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Yakima River Basin Study– Out of Stream Needs (Task 2) Subcommittee

Meeting Notes, October 19, 2010, Yakima City Hall

Welcome and Introductions

Andrew Graham reviewed the agenda for today's meeting.

Market Reallocation – Economic Estimates of Trading Potential

Ernie Niemi summarized the ECONorthwest draft assessment of market trading potential. Results are preliminary and intended for discussion purposes. He provided a handout describing the objectives and approach used in the economic modeling of market reallocation; and showing estimated quantities that could be traded.

There has been market trading of water rights in the Yakima Basin in recent years, and further activity is expected to occur even without action under the Integrated Plan. Quantities of expected trades without the Integrated Plan include:

1. Sales of water rights from irrigators to cities or developers for post-1905 residential development (mitigation of past and future development effects). Less than 50,000 acre-feet by 2040.
2. Sales of water rights from irrigators for environmental purposes. 5,000 acre-feet by 2040.
3. Sales from irrigators to other irrigators growing high-value crops. 2,000 acre-feet by 2040.
4. Drought year leases between irrigators. 40,000 acre-feet in a severe drought year.

For the first three categories, ECONorthwest used input from staff at the Department of Ecology and concluded that little additional activity would occur due to effects of the Integrated Plan. For the fourth category of drought-year leases among irrigators, ECONorthwest used a modeling approach to examine how much trading activity could potentially occur in a perfectly functioning market, with no constraints. This provides an initial starting point for further discussion, by establishing an “upper bound” for market reallocation.

The modeling approach assumes that water would be traded from crops of lower value to crops of higher value, regardless of where they are grown in the basin (though locations are tracked, by five irrigation entities: Sunnyside, Roza, Kittitas Reclamation District; Wapato Irrigation Project; and Yakima-Tieton). Irrigators with non-proratable rights and growing the lowest value crops would lease their water first, to irrigators with proratable rights and the highest value crops. The next trades would go from the 2nd lowest value crops to the 2nd highest value crops, and so on until all proratable needs were satisfied or there were no further differences in crop value. The model includes (and tracks) trades within irrigation districts as well as trades across irrigation districts. The model also calculates net farm earnings before and after water trades occur. Net farm earnings represent gross receipts from crop sales,



minus variable costs (fuel, labor, seeds, fertilizers, etc., but not including the cost or revenues from leasing water.)

The model ECONorthwest used has been adapted from a spreadsheet model and data-set of Yakima River Basin crops and crop values developed originally by Michael Scott at Pacific Northwest Laboratories. ECONorthwest updated the data to 2008 and also modified the model to perform the analysis described above. Crop data was also used from the HDR/Anchor-QEA technical memorandum prepared for the Yakima Basin Study, on the Out-of-Stream Water Needs Assessment.

The economic model suggests that the upper bound of agricultural leasing under perfect market assumptions and with a zero price to the purchaser could be 330,000 acre feet in drought years with 40% prorationing. With a price of \$150 to the purchaser, this upper-bound quantity would be reduced to 190,000 acre-feet leased. Lower quantities would be traded if buyers were limited to only 70% of crop irrigation requirements (190,000 acre-feet at a price of zero and 80,000 acre feet at a price of \$150/acre-foot). These values compare with estimates of 40,000 acre-feet traded with status-quo market conditions.

Economic losses from drought were also modeled, by comparing net farm earnings under different scenarios of water leasing among irrigators. In the absence of water trading, a severe, one-year drought is estimated to cause a reduction of \$90 million in net farm earnings. With trading under status quo market conditions, these losses are estimated to be reduced to \$70 million. With perfect market conditions losses could be reduced further, to levels estimated at \$10 million to \$60 million under the various scenarios examined.

Subcommittee members offered comments on the draft findings presented by ECONorthwest:

- Don Gatchalian: The memo should note that the model examines a one-year drought. Ernie responded that the effects could be extended to a 2nd or 3rd year. Losses in net farm earnings would be the same each year if the prorationing level were the same, unless variable costs changed due to the extended drought (i.e. costs of fuel, labor, fertilizer, etc).
- Andrew Graham: Can the model be run at different levels of water availability? Ernie responded that it can.
- Bob Montgomery: This model assumes trades occur effortlessly and all participants are active in seeking economic value. What is the actual level of “market penetration” in other regions where this kind of agricultural leasing occurs? Ernie says it varies a lot from region to region and is evolving. Some areas see a rapid response, while others are slower.
- Ernie: UW and WSU research shows considerable reluctance by irrigators in the Yakima Basin to participating in government-sponsored leasing. However due to the recent USGS study, some staff at Ecology believe there will be new pressure to lease water for mitigating the effects of municipal development in the Basin, and that may spur more leasing generally.
- Dave Brown: Why is there a “zero price” scenario? Ernie said this is to show how the model works with no constraints, just based on comparing the value of crop production. Then the modelers impose constraints. Also, zero price could be viewed as a 100% subsidized leasing program. That sets the maximum level of leasing. So including a zero-price scenario helps us see the full range of possible outcomes.

- Ron van Gundy feels the model assumptions are not valid and it shows trading quantities that are not really possible. His concerns are:
 - In the last drought, only 16,000 acre feet were transferred at a price of \$150/AF, not 40,000 acre feet as indicated in the scenario without the Integrated Plan.
 - Most irrigation districts refuse to permit transfers to another district, because it harms their operational efficiency. The canal systems are designed to run with a full supply. With less water the system is less efficient. So if you transfer water to another district, everyone in the “selling” district is harmed. Kittitas Reclamation District has told him they simply will not allow transfers to other districts.
 - Willingness to lease water varies from year to year, based on crop prices. When prices are higher, sellers are less interested in leasing their water. So you can’t count on this as a reliable supply.
 - When you fallow lands producing silage for the local dairy industry, this immediately raises prices for silage, because it is only economical to purchase silage that is produced locally. As soon as other landowners can get a higher price for silage, their interest in leasing water goes down.
 - Considering transfers within districts doesn’t make any sense, because it doesn’t increase the water supply available. And in the Roza Irrigation District, there would be no “sellers” because everyone is growing perennial crops that would be destroyed if they weren’t irrigated. (Ernie responded that intra-district trades, where feasible, can reduce economic losses by increasing production of higher-value crops).
 - The kinds of changes suggested to make water transfers easier won’t make any difference in a drought year. The committee that has been set up to accelerate transfers in drought years works very well, so there is really no legal or procedural impediment now to doing leases. So the Integrated Plan won’t change conditions towards more effective functioning of the market.
 - Reclamation’s facilities are not capable of moving the quantities of water listed in the economic analysis.
- Tom Ring. If it’s true that irrigation districts are unwilling to allow leasing outside their boundaries, that takes 90% of the water off the table, and makes water markets a lot less viable as a solution.
- Joel Freudenthal: Most of the water that would come from low-value crops would come from Kittitas Reclamation District. In a drought year, if you transferred that much water from KRD, it would harm the economy of Kittitas County. That would be hard to accept in terms of public policy objectives.
- Tom Ring: Kittitas County has been reluctant to allow transfers from agricultural uses to urban uses, even within the County.
- Bob Montgomery: the economic analysis gives us an upper bound for market transfers. This is just the first step. The next step is to assess what can actually be achieved within those limits.

- Bob indicated the value of 40,000 acre feet traded in the last drought came directly from Ecology records. He will follow up to determine whether that number is valid for our purposes. Ron thinks some of that may be from tributaries, where it does not increase Total Water Supply Available.
- Tom Ring: The Yakama Nation wants market transfers as part of the Integrated Plan. But it needs to be realistic.
- Andrew: It's important to start with the full range of transfers possible, using the framework of economic analysis, because some others watching this process will come at it from that perspective. We need to understand the economic perspective first, then examine what the practical limitations are.
- Joel. The 50,000 AF transferred permanently from agricultural uses to urban uses would be removed from the pool of water available for leasing. The model should reflect that.
- Stuart Crane. The model projects that 30,000 AF could be transferred from lower to higher value crops within Wapato Irrigation Project. With current canals and ditches, that isn't possible, because the capacity to move that water is not there. With improvements some of that could probably be achieved. Some of those improvements are included in the Conservation element of the Integrated Plan.
- Wendy Christensen: The practical constraints are important. Roza has worked hard to enable the process for leasing, and their experience counts for a lot.
- Michael Garrity. Joe Cook at University of Washington is examining what levels of subsidies would be needed to stimulate trades. We need to know more about that.
- Tom Ring: interview Roza and Washington Water Trust, regarding the challenges they've had trying to lease or purchase water.

Economic Effects Analysis of Integrated Plan – Progress Report and Look Ahead

Andrew said that ECONorthwest has been waiting for the details on costs and benefits of the Integrated Plan projects, before they can carry out the two elements of the Economic Effects analysis. The two elements are: 1.) Characterizing cost-effectiveness; and 2.) characterizing overall economic impact of the Integrated Plan, compared with the future without the Integrated Plan. Andrew asked Ernie Niemi to give a brief description of where ECONorthwest is in developing these items.

Ernie responded:

- The cost-effectiveness analysis will summarize costs in terms of Net Present Value. This converts a stream of values over time into a single value that can be compared with other projects. They can also express this in annualized terms if needed. Costs will be expressed in standardized terms, such as cost per unit of improvement in pro-rationing during droughts.
- The economic impacts of the Integrated Plan will be assessed using the spreadsheet model of the basin's farm economy, based on Michael Scott's previous work (same model that underlies the market allocation analysis discussed above). This covers crop values.
- They will also use published values on benefits of increased fish production. Reclamation has developed estimates of the value of the commercial harvest, recreational harvest and cultural

harvest. In addition the University of Washington carried a survey of Washington residents to assess the value of increased fish production in the Columbia River system.

- Depending on the information available, ECONorthwest may also be able to include benefits from increased reliability of municipal supply.
- Andrew asked if ECONorthwest will include multipliers for other economic effects on the Basin economy. Ernie said they are not planning to include this. There are too many assumptions involved. One key assumption is whether the investment comes from inside the State of Washington; or entirely from outside the State.

Discussion of the Economic Effects Analysis:

- Joel Freudenthal noted that the market allocation technical memorandum shows \$280 million in net farm earnings. He has often heard it said that the Yakima Basin economy generates \$1.8 billion. Why are these numbers so different? Ernie said it is partly because the larger value is a “gross” value; while the smaller one is a “net” value.
- Michael Garrity suggested that elements such as reduction of flood damages due to the floodplain improvements in the Integrated Plan should also be discussed in the Economic Effects analysis.

Municipal and Domestic Water Conservation - Modifications

Andrew introduced this topic. At the last Workgroup meeting Michael Garrity said he was concerned about the quantity of water being used to forecast demands: 250 gallons per capita per day. Andrew had followed up with him, and it seems the conservation recommendation is best way to address his concerns within the Integrated Plan.

Michael said that municipal water conservation is a key focus for American Rivers, and it’s important that it be fully addressed on every project they are involved with. That’s why he has been stressing it, even though he understands that municipal uses are much smaller than agricultural uses in the Yakima River Basin. He does not think we need to get hung up on the specific numbers. He wants to make sure that best management practices are in place, and that the Yakima Basin achieves something close to state of the art practices by year 2060 if not before.

Michael’s biggest concern with the recommendation on municipal water conservation is that it puts off some important decisions until later. We need a firm commitment to conservation in the Integrated Plan. It should get closer to the “aggressive” end of what is possible, from HDR’s memo on the range of potential municipal and domestic water conservation savings. And there should be a strong link between conservation performance and access to the new water that the Integrated Plan would create for municipal and domestic users.

Don Gatchalian said the discussion of gallons per capita per day should explain what kind of housing, lot-size and yard would be involved. It takes different housing and lot characteristics, to achieve reduced water use per capita. The public and their elected officials will be interested in that.

Andrew reviewed a list of modifications to the municipal and domestic water conservation recommendations, that he put together for the Subcommittee's consideration. Using the August 19 Recommendation as a base, the modifications are:

- Move Item #4 (emphasis on outdoor uses served by irrigation systems) to immediately follow Item # 1 (recommendation on Advisory Committee). This helps to underscore the emphasis on outdoor uses in irrigated areas of the basin where uses can be high.
- Make the provisions on domestic wells more clear. This responds to a comment from Paul Jewell.
- Clarify that irrigation districts are key participants in helping residents on district lands to improve their water- use efficiency.
- Item #2, 4th bullet on comprehensive menu of conservation options: strengthen text to indicate state of the art, industry best practices.
- Item #2, 2nd bullet on targets for per-capita water usage: leave the quantity to be determined, but indicate it should aim towards the upper end of the potential water savings in the HDR technical memorandum on municipal and domestic water conservation potential.
- Add a requirement that new developments receiving the water set aside for municipal and domestic purposes use closed-pipe systems instead of open ditches or canals.
- If new water is set aside for municipal and domestic use in expanded reservoirs, Reclamation should use its contracting process for the new water to implement the requirements for municipal and domestic water conservation.

The Subcommittee accepted these modifications. Some additional points were made by Subcommittee members:

- Michael: It should indicate that the conservation program should be adaptive, and include new technologies as they are developed in future years.
- Joel: consumptive uses should be the main focus for conservation.
- Joel: Some consideration should be given to land-use standards such as lot sizes and landscaping.

Andrew will revise the Subcommittee's conservation recommendation and circulate it for review.

Estimates of Climate Change Impact on Future Water Needs - Revised

Bob Montgomery summarized the updated estimate of how climate change to the 2040's may affect agricultural water needs. We are no longer using the comparison with California irrigation districts. An updated version was distributed. Results are similar to the results discussed previously. We will share this with UW and WSU.

Final Steps on Peer Review of Water Needs Assessment

Andrew said the consulting team has finished responses to all of the comments received from the WSU Peer Review of the Out-of-Stream Water Needs technical memorandum. The subcommittee previously reviewed a table with all the comments listed, and discussed several of the more significant comments. The responses prepared reflect that discussion. The final table listing both comments and responses has been distributed to the Subcommittee. HDR and Anchor are now finalizing the technical memorandum, with those responses incorporated.

Closing

Andrew said no further meetings are scheduled for this Subcommittee. He thanked everyone for their participation over the past several months.

Attendance

Dave Brown, City of Yakima
Wendy Christensen, Reclamation
Stuart Crane, Yakama Nation
Joel Freudenthal, Yakima County
Chuck Garner, Reclamation
Michael Garrity, American Rivers
Don Gatchalian, Yakima County

Chris Lynch, Reclamation
Tom Ring, Yakama Nation
Ron van Gundy, Roza Irrigation District
Andrew Graham, HDR
Keith Underwood, HDR (phone)
Bob Montgomery, Anchor QEA
Ernie Niemi, ECONorthwest (phone)