

PWB-Oregon-EPA Meeting
June 9, 2010
12:30 – 5:00 PM
Portland Water Bureau
1120 SW 5th Ave., 5th Floor
Portland, Oregon

Portland Water Bureau LT2 Variance Request Policy Implications and Review Status

Meeting Summary

Note: The following meeting notes are not a transcript but are instead intended to summarize the discussion. Therefore, they do not necessarily completely capture specific statements or discussion points.

Attendees:

EPA: Tony Barber, EPA Oregon Operations Director; Mike Bussell, Director of EPA Region 10 Office of Water & Watersheds; Marie Jennings, EPA Region 10 Drinking Water Unit Manager; Fredianne Gray, EPA Region 10 Drinking Water Unit, technical lead; Stephanie Harris, EPA Region 10, lead for *Cryptosporidium* sampling method; Harold Rogers, EPA Region 10, program lead for Oregon's Public Water System Supervision program; Mary Schoen, EPA Region 10 Pathogen Catchment Budget Model coordination; Michael Finn, EPA OGWDW

State of Oregon Drinking Water Program (DHS): Dave Leland, Program Manager; Kari Salis, Regional Engineer

Portland Water Bureau (PWB): David Shaff, Administrator; Chris Wanner, Director of Operations; Eddie Campbell, Director of Resource Protection and Planning; Yone Akagi, Regulatory Compliance Manager; Dave Peters, Principal Engineer – UV Treatment; Ann Richter, technical staff

Introductions and Purpose

EPA:

- Most of the EPA staff working with Portland on the variance was present for the meeting.
- Emphasized the need for honest discussion regarding EPA's status in the variance process.
- EPA has found that there are great uncertainties regarding crypto and the water system, making this a difficult process.
- From EPA's perspective, it will be extremely difficult, if not impossible for EPA to reach a finding that would allow Portland to get a variance.
- This is the first variance request in the country and EPA has been learning along the way.
- EPA has been engaging experts to assist in the process.

PWB:

- Portland understands that there is a standard in the Rule (<0.075 oocysts/1000L) and believes that Portland could meet it and present information to support its claim.
- Portland is halfway through its variance sampling and has still not detected any crypto. In another six months, if all intake samples are still negative, PWB understands that they will have "met the bar".
- Portland has invested a lot of resources and wants to know from EPA if EPA's standards for a variance are changing. Portland needs to know what EPA's expectations are going to be.
- A lot of people, nationally and locally, are watching Portland. The community is interested in keeping the system as pristine and affordable as possible. If PWB does not succeed in the variance it should be for clear reasons, no gray area.
- It is Portland's intent to comply with the Rule and build a UV plant if the variance is not successful.

EPA:

- EPA acknowledges Portland's investment in this process and wants to be as open and honest as possible.

- EPA has concerns about the sampling and modeling and what might be different in the watershed now, compared to the past when there were detections of Crypto. All these things are components to consider and there are many uncertainties related to the watershed.
- The variance provision was arguably not thought through as well as it could have been at the time the LT2 Rule came out. EPA was aware that the feasibility of obtaining a variance was unknown at the time but didn't close off the option for a system to do their own research and make a case.
- EPA understands how special the Bull Run resource is, understands how citizens feel, and EPA wants to keep it that way for years in the future, even if there are climate changes and other unknowns.

Overview/Status of Portland's Compliance Efforts with Treatment portion of LT2

- Yone Akagi gave a PowerPoint presentation that summarized where PWB is in their variance process and Sampling Plan and Study.
- Dave Peters presented on PWB's conventional compliance track: design of a UV plant. PWB is committed to the LT2 timeline and being in compliance (PWB would need to request a 2-year extension for construction, for completion by 2014). The City Council will be waiting for EPA's decision on a variance before they allow for a UV construction contract. Construction would be about \$60 million, with a total project cost of \$100 million.
- Mike Bussell asked PWB about what, if any, backup supplies PWB had in place if Bull Run had to be shut down due to future crypto issues or for other reasons.
- Yone Akagi & others explained how Portland's back-up groundwater supply (almost 100 MGD) can meet winter demand and average day demand (not peak summer). PWB also just completed approval to increase capacity of the GW system. PWB regularly runs groundwater, blending to augment summer supply and has used it at 100% during winter turbidity events.
- Eddie Campbell asked EPA if they would, at a separate future meeting (this fall?), be willing to have a more detailed discussion of conditions of a variance. PWB is starting to think through that now and would want EPA to see what PWB, as a utility, is thinking of and would want EPA's regulatory perspective. PWB knows that if successful in a variance it will have to adopt a whole approach to its watershed management.
- Mike Bussell stated that EPA would be there to support PWB, assuming PWB still proceeds with a variance request.
- David Shaff stressed that PWB is definitely planning to continue with the variance process (if the sampling data supports it).

LT2 Primacy

- EPA and Oregon have been sorting out roles and responsibilities for LT2. Oregon now has primacy; however, EPA has the crypto expertise. Both agencies will be involved from this point forward on the LT2 treatment variance related to crypto and Portland's Bull Run supply. Oregon has the authority to issue a treatment variance. Under SDWA, EPA (the administrator) has the responsibilities for outlining/identifying conditions of a variance that the state may issue. Also, the State can apply conditions that are stricter or in addition to those outlined/identified by EPA. It will be critical for DHS to see what the conditions of a variance would be before it would be issued. DHS will want to know from the EPA if PWB is eligible for a variance.
- PWB assumes they will still have a lot of communication with EPA and wants to know who in EPA will evaluate the application, and who will actually make the variance decision.
- There was a short discussion on non-LT2 related primacy.
- The EPA regional office has formed a team with a lead and an executive sponsor. Fredianne Gray is the lead point person and most of the team was present at the meeting. Tony Barber from the Portland office is the executive lead to ensure administration is in the loop. EPA encouraged PWB not to hesitate to go on to higher levels if needed. Dennis McLerran, Regional Administrator, in very close concert with Pete Silva, EPA Assistant Administrator for Water, and relying heavily on experts, will decide upon EPA's recommendation to DHS (together with any conditions). Mike Bussell stated that Dennis McLerran wanted PWB to know he's happy to meet at the appropriate time.
- PWB raised one specific issue: PWB submitted a method modification to EPA Method 1623. Who should PWB talk with about that? PWB is still unclear as to what to send to the State vs. EPA. For

instance this Tier 1 validation was submitted but not yet not resolved. PWB received a letter from Marie Jennings but it wasn't an approval. PWB has not received any official response from the State yet.

- EPA stated that “approval” is not the right word. Approval takes place in a compliance setting. EPA doesn't “approve” method modifications in cases where such modifications are made for purposes of a variance application. If PWB would like input from the regulatory agencies involved in the variance decision, the modification should go to both EPA and the State. EPA is completely satisfied with Portland's method modification but cannot say if the State is satisfied. The modification study demonstrates the requested statistical rigor and follows previous guidance given by EPA... The State may take a more stringent perspective than EPA.
- The State agreed to send a letter to PWB regarding the method modification.
- PWB can proceed with using a method modification for variance sampling regardless of State or EPA opinion. However, all components of a variance application will be considered by the State and EPA in the variance decision. [NOTE: The State has since sent their response to PWB.]

Variance Process: policy analysis and assessment of current steps and information, operating premises/assumptions, potential conditions of the variance, variance process/schedule

- Marie Jennings posed the question--What does a variance mean? She felt it was important to clarify operating assumptions. She stated that in the past, David Shaff has felt EPA has moved the bar, and that's because EPA has not always been clear about operating assumptions for EPA or PWB. She continued by saying that it can feel like EPA is moving the bar but they are not. EPA is learning along with PWB and has the same health protection goals. It's important to communicate to the public the level of certainty that we can deliver. It starts with knowing limitations of the sampling method. PWB has done a good job to maximize recovery in the sampling method used. Even still there's the risk of false negatives; what would PWB and EPA communicate to the public about what the data means?
- Fredianne Gray spoke about the technical uncertainties related to the variance. As the information has been gathered, there are a lot of uncertainties across a lot of parameters.
 - Event sampling. Crypto enters water under certain conditions, and during those conditions are the best times to sample. The science that will describe these conditions is still in the research phase. Additionally, there are uncertainties about the fate and transport of crypto in water systems.
 - Matrix issues. It seems Portland's matrix is “sticky” and crypto may stick to the filter leading to low recoveries. There are also uncertainties in the scat sample analysis and how much crypto is actually present.
 - Intake. There are uncertainties that arise from the method, and crypto could get through the intake without being detected. The literature shows that even crypto-laden water could be sampled without detections. We know crypto can pass through in slugs, so the absence of crypto detections does not give us certainty.
 - Historical data. Crypto has been seen at the Bull Run intake in the past. It seems unlikely that it's just gone. What has changed? If PWB were granted a variance and a Cryptosporidiosis outbreak occurred, a decision that did not adequately address this uncertainty would be called into question.
 - Input from experts. EPA has tried to resolve the uncertainties and has talked to a lot of experts on monitoring and event sampling protocols. EPA's getting input from hydrologists (USGS) and is finding it is still in a research phase. Harold Rogers based his recommendations on literature. We see orders of magnitude of uncertainty from a public health standpoint.
- Eddie Campbell asked if the LT2 Rule and Bin determinations take into account these uncertainties in establishing the rule. How could EPA have established levels of treatment without factoring in uncertainties?
 - Mike Finn explained the Rule assumes treatment is occurring or will occur. There is assumed a minimum level of 3 logs of crypto inactivation in place. It's a different process to establish bins and the variance process – the Rule was not written with the intent of a variance. The variance process is separate. It's only found in the preamble of the rule that the process could in theory apply.
- PWB is working under the assumption that there is a variance provision in the Rule. PWB asked if EPA is saying “you cannot get a variance”.

- Mike Finn answered no.
- EPA elaborated that a variance can be granted, but the preamble of the LT2 rule is clear that there is not a way to address all levels of uncertainty. Fredianne Gray stated that she appreciates PWB's effort and has looked at the data and a lot of people on the EPA team are analyzing this to determine a way to move forward but EPA doesn't see a way to resolve the uncertainties for this water system. The system is pristine, but animals are a source of crypto and EPA does not see, at this point, that there is a way to get a variance. Regulatory-wise there is a possibility, but practically speaking EPA does not see a way they could grant one.
- Tony Barber stated that for example, one scenario would be to grant a variance, but with such "awful" provisions that it would be very unattractive and impractical.
- David Shaff replied that with crypto, PWB understands we are sampling a relatively small volume but we are looking really hard to find it through our Sampling Plan and Study and believes if it were present in concentrations above the threshold, we would find it.
 - Fredianne Gray stated that the question of how much volume of water to sample is less of an issue than when and how often sampling occurs because of the way crypto travels; it tends to come in events. You have to look at the right times and it is a subject of research - we need a protocol for how to find it if it is there. In addition, Method 1623 is not so good – but it is all we have.
- Marie Jennings asked if a variance is given, what would it mean and what would PWB say to the community? In regards to operating assumptions, Marie Jennings asked PWB if they see a variance as a stamp of approval from the EPA, and that the EPA agrees with the citizens of Portland that the Bull Run is pristine and we can give a variance?
 - David Shaff replied that PWB would tell the community that we are in compliance with all federal regulations and laws and we have a variance that our source water is of such a nature that it does not require additional treatment. PWB would put it in our CCR even if it wasn't required and would also report the conditions of the variance. We take the public health of our community first; we may achieve compliance differently but that's just due to the nature of our water.
 - Tony Barber replied that part of EPA's perspective is that the nature of the water includes some historical crypto detects and from a practical perspective, how do we explain now that it's not detected and that it's not going to be found in the future? Are we enabling too simplistic a view to not talk about previous positives? EPA would like to hear what's changed to explain why crypto did occur but no longer does.
 - PWB replied that there have been modifications in operations and infrastructure in the watershed that we could discuss. To put it into context: PWB has not found crypto in almost 10 years – a long time, even though we have been sampling monthly. The sampling that is being done right now exceeds all sampling done in past. Further, not all crypto data is the same. The method has changed and improved and PWB feels most confident with current data because it is higher quality/higher confidence data. So the prior detections of crypto were not in the recent past. We wouldn't be attempting a variance if we had detected crypto recently. We believe we are sampling more now than most other systems have ever done.
- Marie Jennings shared her concern of false negatives and asked how you deal with that. How, if at a press conference in a policy statement, even under best situations do you explain low recovery of crypto?
 - PWB replied that even if we don't find crypto we would acknowledge the potential of it still being present. Recoveries for crypto have always been low and LT2 was designed knowing recoveries are low. Portland's program of sampling so much water is a result of knowing the method has low recoveries and is why we are taking so many samples to achieve a large total volume. If, for example we only get 30% recovery, we know that if we continue to sample we will eventually find crypto – if it were there at significant levels. We will also continue to look at our watershed - it would not be the end of the story (if we had a variance), really just the beginning.
 - The technology to detect crypto will likely improve over time. PWB's interest is to prove to regulators that, although not guaranteed, we show the same level of public health protection as a system that treats for crypto.

- Fredianne Gray stated that the public health threat of crypto has been addressed by having all systems treat. And when the public health risk of Crypto is great and EPA would have to defend that no treatment for Portland is needed, that's difficult.
 - David Shaff replied that we know the rule says we have to meet a minimum level of treatment and the EPA cannot say that any system is guaranteed to prevent crypto (Fredianne Gray interjected that EPA is not saying that EPA would make such a guarantee) and that is the level EPA said that PWB would have to meet, and we think we can meet the standard without treating.
- The Variance process was discussed. It was agreed that actual steps include application submittal and 90 days for EPA response.
- Mike Finn stated that variances are extremely rare and there is no precedence for a process and it is not yet tested. Response time will include a public hearing at the regional level. It has national implications, but it is mostly delegated to the regional level.
- Eddie Campbell stated that sometime mid next year PWB will be done with design of a UV treatment plant and would need a response to our variance request to know whether to move forward with construction. PWB wants to be sure we can meet the timeline for compliance, knowing there's a public hearing process. Eddie read from 40 CFR 142.41 and 142.42 and asked EPA if the 'administrator' is the Region 10 administrator or the EPA administrator?
 - Mike Finn will follow up on this but said that the Region 10 Administrator has been delegated the authority to make a decision for a variance application from Portland.
- Eddie Campbell continued to read CFRs. PWB stated they wanted to talk at a later date about conditions and other info required by the administrator. PWB would like to know what it is EPA would require. PWB stated that we know we would provide water quality data and a description of sources of pollution.
 - Mike Finn added not to forget the SDWA language.
- Marie Jennings stated that in an event that the application is submitted, it's important that what we are doing here is cautioning PWB, and she wanted to know how PWB was hearing what EPA was saying. She was concerned that PWB would feel EPA was leading them on.
 - David Shaff stated that PWB does not feel that but went on to say that EPA has established a target and PWB is going to try to meet that. He added that it would be an issue if down the road the EPA changes the target. He continued by saying that he hears that it will be very difficult to do, but thinks we can and that we want to honestly say that we have met the bar that was established and the targets that were set for us.
- Marie Jennings stated that it could be that we look at the data differently, i.e. the pathogen model. By your standards and operating principles PWB may be convinced but maybe by EPA's, we may see the data at a level with insufficient certainty to approve a variance.
 - David Shaff stated that if PWB doesn't know the standard we can't meet it. This is PWB's third attempt at a variance application - we think it is very thorough and designed to meet what we see in the Rule and preamble to meet the variance criteria. If PWB hits the <0.000075 mark, he believes EPA should say we met it. PWB knows there's more than that, and knows EPA wants to know what's changed in the watershed and we will make an effort to and we'll make an effort to demonstrate this but these are not certain. The items are to support the reasons for why we've not detected crypto. The sampling will tell us a lot if we miss the mark. It's our goal to hit target and articulate why additional treatment is not necessary.
- EPA stated that they see that more clarity is needed. PWB is not factoring in the amount of learning that is needed and is not considering the level of certainty that is needed. EPA would be uncomfortable if they gave a variance and "guaranteed safety".
 - David Shaff replied that he does not think EPA would be guarantying anything. PWB understands that this is an area of science still in research and PWB will have to answer a lot of public questions. PWB has understood we have to meet standards but if there are standards that we have not met we don't know what those are.
 - EPA replied that they are not sure what the conditions for a variance should be.
- PWB summarized the following concerning the timing and process of applying for a variance.

- If the data continues to support a variance, PWB would start in the fall to assemble applications and would want more conversations with EPA to prepare the application appropriately. PWB would like to know what additional info the administrator will require and the conditions of a variance.
- It seems that when EPA wrote the rule they thought no one would try for a variance. PWB has been very clear all along that they plan to continue with a variance application. This might end up where we are talking about an exemption (time extension) – if there is not an answer from the EPA before PWB needs to break ground to build a treatment plant by the 2014 timeline.
- PWB is going to do their best to supply EPA with the information they want and hopes EPA will tell PWB what is needed in time for PWB to get it to EPA. Information on the quality of the data and sources of pollution and source protection methods will be in the variance application package.
- EPA replied to these points:
 - It's a high priority for EPA to keep the door open for this discourse.
 - EPA believes getting together in the fall (or sooner than that) is a good idea to discuss the conditions of a variance.
 - EPA will send a letter to PWB after the meeting to be very clear about what EPA has stated today. PWB requests that the letter be very clear and understandable to the community.
 - EPA is dealing with a higher uncertainty level and that Portland seems more confident with all the work they've been doing.
 - Even if Portland's intake sampling is <0.075 oocysts/1000L, EPA is still going to look at the other aspects in the body of evidence.
 - EPA will do their best to give Portland as much of the information that is known.

Hot Spot data – how it will be used by EPA in the variance process

- The EPA shared the following points regarding how the hot spot data will be used.
 - The intent with the hot spot data was to collect during the times crypto would most likely be present (worst-case conditions) and therefore characterize what is in the watershed. Harold Rogers researched what would be the optimum times to sample and found that this information is not completely known in the literature. EPA stated that PWB didn't exactly follow Harold's recommendations so it's difficult for EPA to know if the watershed will be adequately characterized.
 - The overall suggestion of hot spot sampling came from the need to consider the nature of the raw water source. Harold Rogers questions if the objective is being met through the sampling. Because of the ever-changing uncertainties in the watershed EPA doesn't even know the answers yet, or even the questions. EPA has only begun this process.
 - The hot spot data won't be used like the intake data. If PWB doesn't find any crypto at the hot spots, there will be nothing to work with when analyzing fate and transport.
 - EPA is concerned with what changed in the watershed after 2002, and would like to know if the conditions in the source water will change again to where crypto will again be detected.
 - There is a gap between where the science is and where EPA needs the science to be. EPA knows what issues we would like to have addressed but doesn't have the pathway to get to the answers they would need (to grant a variance?).
 - Harold Rogers stated that although he's not a hydrologist or statistician he has an issue with PWB's event sampling protocol. He studied PWB's historical data and concluded there was a relationship between stream flows and historical crypto detections. He recommended the event-based threshold be 250% over historical mean stream flows, but PWB used the 95th percentile and as a result of seasonal low stream flows is concerned that the number of event-based samples is too low and PWB will be shy of predicted hot spot data.
 - Fredianne Gray stated that the USGS hydrologist who provides input to EPA on Portland's variance process suggested that PWB might have missed some events during last season

(birthing season in March/April?) She stated that we don't know the conditions under which crypto washes into Bull Run watershed streams.

- At this time EPA doesn't have additional recommendations for PWB's hot spot sampling as we move forward, just that the event-based threshold should have been lower during the study period [**NOTE:** PWB & EPA are not in full agreement on this point. It is PWB's understanding that EPA specifically meant the spring season when discussing this issue during the meeting]. EPA is not saying that PWB did something wrong, but it just adds to the uncertainty.
- PWB would like to understand from EPA what EPA's needs are for the hot spot data, how it will be used and how it relates to the model.
- PWB would characterize its hot spot sampling design as a collaborative approach with EPA. PWB has implemented EPA's draft suggestions and has designed it using PWB's knowledge of the hydrology of the Bull Run system.
- PWB stated that there have already been five event sampling days, in spite of the fact that it was very dry earlier in the year and stream flows were low and steady for quite some time. PWB can't sample for an event when there isn't one. PWB is sampling every time we have an event, even on weekends.
- PWB asked if EPA has reservations with how PWB is conducting their hot spot sampling.
- PWB wanted to make it clear that they did incorporate Harold Roger's suggestions of weekly sampling year-round at the four tributaries, as EPA suggested.
- PWB recognizes that it's inherently hard to capture an event. Ideally you should sample at the peak of the hydrograph but you don't know it is peaking until after it happens. But PWB's scat sampling effort gives us additional confidence. PWB has only had one positive scat sample (containing only 2 oocysts).
- PWB wanted EPA to know that PWB is trying to meet the intent of what EPA has suggested, and we think we are doing that. We know our system very well. We have also collected samples during small events that didn't exceed the threshold, but that we think represented material moving in the stream.

Pathogen Catchment Budget Model

- Fredianne Gray said that originally, the details of the model adaptations (e.g. inputs, outputs, etc.) PWB was developing was an unknown for EPA. A lot of knowledge was gained at this past April's workshop that PWB held with Christobel Ferguson (author of the PCB model).
- Mary Schoen summarized EPA's view of the model: The model is designed to predict and generate the export and generation of pathogens in the watershed. It is looking for: predictions for different scenarios and their ranges (because you can't sample every possible scenario in the watershed) It is looking at: ground truthing and other things. There have been a limited number of events that have occurred this year and it makes ground truthing challenging. There should be a range of inputs used in the model and a sensitivity analysis. It helps us understand what is driving the prediction and informs what is going on in the watershed. The sensitivity analysis also points at what is important in the watershed to drive the export and generation of pathogens. The model results will help shed light on the important watershed processes and predicted pathogen ranges by looking at the changes from the different scenarios.
- Yone Akagi asked how we will link what the model will say vs. what our actual data says.
 - Mary Schoen replied that convincing ground truthing is needed, so that what the model predicts has been seen in the watershed. That's why Christobel (Ferguson) designed an indicator in the model (*E. coli*). We use that to give you some comfort that the model is representing the processes in the watershed. It can tell how predictions change when changes in the watershed occur. Changing conditions can include – dry, wet, animal, seasonal, deposition rates. We can ground truth it using *E. coli*. It helps you explore possible conditions and future changes can be modeled.
- Yone Akagi stated that it's likely that we won't find any crypto at the intake or hot spots and asked how the model deals with that?
 - Mike Finn replied that that is a part of the weight of evidence approach.

- Fredianne Gray replied that the model tells you relative weights of what parameters are important. The PCB model may have more of an application if a variance is granted, rather than the determination of whether or not to grant a variance.

Next Steps/Closing Remarks

- PWB still plans to submit a variance application assuming the data supports it.
- EPA will follow up with a letter clarifying our concerns with respect to uncertainty.
- PWB will take the lead on planning to talk with EPA about the conditions of the variance. PWB is ready as early as EPA is prepared to meet, likely before this fall.
- Dave Leland stated that he is confident that this process will not have been under vetted.
- All parties agreed that it was useful to have an open and honest discussion.
- David Shaff thanked everyone for coming.