

*Note: This meeting summary represents notes from the meeting, not a formal transcript or minutes. It is provided for information of Council members and other interested parties.*

**Meeting date:** March 4, 2002

**Location:** The Association Center, Salem

**Prepared by:** Oregon Department of Environmental Quality (DEQ)

**Attendees:** *Council members:* Dave Cruickshank, Bill Dameworth, Kathleen Feehan, Douglas Hunt, Chris Jarmer, Jim Kincaid, Jerry Marguth, Dick Pedersen, Ernie Platt, Matt Rea, Michael Read, Glen Spain, Mark Steele, Kathryn VanNatta, Travis Williams, and Mark Yeager.

*Others:* Pat Serie, facilitator; DEQ staff Jim Bloom, Tara Corbett, Jared Rubin, Pamela Wright and Beth Woodward; Don Moisan and Jim Krahn, Dairy Farmers Assoc.; Tom Wawro, BLM; Dave Kliewer, City of Portland; Erin Lynch, SECOR; James Field, AMEC; Steve Downs, City of Salem; Kat Ricker, Capital Press

**Council members not present:** Scott Ashcom, Nina Bell, Doug Krahmer, and Laurie Power.

### Introduction

Pat Serie introduced Jim Krahn, of the Dairy Farmers Association, and said he may be replacing Don Moisan, who is leaving the Council. Serie invited comments from the public and no comments were given. She asked for comments on the Council meeting summary for January 14, and no changes were suggested. Mark Yeager requested that a revision date be included in the footer, so it is always apparent which version is most recent. Chris Jarmer asked Matt Rea to clarify his statement at the last meeting, that last year was a normal flow year. Rea clarified that with flow augmentation from reservoir releases, we were able to maintain mainstem flows at Salem at around their normal summer minimums. Flows at Albany, however, were considerably lower than normal and reservoir elevations at the end of summer were very low. Serie reminded the Council that the notes would be sent to them in draft form and after two weeks to the public, so please remember to give comments during this earlier time frame.

### State Budget

Serie asked Pedersen to discuss the current state budget issue with regard to the Willamette TMDLs, and the legislature. He said that the legislature is evaluating discrepancies between budget and projected revenue (gap of \$850 million). Pedersen said the staff and funding for the Willamette TMDLs do not appear threatened at this time. VanNatta asked if the FTE allotments for the TMDL project would remain the same in the next biennium, and Pedersen said that for now DEQ is looking at the proper effort to finish the job. He doesn't know what that equates to in terms of FTE, but as far as finishing the project on time, the DEQ is committed to that. Jarmer asked whether, in the budget cut scenarios that the Governor asked agencies to provide, if the TMDLs would be potentially affected. Pedersen said no.

Pat Serie introduced Tom Wawro, of the Bureau of Land Management. Wawro explained that the BLM and the US Institute for Environmental Conflict Resolution (IECR) are each contributing fifty thousand dollars to provide neutral facilitation for the Council, and the DEQ is contributing a similar amount to the project. Beth Woodward clarified that the DEQ's contribution (to neutral facilitation) is the in-kind work of DEQ staff (Rubin, Corbett and Woodward) in their support for the Council.

### Mercury Update

Jared Rubin discussed the use of a food-web model in the analysis of mercury in the Willamette. In response to VanNatta's questions at the last meeting, Rubin presented data about median and mean mercury concentrations in Willamette River Basin fish species. The food-web model represents the mercury bioaccumulation process in several species. Migratory species such as salmon spend much of their life in the ocean, and therefore will not be sampled. Trout, although consumed by humans, do not have high levels of mercury, and thus will not be extensively measured either. DEQ will be monitoring species throughout the mainstem system from different trophic levels that are known to have high levels of mercury. Northern Pike Minnow and Largescale Sucker will be the species sampled to represent these trophic levels.

Travis Williams was curious as to why these species were chosen. Rubin said that they decided to focus on species that are found throughout the basin and have data available. Other species will not be ignored, but effects on the other species will be evaluated through the modeling. Pedersen said that the DEQ's purpose is to identify and address sources of mercury in the food chain and apply that to other fish. There are also resource constraints that narrowed the fish species selection process. DEQ is still waiting for confirmation of EPA's financial support to do the data analysis. Rubin added that by focusing on the chosen species, DEQ creates a worst-case scenario. Serie asked about Lamprey and Rubin explained that Lamprey would not be monitored due to the fact that they too spend a portion of their life cycle away from the river.

Mark Yeager asked if there is a simple way to show how the chosen species relate to other species. Rubin said the model calibrates levels in the food web. DEQ uses the known tools available to measure the chosen species and then check these measurements against the model. The food web model allows for placing percentages on what fish consume and the model is calibrated from there. Yeager asked if anyone else is doing fish data collection. Rubin said USGS and OSU are doing some related work. OSU got a grant to study skeletal deformities and DEQ will be interacting with them to make sure data collection is not duplicated. Several Council members requested food web model handouts.

VanNatta asked when the next check-in point would be for fish data for the TMDL. Pedersen said data collection would be done this summer for fish, so fall would be the earliest time. Bruce Hope (DEQ toxicologist) may be available to come in before then to explain the food-web model. Williams asked what the hold-up is with the funding from the EPA. Pedersen said EPA has yet to let us know the total amount of money available for this project and he will be working with EPA to speed this up as much as possible.

## **Riparian Vegetation**

Pat Serie introduced Pamela Wright, DEQ, to talk about potential riparian vegetation, and asked Beth Woodward to provide an introduction. Woodward refreshed the Council about discussions at the last meeting, on shade and solar inputs for the model. Woodward explained that Wright has been working for DEQ for 2 years. Prior to this she worked for the US Forest Service for 10 years in the Willamette and Siuslaw National Forests, and has a Master's degree in Plant Ecology. Wright has been working on this methodology with experts at U of O, OSU, and the EPA Western Ecology Division research laboratory.

Wright said she hopes to fill in some of the details regarding how DEQ is determining potential vegetation. Two main components that affect stream temperature are channel morphology and riparian vegetation. She said today she would only be discussing riparian vegetation. Reducing human-caused warming as much as possible is the goal to meet Oregon's temperature standard. With this in mind, potential vegetation is vegetation that can be expected to grow and also recover after a disturbance event. The forested areas of the Willamette Basin have had vegetation surveys completed over the past 20 years, and those data have been published and are widely accepted. DEQ will use that information to develop potential near-stream vegetation for mountainous, forested parts of the basin. There are little field data for the river valley bottom, however. There is excellent data cover for historic vegetation. This historic vegetation map was put together as a collaborative effort between the Nature Conservancy and other groups. Wright showed several overheads of historic vegetation and explained how the data are presented for historic vegetation. She then compared layouts of current vegetation and historic vegetation. In some cases there are more trees now than in the past, and in other places there are fewer trees. Wright provided information on the large number of streams that DEQ chose to sample. Map layers of data include ecoregions, soils, geology, and historic vegetation. These layers were clipped in GIS to 300 feet on each side of the 30 sampled streams, and some strong patterns were found. Outside experts who reviewed the data suggested that geomorphology should also be incorporated. DEQ added a new layer of geomorphic data that now is also being clipped to the 300-ft width to be compared with the other data layers.

Geomorphology, soil drainage, and historic vegetation data will be intersected in GIS, and the DEQ will make a matrix of data to examine the relationship between these environmental factors and historic vegetation. The vegetation will be grouped into three categories: forest, savanna, and prairie. Tree heights and densities will be estimated for these categories and

they will be used as input to the model to predict stream temperatures under conditions of primarily mature vegetation.

Dameworth asked how DEQ determines how to make decisions about vegetation density. Wright said we will use knowledge and research from modern silviculture about individual tree species. Wright said that the map sizes are pretty general and that is why the wide measurement of 300 ft. was selected. Wright said the DEQ will probably use a range for vegetation density in the model.

Rea said that the assumption of natural disturbance needed some clarification. Wright said that we are not trying to model something static, but something that would be able to exist over time. Rea clarified that we are not going back to a natural flood hydrology, and asked then how do we do this. Wright said what DEQ is trying to do is get an idea of what the potential vegetation is for streams and then put this into the model. Pedersen said we are trying to capture what a mature riparian forest would yield in terms of shade, not what the maximum shade could be.

Spain commented that there are a lot of non-native species now in the Willamette Basin and he has concerns that it could limit potential vegetation by taking over. Then he said that although there are a lot of descriptive data, we need to determine an idea of where we want to be. Spain also said that the valley floor is related to larger valley processes and industrial timberland activities, and we may have some problems linking through the entire stream system. We have to factor in what we do up and downstream. He said that this is one dot in a matrix.

Doug Hunt asked Wright if the size and slope of the banks is taken into consideration and wondered if the width coincides with other protection efforts. Wright said the 300 ft. was chosen to provide information about the variation in the different types of data we are considering; it does not relate to other widths that have been established for riparian management purposes. For the data analysis that Wright did thus far, slope was not considered, but it will be considered in the model. Chris Jarmer wondered how valid the assumptions were, especially when some pavement and disturbance will not recover. Pedersen said that this will be something that the Council needs to talk about. The Council will need to discuss the variability in the desired future conditions. Vegetation allocation will need to be discussed. Spain clarified that he was just making a differentiation between actual and potential and you don't get to desired future conditions without a lot of thinking.

Rea said that the Pacific Northwest Ecosystem Research Consortium (PNW-ERC) looked into these exact problems and the end result of this was a highly detailed projection of various future conditions. The work they did is very sophisticated and their work should be incorporated. Williams wanted to make sure that there was a difference between historic, current, and potential. Pedersen said that the PNW-ERC work could be brought to the Council. Rea thought this could be very helpful. Williams agreed that this could be a very good thing because their potential scenarios were put to a stakeholder test.

VanNatta asked about the next steps of the potential vegetation process. Wright said that flow diagrams would be developed for potential near stream vegetation and modeled as one scenario. Other scenarios would be modeled as well and the Council would have input on those. One thing we'll find out from the model is how critical shade is and how influential it is on temperature. Rea said that before we go into a lot of detailed work, it might be more important to do some sensitivity analysis. Serie suggested that this may be revisited during the modeling process.

Michael Read asked about certain reaches of the river that will not be able to meet the standard even after the modeling is done. He asked if the model would tell us this. Wright said that it would not only tell us whether the stream will meet the numeric triggers for the standard, but also the temperature given no anthropogenic warming. Serie suggested that we move onto the modeling presentation and said Wright will be staying to answer more questions. Pedersen added that the methodology we are working on will be more important for smaller tributaries than for the mainstem.

## **Mainstem Model Update**

Serie asked Woodward to provide an introduction for Jim's discussion. She refreshed the Council on the steps that are needed to determine loading capacity, that were presented to the

Council in June. The questions that need to be answered by the model were determined (temperature sensitivity to channel morphology, shade, reservoir operation; average and max temperature; and seasonal variation) before data collection began. We are now halfway through the data collection process. Woodward explained that Jim Bloom, DEQ, has led the whole process which is now at the step of constructing the model. Bloom is coordinating the work of building the model. Woodward said Bloom will discuss what model inputs can actually be changed to reduce temperature. He will provide detail on what the model can show us in terms of scenarios. Woodward also mentioned that Bloom has been creating water quality models for at least 12 years and has worked at DEQ for 5 years. Previously he worked for the EPA and for a consulting firm.

Bloom presented data on Willamette River temperatures and explained that river temperature is sensitive to reservoir release flow, point sources, vegetation, shade, channel morphology, and hyporheic flow. Hyporheic flow is flow through gravel. It is similar to groundwater, but this is flow that flows through the channel, through gravel, and back into the channel. It is not a source. Air temperature is an input to the model, but is not a control of the model. River temperature has been previously modeled in relationship to flow rates. Bloom displayed a graph (presented last June) that showed that as the flow rates measured at Salem decrease, the temperature increases. Rea asked if DEQ is assuming that the rest of the river is proportional to the data collected at Salem. Bloom explained that this is assumed. Pedersen asked about the tributary and near-field cooling effects. Bloom said that the drop in temperature shown on the graph would affect conditions downstream. Yeager asked about the graph and Bloom said that it is not good to micro-analyze the graph because it is a product of QUAL2E and includes many assumptions that will not be used in the new model DEQ is working to develop to address this problem. Bloom clarified that this model run was made to consider effects of potential extreme low flows during last year's drought. Rea said this graph was developed to compare flow data at Salem. Actual flows at Salem were about the same as normal years, and the difference was that the reservoirs were empty at the end of the year, but the flows were pretty normal. Bloom moved on from the graph and explained other influences on the river. In the wide channels, shade is not that critical, but in narrower reaches, shade can influence stream temperature. In terms of hyporheic flow, the more flow, the cooler temperatures and more steady the temperatures. The model can also have the capability to predict dissolved oxygen (DO), pH, algae, and bacteria. However, the model only will test algae and bacteria. Jarmer asked about hyporheic flow and why it is not being modeled, since it is influential. Bloom said that some research has been done, but hyporheic flow is so complex, it doesn't seem to be able to be modeled explicitly. There are ways to get at hyporheic flow models, but it is not being modeled directly. VanNatta asked about heat source outputs. Bloom said that heat source outputs for tributaries are used as inputs for the model and they work great. The issue is in the future scenarios. When we look at potential vegetation, DEQ will use the heat source model for that. The output of heat source models will be inputs for the CE-QUAL-W2 model.

Bloom showed the mainstem reaches to be modeled. Reservoir models are needed to evaluate impacts of reservoir operations. The Corps of Engineers is working on Cougar and Blue River temperature control modifications to keep the margin of safety as small as possible. DEQ is working collaboratively with ACWA, NWPPA, Corps, PGE and EWEB. These groups are working together and have contributed resources for this effort. The Corps is potentially doing reservoir modeling for several reservoirs. Cougar will be modeled, maybe the Blue River Reservoir, and possibly Lookout Point. Rea said there is limited funding for this. The Middle Fork Projects may be prioritized more highly due to threatened and endangered species concerns, so DEQ should consider that this modeling will be completed. Detroit Reservoir is still a possibility, but there are other priorities and the funding is uncertain. The modeling won't be done until after the TMDL process is completed. Bloom said that the model does depend somewhat on flow rates from the reservoirs, but we don't know how realistic lowering flow temperatures is. Don Moisan asked about prospects of modeling and said he thinks there needs to be discussion about this and wants to talk to Rea about this. Yeager asked about existing conditions and asked how many years worth of data are available. Bloom said that some of the reservoirs have years of data. USGS stations measure flow, and in some cases there is a long-term record of temperature.

Bloom added that additional work is also being done. ACWA support is helping to

understand bathymetric and river-width studies. Dye tracer studies will be done by USGS to understand travel time. They are also helping on modeling.

Modeling will evaluate the sensitivity of river temperatures to reservoir flow rates and temperatures, point source flow rates and temperatures, and other factors. Point source scenarios can include current permit limits, and elimination of discharge. The model inputs for potential vegetation will be one scenario. One of the options for simulating reservoir influences on temperature is to eliminate or add reservoirs to the model. Point sources and their presence could be modeled. Vegetative shade could be modeled for different management scenarios. Morphology could be looked at in terms of restoring channel complexity, and modifications to width and/or depth could be simulated. Diversions could be analyzed and simulated. A climate scenario for global warming could be simulated. Reservoir models could be simulated. Some scenarios are difficult and some are easy to run. DEQ needs up-front time to make changes in the model.

Serie asked the Council to hold further discussion on scenarios until after the break when Bloom would specifically address that topic.

### **Selecting Scenarios for the Model**

Following up on the discussion regarding hyporheic flow, Pedersen said that a good methodology is available. Forward Looking Infrared Radiometry (FLIR) reveals where cool water refugia are located. In the Klamath, DEQ was able to account for groundwater influences quantitatively through this method. This could be good for the Willamette River modeling. Jarmer asked about the W-2 model and Bloom said that it could be run to show a large portion of a year. Heat source can do series of runs and the sensitivity to shade can be done. An adjustment factor can be added to understand flow rate. Heat source wouldn't be run the same way, but adjustments could be made for temperature. Bloom said they would use the observed data to calibrate the model and to create a scenario. The W2 model is more flexible. Serie asked what kind of adjustments would be needed. Jarmer asked if DEQ felt confident that they could model for temperature and Bloom said yes. Heat source will be used for TMDLs for smaller tributaries to evaluate the sensitivity of mainstem temperatures to shade in the tributaries. Yeager asked for clarification on whether DEQ would use the lowest temperature, and Bloom said no, it models change in temperature. Bloom also said that it uses daily average temperature.

VanNatta asked about real-time data for times other than the summer. She'd like to see a simulation done that models temperature year round and asked if this sensitivity work could be done based on summer data. Bloom said lots of data collection has been done for late spring, early fall, and year round data is available for some sites. Bloom said that it is difficult to model the winter due to runoff. This is difficult because you have to quantify flow and assign a temperature to it. USGS has made a precipitation runoff model and DEQ can use this, but funding is an issue. ACWA and USGS stopped that portion of work, as this was lowest priority for them. Overland flow data is always helpful information. DEQ could still run a model, but it would not be as good. VanNatta explained that she is interested in the length of time of impairment. Secondly, in sensitivity analysis, she wants know about reduction in thermal load. She asked if DEQ would be looking at parameters with the greatest movement. Bloom said some scenarios are easy to do, but a regular sensitivity analysis can be difficult to do on side channels. Increased channel complexity is harder to model. It is an either/or scenario. VanNatta said that the Council has discussed what the potential thermal load is a lot and wondered if the model would provide this information.

Bill Dameworth asked how the Council can get someone to say what is achievable on the ground, such as channel morphology and vegetation, so that that can be modeled, and asked if anyone is going to be doing this. Williams responded that PNW-ERC has done part of this. Rea added that they developed three alternative futures scenarios. PNW-ERC modeled three different scenarios of land use choices. They used a high development scenario, existing land use laws, and a high conservation scenario. Each scenario is based on realistic constraints. The Council agreed that they would really like to hear information about the PNW-ERC presented in a future meeting. Pedersen suggested that their presentation might help in prioritizing scenarios; if we can know the sensitivity we can perhaps talk about future actions.

Dameworth said that future scenarios need to be looked at very critically. Bloom added that when doing modeling, it is good to do extreme case scenarios so that you can determine what

the river is actually sensitive to. That way, before you model less sensitive things, you can get an idea from the basic model runs what is possible.

Spain said he would push for a model that gave us the best idea of what is possible. A lot of operational parameters could influence this. He suggested that sensitivity and modeling of reservoir action is critical. He then said that the side channel analysis would be important as well. Point sources do not seem to be as important. Channel morphology is more difficult to deal with in terms of changes. Spain would like the Council to move in the direction of discussing changes in channel morphology, but he recognizes it is more difficult and it seems like it would not be a high priority due to resources.

Hunt asked if there are cold water sources that could be released to cool the area. Rea said that this is an issue that is critical because in the Willamette River, all the reservoirs cool the system when water is released from the bottom of a dam. But later, warm water from the top of the reservoir is eventually released in the fall. Doug asked if there was a source from the reservoirs that we could look at to help cool the river. Rea repeated that even if more cold water was released, there is still hot top water that has to be released as well. Construction of withdrawal structures in the future is a critical issue and there needs to be very careful analysis before decisions are made. Spain added that it would be important to know what the influence of reservoir water is on the whole system. He wants to know the extent to which cool water influences the stream. Rea said that the focus of the Army Corps of Engineer's project is to protect salmonids, not the TMDL process. Even if reservoir operations indirectly impact the TMDLS, this is not their focus.

Yeager asked about the Council process and wondered what the Council could do in terms of giving feedback to Bloom. Yeager asked if there was a limit to how many scenarios the DEQ will run. Bloom said that there is not a limit, but the river model has to be extended and adjusted to do certain scenarios. The team has not yet looked at what scenarios it wants to model. DEQ will definitely model certain things, but there are a lot of optional things that could be modeled. Serie pointed out that there is a list of potential modeling scenarios on page three of Jim Bloom's modeling handout. Yeager suggested that the Council create a list of possible model scenarios that they could then prioritize.

Council members began to brainstorm various potential modeling scenarios and Woodward made a list on the board of their suggestions. Reservoirs seemed to be important. Channel complexity is harder to implement and harder to model. Yeager said complexity should be modeled. The concept of having more complexity would be really important, Spain commented. Yeager said that the mainstem channel's shape is really critical in regard to possible model outcomes. Dameworth said he supports looking at channel complexity. Williams asked about the role of DEQ and their impact on actually changing channel complexity and its relevance to TMDLs.

Rea had questions about hyporheic flow and didn't know how anthropogenic action affected this flow. Bloom said in the model calibration process, you have to account for groundwater. If you want to know about groundwater, you get at it by deduction from things you do know. In terms of developing scenarios, if you have complex channels, lots of flow is in gravel bars, and you are improving the river by having more hyporheic flow. It is a very qualitative type of model. Bloom explained that you can back-calculate flow rates, but why focus on something if you don't have any control over it. Rea said that is what he is trying to say. Platt said that this was an issue in the Tualatin. Bloom said that happens under a scenario we try to avoid. There are things we can do and can't do. Serie asked if it makes sense to look into what is being researched regarding this.

VanNatta asked about ambient temperature. Spain said if you change ambient temperature to microclimate in the model, then you get shade. Rea said that we need to be careful on which models we decide to run because they are complex. Pedersen said that we have to come up with parameters and it is very important, but we are not ready to describe scenarios. Bloom said that scenarios would be built next year, and clarified that this is just a preliminary discussion. Yeager said that we should then look at the list of things we can consider. In the handout, under reservoirs for example, we should discuss the list of options. Rea said we should first address model parameters and then discuss potential scenarios. We should determine which parameters are really critical and then decide what to craft in scenarios.

This is the hard part because this is where policy and law come into play, but before this we need to narrow our focus.

Serie asked if everything was up on the list that the Council wanted to look at. Woodward suggested impervious surfaces. Bloom said this wasn't something that can be modeled, but you can look at the impact of stormwater on temperature. Woodward said she was talking about removing roads that interfere with potential vegetation. VanNatta said she would be interested in some of these parameters in relationship with a 7Q10 river flow, because this is how the permits are set. 7Q10 is the lowest seven-day average flow that occurs every ten years. VanNatta thought that it would be important for the Council to be educated on what a 7Q10 is and how it relates to point source and NPDES permits.

Jarmer noted that Bloom's handout suggested that point sources should be on the list, but he did not think it realistic to model the withdrawal of all point sources. The Council agreed and also said that diversions should be included. Jarmer said that some of the things that can be modeled are totally unrealistic, such as removing all wastewater treatment facilities. Bloom clarified that running scenarios like this is not done for allocation purposes, but rather is done in an effort to understand how sensitive the river is to point sources. Jarmer warned about the way that the public might read the handout as they may misunderstand this. Bloom said it is for model calibration, not for allocation and this is a normal procedure. Bloom said that some places are limited on their discharges, such as Florida. Platt said that a number would be important to know so that even if the technology changes, we could still rely on numeric data.

Steele suggested adding additional reservoirs as an option on the list. The Council discussed the idea of adding additional reservoirs to control flow. Pedersen said that this has been a frequent request in other TMDL processes. There would need to be a local benefit in order for another reservoir to be built. Don Moisan offered the idea of increasing reservoir capacity. Serie asked if it would be a good idea to put on a future meeting agenda for the Council to prioritize and discuss the topics on the list on the board. The Council's list contained the following items: reservoir operation, increase reservoir capacity, eliminate reservoirs, new reservoirs to increase augmentation, channel complexity, vegetation, point sources, seasonal variation, hyporheic flow, diversions and withdrawals, air temperature (ambient), relative sensitivities—which change produces greatest temperature response, eliminated reservoirs, tributaries and their impacts, stormwater, impervious surfaces (roads), 7Q10 flow, local effect versus downstream effect, and side channels. Serie said we should understand which items on the list are the most important and why.

Feehan asked about moving forward and asked when the Council would have a sense on sensitivity analysis. She asked if the Council should wait until this information is available. Yeager supported the concept of educating first and then making decisions. Bloom estimated that sensitivity analysis would be completed sometime next year. Dameworth asked if some sensitivity had already been done, and Bloom said yes, but he didn't want to do more with the QUAL2E model. He is not sure when the new model will be up and running. Spain rephrased the question: Which things are likely to most impact temperature, and thus are the key things the council should look at? Bloom said that we have to wait for the Corps to model the reservoirs. Rea said he doesn't think that it is a worthwhile exercise to increase reservoir flow. You have to think of reservoirs as cooling and warming the river. Rea doesn't think it is worthwhile to think about adding or eliminating reservoirs, for political and environmental reasons. Rea said that it was not long ago that the Army Corps de-authorized four reservoir projects that were planned. He doesn't think the effort should be focused on this, as it doesn't seem likely that reservoir capacity will increase. Serie suggested that the Council members may want to review the handouts and meeting notes from Rea's presentation about reservoir operations last summer.

Spain asked what would be done in terms of process. Serie said we are trying to figure out a timeline and understand people's views on modeling. Pedersen said that we can start learning more by looking at the PNW-ERC future scenarios and we should be able to better advise after we hear from those folks. Then we may have an end point.

Read moved back to the issue of reservoirs and said that if there is a potential that reservoir capacity can help, even if it is a politically sensitive topic, we should still look at it as an option.

Yeager said it would be helpful if the team could organize the model inputs under the categories we think can change. It would be helpful if it was under broad categories and that way it would give structure to future Council discussions. Pedersen thought this would be a good idea and asked that be provided for the next meeting. Yeager said that he was looking for more limited, bang for the buck, approaches. Bloom wasn't sure he could do this by the next meeting, but it would happen in the future.

Spain asked if a hypothetical situation could be modeled fairly quickly. Bloom said yes, but this takes him away from model calibration, and he wasn't sure if this was a good idea. Spain said it wouldn't be modeling how it could be, but would just indicate sensitivity. Bloom said this wouldn't be possible until the model was built. Once it gets calibrated, in the next six months, this should be possible. Spain said he didn't see any basis for discussing the parameters until the sensitivity analysis is done.

Rea reiterated that the PNW-ERC has done a lot of sensitivity analysis and has laid out a piece of the river. Bloom further explained that in regard to Spain's request, the iterations would be totally different than the model and he is hesitant to do this. Spain said he'd love to see a PNW-ERC presentation.

Kincaid said that although we have been listing potential parameters to consider in the model, he's not sure if we are going to get all of the possible parameters. He asked if that is what the calibration is going to do. Kincaid said that it seems like there are parameters built into the model and he asked if there are things in addition to these that are more categorical. Bloom said yes, DEQ is working on calibration. Kincaid didn't know what the rest of the list would be in terms of existing parameters that could go into the model. Kincaid asked if there are things in addition to what is on the board that DEQ is contemplating that perhaps the Council is unaware of, or that are not listed. Pedersen said there are very few parameters that really influence temperature. Different management schemes affect the parameters in different ways, but there aren't other parameters. Pedersen said that instead of making a statement about sensitivity, giving broad categories would be helpful.

Steele said that what he understood was that it would be expensive to add complexity and the difference it makes to the model. He asked whether it would be possible to compare a section of the model where the channel is complex, to an adjacent section with a simple channel, to see the comparative effect on temperature, rather than spending a lot of modeling time trying to manipulate the model to create artificial complexity. Bloom said this is not what the model that DEQ is using does. It would be a good analysis if we had a comparison, but we don't.

Platt addressed the issue of "biggest bang for the buck" and significance. He asked if we are going to be the ones to apply an economic model? Where will the cost come into consideration? Pedersen said that a detailed economic analysis had not been done for other TMDLs. Platt said that different people could pay for the outcomes depending on how the TMDL is determined. Rubin said that PNW-ERC did a study that overlaid economic constraints and river changes. Read said he didn't anticipate the model to give a cost-benefit ratio. The model won't say anything about the dollars. Bloom said that the model could indicate some things, but there is not an economic portion of the model. Pedersen said that some groups spin off and do cost-benefit analysis in the water quality management plans. It is not DEQ's obligation to do a detailed analysis, but it is really valuable.

Rea said we should not only talk about economic concerns regarding the biggest bang for your buck, but also ecosystem benefits and fish recovery. There is also a cost-benefit to be considered in terms of fish.

#### **Next Meeting's Agenda**

VanNatta said that the pulp and paper industry has information regarding point source discharges and NWPPA would be happy to give a presentation on this. Perhaps this could be done at the May meeting because we may be at the Pope and Talbot Inc. pulp facility. VanNatta said that at the pulp mill, the Council could get an idea of the size of the processes and the air and water impacts. The tour would also provide perspective on the magnitude of the industrial facility. The Council agreed that this would be interesting.

The Council would like to try to get the PNW-ERC to come and talk and would also like more information on food web models related to mercury.

Serie suggested that an additional agenda item might be more budget information from DEQ. She also said that the IECR would like to come and observe the next meeting. The next meeting is scheduled for May 6<sup>th</sup>. Serie asked the Council if they would mind starting earlier in the day as there is a lot to cover. She proposed the time of 10:00 a.m. to 3:00 p.m. People said this would be fine. VanNatta said that people might want to keep in mind the location of Halsey and think about the travel time.

Yeager suggested that a future agenda topic should be a discussion of potential allocations, as we should be well prepared before we have numbers in front of us. The Council needs to talk about equity and allocation principles before we have numbers at stake.

Pedersen said that he wanted to get a feel for the lunch issue and asked if people wanted to continue to eat lunch together, since meetings are scheduled through lunchtime. People want to keep the lunch.

Woodward asked about dates for 2003. The Council suggested we should talk about this when more information is available regarding the model. Woodward reviewed the meeting dates that are set for the rest of the year. They are as follows: May 6, July 8, September 9, and November 4.

Serie adjourned the meeting.

**Handouts:**

Agenda

Meeting Summary for January 14 Council meeting

Meeting Summary for November 5 Council meeting

Potential Near Stream Land Cover for Willamette Basin TMDLs (PowerPoint by Pamela Wright)

Willamette River Mainstem Model (PowerPoint by Jim Bloom)