthright and open about their concerns. OC thanks everyone who participated in the interview process.

**Next Steps**

The interviews conducted to date indicate a clear need for collaboration between multiple parties to address complex water management issues in the North Santiam. OC will work to identify potential funding sources for a collaborative process. If additional funding can be secured, OC will complete interviews with additional interested parties and identify process design options.

## II. North Santiam River Basin Background

This section provides background information on the North Santiam basin to provide a context for the comments received during the interviews. A map of the North Santiam basin is included as Figure 1.

### Willamette National Forest

The upper reaches of the basin lie almost entirely within the Willamette National Forest.

### Detroit and Big Cliff Dams

Two US Army Corps of Engineers (USACE) dams are located in the basin: Detroit dam and Big Cliff dam. These dams are part of the Willamette Project, which includes thirteen multi-purpose dams in the Willamette Valley. USACE operates the Willamette Project dams as a single unit.

The primary purpose of Detroit dam is flood control. Water is released from Detroit dam in the fall to create additional capacity in the reservoir for flood control. After the threat of floods has decreased, the reservoir is allowed to refill. Big Cliff dam is used to regulate the large flows of water released from Detroit dam and is also used to generate hydropower. These dams are also operated for other purposes, including: irrigation, recreation, navigation, and to augment the natural flows in the river for water quality and fish and wildlife purposes. USACE must balance between these competing authorized uses.

USACE owns and operates Detroit and Big Cliff dams. Bonneville Power Administration (BPA) markets power generated at Big Cliff dam. The Bureau of Reclamation (BOR) manages irrigation contracts for water stored behind Detroit dam. Irrigation is the only beneficial use listed on BOR's water rights for storage behind Detroit dam. Therefore, BOR issues contracts only for irrigation.

### Detroit Lake

The reservoir behind Detroit dam is called Detroit Lake. Detroit Lake is one of the top three lakes for recreational use in Oregon. Tourism and recreational use at Detroit Lake is an important part of the local economy. The highest recreational use of Detroit Lake occurs between Memorial Day and Labor Day. During this time, the USACE must balance recreational use in Detroit Lake against the need to release water from the dams for other authorized uses. The USFS owns a considerable amount of land around Detroit Lake and is responsible for managing recreational use on the lake.

ORS 536.595 provides direction to the Oregon Water Resources Department (WRD) during their discussions with USACE over operation of Detroit Lake. This statute directs WRD to:

1. Specify that the State of Oregon has determined that Detroit Lake is an important recreational resource to the citizens of Oregon.
2. Encourage the United States Army Corps of Engineers to place Detroit Lake as the highest priority recreational use lake in the Willamette Basin reservoir system.
3. If the United States Army Corps of Engineers indicates that recreational use of Detroit Lake will not receive the highest priority, notify communities that may be detrimentally affected by such a decision and hold public meetings within the affected communities.

### Willamette Project Biological Opinion (BiOp)

The North Santiam basin contains the following Endangered Species Act (ESA) listed fish species: bull trout (threatened), Oregon Chub (endangered), Upper Willamette River spring Chinook salmon (threatened) and Upper Willamette River winter steelhead (threatened).

In 2008, the National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (USFWS) completed a consultation with USACE, BPA and BOR on the impact of the Willamette Basin project on ESA listed species. Both NMFS and USFWS issued a Biological Opinion (BiOp) for the Willamette Project. NMFS determined that the continued operation of the Willamette Project would be likely to jeopardize the continued existence of Upper Willamette River spring Chinook salmon and Upper Willamette River winter steelhead and destroy or adversely modify their critical habitat. NMFS developed a “Reasonable and Prudent Alternative” (RPA) to the proposed operation of the Willamette Project that included additional measures to mitigate for project impacts, including the impacts of Detroit and Big Cliff dams. These measures include: fish passage, temperature controls, changes in downstream flows, screening of irrigation diversions, improved hatchery practices and facilities and habitat improvement projects. The USFWS BiOp concluded that if the NMFS RPA were implemented, the Willamette Project would not be likely to jeopardize the continued existence of bull trout or Oregon chub, and would not adversely modify designated critical habitat for bull trout.

### Marion Forks Hatchery

The Marion Forks hatchery is located below Big Cliff dam. The hatchery, operated by the Oregon Department of Fish and Wildlife (ODFW) was created as a mitigation measure for loss of spawning area caused by construction of Detroit and Big Cliff dams.

### Stayton Complex Dams and Diversions

Near Stayton, Geren Island divides the North Santiam River into two channels, North and South channel, and Upper Bennett Dam diverts water into the North Channel. Downstream of Upper Bennett dam, Lower Bennett Dam diverts water into a number of diversions and canals owned by the Santiam Water Control District (SWCD) and/or City of Salem that are used for irrigation, hydroelectric power production, municipal use, or aesthetic uses. These diversions include:

- The Salem Ditch, which diverts water from the North Channel of the North Santiam River to Mill Creek, which flows through the City of Salem.
- The Gardiner-Bennett Power Canal. Lower Bennett dam directs water into the SWCD Power Canal, which provides water to the Water Street and Rousch hydroelectric facilities owned and operated by the SWCD. A third hydroelectric facility on the Power Canal, the Stayton Hydroelectric Project is currently not operating. The SWCD has applied for an exemption from the Federal Energy Regulatory Commission (FERC) to operate this facility again. Water that does not enter the Power Canal headgate flows over a third dam, the Spillway Dam, and is returned to the North Santiam River via the North Channel.
- Salem municipal water supply intake. The City of Salem withdraws water from an intake on the North Channel of the North Santiam River for its municipal water supply. The city of Salem has a water treatment plant and a pretreatment facility on Geren Island.

### Water Law/Water Rights

Oregon's water laws are based on the principle of prior appropriation – “first in time, first in right”. Older (senior) water rights have priority over newer (junior) water rights. During times of limited water, junior water rights are regulated back to meet the downstream needs of senior water rights. The Water Resources Department (WRD) administers Oregon's laws governing surface and groundwater resources. With the exception of statutorily defined “exempt uses”, water users must obtain a permit or water right from WRD to use surface or groundwater. The Water Resources Commission (WRC) establishes state water policy.

Water rights in the North Santiam basin have been issued for a variety of uses, including: industrial, agricultural, domestic, municipal, and hydroelectric power generation. As part of the Willamette Basin program, WRC adopted classifications for surface and groundwater in the Santiam River drainage basin (OAR 690-502-0110). These classifications limit the availability of natural flow for out-of-stream uses. The Stayton-Sublimity “groundwater limited area” (GLA) is located in the North Santiam basin. Groundwater from basalt aquifers in the Stayton-Sublimity GLA is classified for exempt uses only [OAR 690-502-0180(1)]. These exempt uses are defined in ORS 537.545, and include, but are not limited to, domestic wells.

WRC also adopted minimum perennial stream flows in the Santiam River drainage to support aquatic life and minimize pollution, and established restrictions on new surface water appropriation in order to maintain these minimum perennial streamflows [OAR 690-502-0110(2)]. In a few locations, WRD has established in-stream water rights for the protection of fisheries, aquatic life and pollution abatement. These in-stream water rights are junior to most other water rights.

### Water Quality

The North Santiam River is one of three Oregon rivers subject to the Department of Environmental Quality's (DEQ's) Three Basin Rule (OAR 340-041-0350). The intent of the rule is to preserve or improve water quality for municipal water supplies, recreation and preservation of aquatic life. With certain exceptions listed in the definition of waste discharge in OAR 340-0410-0350(1)(a), the rule prohibits new or increased waste discharges to the North Santiam River.

Sections of the North Santiam and Santiam River exceed water quality criteria for temperature, and are included on DEQ's 303(d) list of water quality impaired water bodies.

### Municipalities

Several small communities are located along the North Santiam River: Lyons, Mill City, Gates, Detroit, Mehama, and Idanha. These communities, as well as the communities of Stayton, Turner, and Salem obtain their water supplies from the North Santiam. The city of Jefferson diverts its water supply just below the confluence of the North and South Santiam Rivers.

## **III. Summary of Interview Responses**

### **A. Interests**

Interviewees expressed the following interests related to North Santiam basin water management (listed alphabetically).

- Aesthetic (i.e., providing for aesthetic flows in Mill Creek)
- Agricultural
  - Obtaining surface and ground water for agricultural uses, including crop production and food processing
- Balancing conflicting uses
  - Managing flows from USACE dams in a manner that balances the needs of conflicting uses and is consistent with USACE authorities and regulations and the ESA
- Environmental/ecological
  - Obtaining peak and ecological flows to maintain overall watershed health
  - Obtaining in-stream flows to:
    - Provide good overall aquatic health
    - Provide for conservation and recovery of ESA listed fish species
  - Implementing the Willamette Project BiOp
  - Obtaining good fish passage throughout the system
  - Developing and implementing restoration projects
  - Maintaining wildlife values within the corridor
  - Ensuring that rivers are not degraded
- Flood control
- Increasing water supplies
- Industrial
  - Obtaining water for industrial uses
- Municipal
  - Ensuring that cities have an adequate present and future water supply, with an understanding that there probably will be limits to supply
  - Ensuring that Salem's water system is developed and used in a way that has the least environmental impact
  - Ensuring that Salem can continue to use water from the North Santiam in an environmentally responsible manner
- Power generation at USACE dams and SWCD hydroelectric projects
- Public interest
  - Ensuring that the public has a voice about how resources are allocated and managed
- Recreational
  - Providing for recreational use at Detroit Lake between Memorial Day and Labor Day to promote local economic sustainability
  - Providing for recreational uses downstream of the USACE dams (e.g., fishing and boating)
  - Maintaining recreational fish production
- Water quality
  - Preserving and maintaining water quality
  - Implementing water quality regulations
- Water rights
  - Working towards a management process that provides water in the long term and protects existing water rights

- Protecting agricultural water rights; making sure that agriculture does not suffer the brunt of water shortages
- Obtaining full legal protection for in-stream water rights
- Ensuring that water laws, rules and policies are applied properly

## **B. Are Interests Being Met**

Interviewees provide a range of responses when asked if current water management in the basin was meeting their interests:

- In-stream flow interests are not being met
  - Flows at Detroit and Big Cliff dams are managed to meet minimal biological requirements and are not necessarily the most optimal for overall watershed health
  - In-stream flows are not meeting the needs of fish for various reasons (amount of flow; timing and temperature of water released from the dams)
- Additional information is needed to determine if interests are being met (baseline information on habitats, water flow, water quality and the impact of flow on fish and other resources)
- Interests are met during good water years. During low water years, interests are either not met or adaptations or adjustments to operations are required.
- Concerns were expressed about whether interests would continue to be met in the future due to:
  - Decreased water supplies due to climate change
  - Modifications to flow releases in Detroit and Big Cliff dams to implement the BiOp
  - Pressure to keep Detroit Lake full throughout the recreational use season
  - Increased demand for water as a result of future population growth development
  - Increased water use by the city of Salem

## **C. Issues and Challenges**

- The level of current and future demand versus the quantity of water available (groundwater and surface water)
  - Too many interests competing for a limited volume of water
  - Differing views on over-allocation
    - Water has been over-allocated
    - Better information on the amount of water needed and used for various purposes is needed to determine if over-allocation has occurred
- How to allocate water during times of low flow
- Providing for new storage or increased storage capacity
- Demand management
  - To what extent can the need for water be reduced through:
    - Conservation
    - Delivery efficiencies (i.e., infrastructure improvements)
    - Efficiency of use (what water is used for)
- Maintaining water quantity and quality in light of population growth and Clean Water Act and Endangered Species Act (ESA) requirements
- Land use and growth
  - Effect of future population growth on water demand and use
  - Impact of increased development on riverine habitat (e.g., loss of riparian habitat, increased runoff, water quality impacts of pesticides and fertilizers)

- Impact of future development (including exempt wells) on groundwater quantity and quality
- Recreational use in Detroit Lake
  - How to balance the need for water in Detroit Lake during the recreational use season against other needs (e.g., threatened and endangered fish species, downstream recreational uses, the needs of other water users)
- Flow management at Detroit and Big Cliff dams
  - How to balance the needs of all water users in a manner consistent with USACE regulations and Clean Water Act and ESA requirements
  - Timing of flow releases
    - Less flow is released during the summer when demand for water is highest
    - Timing and temperature of water releases adversely affects fish
  - Impact of the BiOp on USACE flow releases
    - Will there be less flexibility in how flows are managed
  - How to manage flows to:
    - Provide a more natural hydrograph
    - Provide for peak and ecological flows
    - Promote recovery of threatened and endangered fish species
  - The impact of future changes in to USACE flow allocations on other water users
- Bureau of Reclamation (BOR) contracts for stored water in Detroit Lake
  - Impact of the BiOp on BOR storage contracts
  - BOR storage contracts are issued only for irrigation
- Threatened and endangered fish species
  - Amount and timing of in-stream flows needed to promote recovery of threatened and endangered fish species
  - How will flows be monitored to determine their effectiveness
  - How will providing in-stream flows for threatened and endangered fish affect
    - Other water users
    - Water rights
  - How important are factors other than flow to recovery of threatened and endangered fish species (e.g., recreational fishing, ocean conditions, hatchery fish)
  - Barriers to fish passage
- Impacts of Detroit and Big Cliff Dams
  - Changes to river hydrology; loss of upstream habitat; changes to river temperature; fish passage barriers
- Upper and Lower Bennett dams and diversion structures in the Stayton complex
  - Amount of flow being diverted
  - How will diversions increase when the Stayton hydroelectric project is relicensed
  - Impacts of dams and diversion structures on fish
    - Reduced flows in the South Channel create temperature and passage problems for fish
    - Unscreened diversions
- There is no coordinated, basin-wide approach to water management
  - Multiple agencies with overlapping responsibilities and different priorities for water use are involved in water management
  - No comprehensive, long-term water management plan
  - No crisis management plan for allocating water during low flow years

- No collective understanding about the needs of all water users
- Water quality
  - Temperature and the affect of flows on temperature
  - Finding alternatives to dilution to address water quality problems
  - Effectiveness of existing rules and regulations in protecting water quality (e.g., Three Basin Rule, SB1010 agricultural water management plans)
  - The impact on water management if water quality standards tighten up in the future
  - The relationship between North Santiam flows and Willamette River water quality
  - The effect of water uses and return flows on water quality and Salem's treatment of water
  - The effect on water management if aquatic invasive species come into Detroit Lake
- Municipal water use
  - Amount of water cities will need in the future
  - What methodology will be used to determine future needs
  - How will increased municipal use affect other water users
  - Salem's municipal water needs
    - The needs of future industrial uses are a big unknown
    - Are there alternative water sources for meeting these needs that are:
      - Less ecologically sensitive than the North Santiam
      - Technologically and economically feasible
- Climate change
  - The impact of climate change on water supplies and water use

#### **D. Barriers**

Interviewees identified the following barriers to addressing their issues and concerns:

- Water supply and storage
  - Water supply depends on rainfall and snowpack, which are out of our control
  - Water availability, cost, technology, compatibility with existing systems, and environmental considerations limit development of new drinking water sources
  - Getting permits for new water storage is difficult
- Legal and regulatory
  - Water law
    - The prior appropriation doctrine may not always result in the most effective use of water
    - There is no way to ensure that water released from the dams for fish will remain in-stream
    - Minimum perennial streamflows have not all been converted to in-stream water rights
    - Cities can keep unused municipal water rights forever
    - State law requires WRD to advocate for recreational use in Detroit Lake as the highest priority use of water
  - BOR contracts for stored water in Detroit Reservoir can be issued only for irrigation
  - Obtaining permits for projects is time consuming because multiple agencies are involved
  - There is uncertainty about who is responsible for maintaining flows in the river below the Stayton complex
  - There is no consistent methodology for addressing peak and ecological flows during review of water right permits
  - Water quality laws and regulations

- Unused municipal water rights are not considered when DEQ establishes Total Maximum Daily Loads (TMDL's)
  - DEQ has no way to require reduction in discharge allowed under their permits during times of low flow
- Water rights
  - Reluctance to give up water rights
  - Concern about losing water rights
- Public awareness and education
  - The public lacks awareness about the:
    - Complexity of the system and the impact dams have on the system
    - Habitat needs of fish
    - Source of public drinking water
    - Multiple competing uses for water
    - Connection between the water they use and the rivers they fish in
  - Sources of public information about the basin are limited
  - Forums for public involvement are limited
- Litigation
  - Litigation is tiresome, and makes it harder to reach compromises
  - Management decisions made by courts can be too simplistic (i.e., run the river at a certain level for a certain period of time)
- Politics
  - Interests that are stronger or more politically connected tend to prevail
- Approaches to planning for municipal water supplies
  - Because cities are insecure about their water supplies they tend to overestimate their need for water and provide for an excess supply. Examples are:
    - Developing municipal water systems based on peak demands
    - Developing projections of future water needs based solely on linear population projections without considering future reductions in demand due to conservation, infill development or increased efficiencies of use
  - Cities focus too much on acquiring water and not enough on conserving, reusing or recycling water
  - An engineering culture that is skeptical about conservation measures
  - Lack of creativity about how to acquire and use water
- Funding
  - Lack of funding
  - Available funds may not be used strategically (i.e., available funds are spread out among multiple applicants)
- Relationships
  - Personalities
  - Trust issues
  - Lack of openness about true interests
  - Extremists on all sides of the issues
- Technical and scientific
  - Information and data gaps (see Section E below)
  - Lack of commonly accepted terminology, base information or key assumptions
  - Lack of agreement on data

- Data collection methodologies (e.g., different methodologies are used to determine in-stream flow needs)
  - Data interpretation
  - Is information used to make decisions relevant, complete, and science-based
- Lack of a coordinated research or monitoring plan for the basin
- Lack of a clearinghouse or central repository for data collected in the basin
- Lack of a forum for sharing data
- Better methods for providing fish passage are needed
- Lack of a comprehensive, basin-wide, long-term approach to water management
  - There is no collective understanding of the needs of all water users, the amount of water they use, and whether they could use water more conservatively
  - State and federal agencies do not always speak with one voice
    - Oregon agencies have different priorities for water use
    - Different divisions within the same federal agency make different in-stream flow recommendations
  - There is no forum or process for bringing all stakeholders together
    - The Federal Lakes Recreation Committee addresses recreational needs in Detroit Lake.
    - USACE's "Willamette Action Team for Ecosystem Restoration" (WATER) addresses BiOp implementation (including flow management issues)
    - ODFW's state recovery planning process for threatened and endangered fish species is probably the process with the broadest scope; it identifies management actions that all stakeholders need to implement
    - Flow requirements are discussed during review of permit applications, but the impact on flows by users other than the permit applicant is not considered
    - Individual users work out conflicts among themselves based on private agreements or legal requirements rather than having a cross-table negotiation with all users
  - Creating a forum or process to discuss a comprehensive, basin-wide approach to water management may be difficult:
    - Turf issues and concerns about giving up power may make it difficult to reach agreement on leadership and a decision-making process
    - It may be difficult to get people to accept that another process is needed to address water management
    - There is a certain amount of frustration with planning and "process fatigue"
- Communication and coordination
  - Multiple agencies and multiple layers of government (i.e., federal, state, municipal, irrigation districts) are involved in water management; this makes communication a challenge
  - There is not enough government-to-government interaction; everyone tends to work in their own isolated area
  - Each stakeholder is focused on his or her own interests and goals
  - Communication occurs only when there is a problem
  - Agencies with similar responsibilities sometimes engage in turf battles
  - Different processes have different timeframes, which can make coordination more difficult (e.g., FERC relicensing versus Salem's 100 year demand forecasts)
  - Everyone thinks the river is someone else's problem

- There is not enough information sharing
  - Information from decision-makers on why certain decisions are being made
  - Information from cities on their future water needs
  - Concise information on the goals and objectives of the BiOp and how it will be implemented
- Time
  - Pressure to improve fish numbers quickly may: prevent long-term thinking; prevent taking a closer look at the underlying causes of fish declines; stifle creativity or limit options for addressing problems.

## **E. Information, Science and Data Gaps**

Interviewees identified the information, science and data gaps listed below. Studies to fill some of these gaps are currently occurring or will occur as part of BiOp implementation. Some interviewees also pointed out that data is currently being collected by a variety of state, federal and local agencies and organizations, and that it was important to look first at the data that was already being collected.

- Current water use and allocation information
  - Amount of water allocated for various uses
  - Amount of allocated water actually used
  - How efficiently is water being used and distributed
  - What additional conservation methods can be taken
  - Real time diversion rates
  - Impact of illegal diversions
- Information on future water needs
  - Projections of need from all water users (long-term needs and needs within a yearly cycle)
- Information on sources of water for Salem other than the North Santiam (i.e., Willamette River, aquifer storage recovery)
  - Technological feasibility, cost, environmental impacts or benefits
- Flow information
  - Real time information about the amount of flow between the dams and the confluence with the Willamette (particularly at and below the Stayton complex)
- Information on the impact to aquatic resources, other users, and aquifers if water rights were fully appropriated
- Fish information
  - In-stream flow needs
    - Assessments of flow needs of fish throughout the entire river at different times of year and at different life stages
    - Exceedence information (i.e., how often can target flows be achieved)
    - Monitoring to determine whether target flows for ESA species are meeting identified needs
  - Habitat information
    - Habitat assessments
    - Monitoring habitat improvements to determine what works and why
    - Studies to identify the habitat factors that are most important to fish
  - Productivity and distribution information

- Better information on fish use, production, timing and movement patterns to know where and when fish need water
  - Information on juvenile production at different points in the basin
  - Information on tributary spawning
  - Studies to determine the causes of pre-spawning mortality
  - Assessments of the potential for reestablishing historic fish production in the basin
  - Measurements of fish production upstream of Detroit and Big Cliff dams
  - Better assessments of fish population status and distribution
  - Information on what happens to fish in Detroit Lake
  - Information on how fish returns are affected by ocean conditions and fishing pressure
  - Data to resolve the “hatchery fish vs. wild fish” debate
  - Better fish counts
  - Information on fish passage at Stayton complex dams and diversions
- Better information on tributaries and their importance to fish in the mainstem
- Flow and flow management studies
  - Studies on ways to release water from the dams to get more natural temperatures downstream
  - Monitoring to determine the impacts of flow releases on fish
  - Studies on ways to use dam flow releases to refresh gravel and enhance fish spawning
- Studies to determine peak flow and ecological flow needs
- Studies to determine appropriate baseline flows, particularly at the tributary level
- Studies to determine how transition in the headwaters from early seral stage forests to mid-to-late seral stage forests has impacted flows
- Information on projects conducted in other systems to compensate for the impacts of dams (e.g., gravel enhancement projects)
- Detroit Lake recreation
  - Information to provide a better picture of recreational use at Detroit Lake
  - What would public use of the lake look like if the reservoir were not at full pool?
    - Would there be an interest in not achieving full pool if ramps and docks could be changed?
- Climate change
  - Modeling to determine the impact of climate change on water supply and demand
- Water quality information
  - Additional temperature data
  - Monitoring for toxics in the basin
  - Monitoring to determine the effect of water quality plans and improvement projects on water quality problems (including temperature)
  - Information on the potential impact of blue-green algae blooms in Detroit Lake on downstream resources
  - Information on how uses of water and return flows affect water quality and Salem’s water treatment
  - Information on aquifer water quality
- Groundwater information
  - Mapping of groundwater limited areas based on geologic structures
  - Long-term groundwater monitoring to:
    - Determine whether groundwater is declining overall or just in certain areas

- Assess the impact of development (including exempt wells) on aquifer water quantity and quality
- Measurements of groundwater use
- Information on ways to recharge groundwater
- Information on hydraulic connections between surface water and groundwater
- Impacts of upland management (road densities and timber harvest) on water quality and flow
- Information to better predict water availability (e.g., better telemetry to measure snowpacks)
- Information on the residual time of water in the watershed (snow to stream)
- Scenarios of drought year flows that could be used to think through water allocation in drought years and the impacts of that allocation

## **F. Collaborative Process Participation**

Interviewees were asked who would need to participate if there were the interest and recommendation to initiate a collaborative process. Attachment C contains a list of recommended process participants. The length of this list reflects the multiple water management issues in the North Santiam basin and the wide variety of stakeholders with an interest in these issues.

Interviewees were also asked if they would be willing to participate in a collaborative process. The majority of interviewees expressed support for a collaborative process. Although no interviewee said they would be unwilling to participate in a collaborative process, interviewees did offer the following comments or caveats regarding their participation:

- They might not participate if other participants represented their interests
- Their participation would depend on the goals and objectives of the process and the issues discussed
- There must be a clear connection between process goals and objectives and their agency responsibilities
- An agency cannot abdicate its legal responsibilities in order to reach consensus
- They would need to feel comfortable that:
  - Other parties were not participating in the process simply to maintain the status quo
  - Protocols would be developed and followed so that certain interests were not favored over others
  - Goals and objectives would not be limited to finding ways for Salem to take more water out of the North Santiam
- As part of BiOp implementation, studies will be conducted to: 1) establish flow targets for threatened and endangered fish and 2) measure flows. It would be good to have a small group get together to talk about how to design flow studies and collect data. However, there is no reason to begin a larger collaborative process until that data is available.

## **G. Additional Interviewees**

Interviewees were asked to recommend other parties that should be interviewed. Attachment D contains a list of their recommendations.