Reclaimed Water Technical Advisory Panel Meeting
March 26, 2008
9:00 am – 3:00 pm

Welcome and Introductions 1
Task 1 – Communication via Shareware Site 1
Task 2 – Scope of Work, Timelines 2
Task 3 – Source Water Considerations 3
Task 4 – Pathogen Standards Recommendations 8
Wrap-Up and Action Items 14
Meeting Attendees 15

Welcome and Introductions

Angie Thomson, EnviroIssues, welcomed everyone and introductions were made. Angie reviewed the agenda and discussed the goals for the meeting.

Task 1 – Communication via Sharepoint Site

Eugene Radcliff, Washington State Department of Ecology (Ecology), explained that a sharepoint site has been created to assist the Technical Advisory Panel (TAP) in their communications. The website has a section that outlines TAP tasks as assigned by Ecology; each task can be tracked to completion. The document library allows members to update documents and share them with the rest of the panel. The website includes a meeting page to track discussions and decisions that are made at each meeting. There is also a discussion page where members can stay up to date on emerging issues. Eugene demonstrated how to post a discussion item and reply to existing discussion threads. Eugene said he is open to any input people may have on improving the site.

Questions/Comments:

- TAP members all generally agreed the website is useful.
- John Malady thought the document repository was particularly important so documents do not continue to be shared via email. John said the success of the collaborative part of the website will depend on the topic and users' knowledge.
- *Can you send emails through the site?* Eugene said members can send emails directly through the site.
- *Is there a feature that would alert us when there is a new posting?* Eugene said he thinks there is but still needs to figure out how some of the tools work. Eugene added that the website also includes a survey tool where you can ask everyone how they feel about particular topics.

- Frank Loge said it would be useful to have a blog feature that would eliminate the need for email.
- Ron Brown said he uses sharepoint at his office for document control and to share documents with contractors/clients and thought the service is great.
- *Is there a document control process that prevents others from using a document if you are updating it?* Eugene said he is still looking into that issue. Craig Riley, Department of Health (DOH), said he thought that when an original document is modified by another user the document should be saved as a new version. Jay Swift thought having multiple versions of one document could become cumbersome and said ultimately TAP will need to create one document with a comprehensive list of recommendations.
- Larry Esvelt said his organization has gone back to email to share documents after experimenting with websites like sharepoint. Larry said he encountered problems accessing the site and found that people did not use it regularly.
- Angie suggested trying sharepoint over the next month and checking in during the next TAP meeting to see if the site is useful and if it should continue to be used.

Task 2 – Scope of Work, Timelines

Kathy Cupps, Ecology, reviewed the scope of work and timeline for TAP activities. According to the schedule, the group will begin addressing one topic during each meeting and follow up on the topic at the next meeting to make recommendations. Kathy went through each month's tasks and outlined the schedule through July. The remainder of the meetings in the year will be used to discuss reliable treatment and review the process for meeting the work scope goals by October.

Questions/Comments:

- *Is filtration included in pathogen reduction?* Jim McCauley, Ecology, said all other aspects of treatment are included in the pathogen reduction topics.
- *Will TAP topics be recommended to the Rule Advisory Committee (RAC)?* Kathy confirmed that TAP recommendations would go through RAC to Ecology. Emily Callaway asked what would happen if TAP made a recommendation to RAC but after further discussion decided the recommendation needs to be amended. Kathy said in this case TAP would need to bring any changes to RAC and explain why the change has been made.
- John pointed out that the schedule says TAP should address what will be in rule rather than guidance in September; John thought TAP would do this each month with each topic. John suggested revising the schedule to say TAP should confirm the decisions that have already been made in September. Kathy agreed with John's suggested revisions and said the group should discuss recommendations for rule versus guidance throughout the process.

- Frank said the discussion during the last TAP meeting focused on defining the breadth of issues that need to be addressed. Frank thought that discussion was not reflected in the schedule and asked for clarification on the type of input that Ecology wants. Frank said the panel never talked about having adequate treatment based on source water. He said adequate treatment can include treatment criteria or water quality criteria independent of treatment. Frank thought creating robust criteria for the water itself would eliminate the need for source control and treatment requirements. Linda Macpherson agreed that the panel did not talk about starting with criteria based on source water. Linda thought the criteria should be based on the quality of water for the specific use (e.g. reservoir water, stream water, wastewater, etc.).
- Kathy said the panel would have time to talk about treatment criteria during today's discussion but wanted feedback on the proposed method for working through topics. Denise Lahmann said the overall concept of discussing an issue and then following up on that issue at the next meeting with recommendations is a good one.
- *Angie asked if the third week of the month would work with everyone's schedules for TAP meetings.* Craig said September and October will be busy with national association work and the schedule would need to be flexible to accommodate that. Kathy asked if the first week works better. Most members felt that the date does not matter, but it is important to get it on their calendars so they can commit to the date. Frank suggested choosing a week and asking members to put their schedules on sharepoint to decide what day is best.
- *Angie asked if anyone had concerns about the location of the meeting at the Ecology offices in Lacey.* Everyone was open to having the meeting in different locations for convenience, but a few members expressed the value of having a consistent location to make it easier to remember. Kathy said they would try to reserve rooms at Ecology's offices first and if they are not available the DOH offices will be looked at as a secondary option. Ken Butti said LOTT Alliance offices are available for meetings as well.

Task 3 – Source Water Considerations

Kathy distributed a handout on source control requirements. Angie explained that the handout summarizes the source control requirements for existing practices. Kathy said she would like the group to determine whether all sources of reclaimed water should be considered. The Reclaimed Water Act addresses domestic wastewater facilities and a blend of commercial and industrial wastewater. Kathy asked whether all sources should meet water quality treatment standards.

Questions/Comments:

- Ken Butti thought it was unnecessary to write a detailed reclaimed water rule to address permitted industries when a permit writer can mandate pretreatment when reviewing the permit. Craig said that is what DOH did with the city of Quincy and it worked well. Kathy explained the existing practices were written for municipal

wastewater systems; private utilities would be different unless language is included to address them.

- *Has Ecology changed the threshold regarding individual entities required to provide pretreatment?* Kathy explained that the current regulations require entities to have either a pretreatment program, or an Ecology issued permit. Larry thought the current practices provide more coverage and work fairly well.
- Craig said in the existing standards, pretreatment is a requirement for groundwater discharge but not for any other uses. Craig provided an example: if someone is doing groundwater discharge through surface percolation a pretreatment process is a specific requirement for the permit. In contrast, irrigation does not require pretreatment. Craig said the groundwater recharge treatment used today will not address chemical treatment requirements and source water control has been used to address this.
- Frank said Craig's point brings up the question of whether source water control is the best method to help ensure the water is safe. Kathy said mercury has been found in the pretreatment process and thought source control makes sense to remove contaminants.
- Denise thought that pretreatment is a common approach to managing drinking water. She said treatment will be done on reclaimed water anyway, so pretreatment requirements may not be necessary. Denise asked if it is better to set a performance standard and have everyone meet that however they choose, or demand source water control.
- Ken said the regulations will filter down the treatment program and be written into permits. It would be easiest to cite the existing requirements in the reclaimed water rule with the idea that the regulation can be adjusted to respond in the future to tighter controls. Frank supported this approach. Denise thought this approach would work for publicly owned treatment works (POTW) but does not address private utilities or industrial and agricultural systems.
- Clint Perry thought the rule should require reclaimed water to meet certain standards, but guidance should allow for best practices which mean source control. Kathy provided an example from the state of Florida highlighted in the handout. Craig said what Florida put into rule is a good business practice. Larry agreed with Craig's point, and said guidance should be used to control permitted wastewater plants from allowing new users. Larry also thought the requirement should be reworded to be consistent with delegated and non-delegated so they operate under the same criteria as if they had their own permitting.
- Jay said smaller municipalities that generate reclaimed water do not have pretreatment monitoring of minor industrial users and have no idea what is being discharged. Jay thought citing regulations in permits is not enough guidance and there should be more clarity for what is expected. Larry said cities have to do an industrial audit which becomes part of the record for the National Pollution Discharge Elimination System (NPDES) permit renewal. Kathy asked if Larry is recommending an annual user survey for all reclaimed water facilities. Larry said the audit would

happen once per permit cycle. Ken said this is an existing requirement for pretreatment programs. Ken said all utilities that deliver reclaimed water should undergo added scrutiny to make sure the current requirements are being met in the industrial survey. Jay said some of the smaller municipalities probably do not have the same requirements as a large wastewater treatment plant and they too should probably also have a survey that should happen every few years if not annually.

- Linda thought the group should discuss the inconsistency in the reclaimed water standards. She said reclaimed water is regulated for landscape or irrigation purposes, but effluent can be put in a receiving stream where a farmer can pull the water out and use it without regulatory concerns about pretreatment. Linda felt there is an inconsistent message regarding the risk of reclaimed water use. Linda thought the rule should ensure industrial programs are monitored effectively before allowing irrigation to occur, but the agencies should also inform people that farmers are reusing water and should make sure they are being protective. Lynn Coleman said Ecology evaluates these issues based on risk. Ecology looks at how well the facility itself is operating and what the risk is to the downstream user. Lynn said it is not based on whether the water is or is not reclaimed.
- Angie asked if Linda's recommendation is one TAP would like to consider. Frank said Linda is asking for consistency between reclamation standards and other existing standards. Frank suggested the panel focus on standards that are set forth for the intended uses of reclaimed water to protect human health and the environment. Frank said pretreatment requirements for municipal system should apply for all private facilities that want to produce reclaimed water.
- Doug Raines said just because a facility is reclaiming water does not mean it will cause exposure. If a facility is reclaiming water for an industrial use they should not have to provide pretreatment for contaminants that the industry is not concerned about. John thought that would be addressed under the permit. Frank elaborated that the requirements for pretreatment apply to public and private water purveyors; if they do not affect you because of an industrial use then you do not need to worry about it. Frank said the point of writing the regulations this way is to provide consistency.
- Ken said the assumption in Washington State is that every significant industrial user that discharges directly to a water source has a permit. The current pretreatment requirements in the reclaimed water rule are not based on industries. Some facilities only have twelve permitted industries and others have hundreds. Ken said the mechanisms are there currently and the state permit writers need to be aware of the tools they have. Ken said permit writers might assume compliance for state delegated programs. He said the risk with this is that after the permit is issued significant industrial users (SIU) could come along and the state would have failed to permit them. In this case it would be unclear who is in violation.
- Craig said Orange County water district has a groundwater recharge program where several treatment facilities are viewed as sources to be recycled. All of the sources have a delegated pretreatment system under the reclaimed water act. Orange County decided they will negotiate stronger and tighter pretreatment for the SIU's they deem to be significant.

- Larry suggested TAP talk with the Ecology staff that work on industrial water permits to understand whether the current program is configured to be protective or if the permit needs to be written differently for the discharger. Kathy said Ecology will take that into consideration in final decision making.

Angie summarized a proposed recommendation:

1. The established pretreatment standards for POTW should apply to private entities for the purposes of producing reclaimed effluent.

TAP members all voted in support of this recommendation.

- Angie asked what other issues with source water still need to be addressed. Kathy said domestic wastewater, blend of industrial and domestic, and totally industrial wastewater all fall under the Reclaimed Water Act. The breadth of parameters will limit the panel's ability to look at water based standards if all source waters are going to be considered. Kathy said TAP needs to decide if there should be one water quality standard, or if the industries should be dealt with case by case.
- John thought there should be different water quality standards dependent on the use. Even if the panel decides on a case by case approach, there still could be standardization of the use. Kathy agreed with John and said the question is whether the industrial source water has been adequately treated. Kathy said there are two types of standards 1) surface water quality standards which are the same for anyone discharging to surface or groundwater and 2) discharge standards which are industry specific. Frank said the discharge standards are part of the NPDES process and the standards are based on intended use of receiving water. Kathy explained that Washington uses technology based standards dependent on what is achievable regardless of where the water is going. The water quality based standards are different and depend on the surface or groundwater you are discharging to.
- Ken said the Port of Olympia has a pump and treat system to Budd Inlet. They have a requirement to monitor for PCBs, but they discharge into LOTT Alliance's outfall and LOTT does not have to monitor for PCBs even though the effluent is going to the same receiving water. Ken said every facility should have to meet the standards, but if there is a unique set of pollutants, flexibility is needed to evaluate that.
- *Is industrial water assumed to be treated or untreated?* Kathy said the water includes pretreatment only if it goes to a municipal system to be combined with regular wastewater. State law requires adequate and reliable treatment for industrial process water for it to be reused. It also requires adequate and reliable treatment for domestic water.
- Kathy asked if the panel wants to recommend taking the industries out and evaluating them case by case. Larry said moving away from a case by case system will require a lot more work up front and will not provide much more protection. Denise said including the industrial processes in the rule opens the regulation up to legislative oversight that is not public health or environmentally based. Jay thought case by case standards need to be as stringent as domestic reuse standards.

- Ron asked if recycled water should be considered with industrial water. Kathy said recycle water is never considered because it is process water and has not been regulated. Craig said the use of recycle water internally is more of a worker health issue that Labor and Industries deals with.
- John asked why industrial water should be treated differently than domestic water if it ultimately has the same use. Frank said the same argument could be made for POTWs; they vary a lot in the composition of biological oxygen demand (BOD) and have the same complexity that industrial water has. Separating the industrial water because of the complexity gives a false perception that you understand what is in the domestic water.
- Angie asked if the panel agrees that industrial reuse should follow the same standards as everything else because it is going to the same use. John still felt there needs to be flexibility in the permitting standards to look case by case but the rule should be the same for both. Linda said the focus should not be on the source of water but on the quality of the product water. Kathy said another option is a case by case discharge standard plus additional treatment. Denise said she supported a case by case approach on the front and back end.
- Angie summarized the options presented for industrial source water: 1) same standards as any other source water for reuse with flexibility for case by case 2) case by case for standards and additional treatment.
- Ron said industrial source water may include contaminants that cannot be oxidized or may require treatment in another fashion. Ron advocated for defining what case by case means. Ken said the current permitting process used in the State includes numerical limits based on discharges but also a case by case approach to the discharger. Ken felt that most of what is being proposed is already being addressed through the permitting process so specific rules do not need to be written into the reclaimed water regulations to take the place of the current practices. Don thought the focus should not be on source water; instead all uses should meet the same criteria and all uses should have standards defined.
- Denise said case by case means different things to different people. Denise said she expects Ecology to look at parameters for monitoring case by case and assume a pretreatment program screens for additional contaminants.
- *Why can't source water be defined in the statute so industrial could be permitted in the same way as domestic?* Kathy said Ecology needs to know the standards to know the requirement. Don said it is important to know where the discharge is going.
- Kathy asked how greywater use would fit in. Ecology is supposed to develop standards for greywater and currently greywater needs to meet reclaimed water standards if it will be used as reclaimed water.
- Angie said it sounds like the panel is advocating for use based standards that do not change. John said industrial reuse water should not be treated any different than the domestic reuse water. The case by case basis happens in the permitting process. Linda clarified the standards are not based on use but on the quality of the water.

Angie summarized a proposed recommendation:

1. The permit process for industrial, agricultural, municipal, and greywater is based on the same reuse standards independent of source water.

The majority of TAP members voted in support of this recommendation. Jay said he thought some additional editing may be required over sharepoint before the recommendation can be finalized. The committee agreed to finalize the recommendation during their next meeting.

Task 4 – Pathogen Standards Recommendations

Jim provided a presentation on pathogen removal. He reviewed the indicator organisms used for measuring bacteria, protozoa, and viruses and compared Washington State's class standards to other northwest states. Jim also compared Washington's pathogen removal requirements with other states around the country. Jim discussed oxidation, coagulation, filtration and disinfection treatment systems used to achieve pathogen removal requirements and compared these treatment technologies between states. He briefly reviewed wastewater discharge standards, surface water standards, and groundwater standards for Washington State.

Questions/Comments:

- Craig said fabric filters are not considered to provide the same treatment as membrane filters. Other types are allowed, but when the standards were written levels were assigned specific to the treatment.
- *Does Class D have a higher standard than wastewater effluent?* Jim said yes, Class D reclaimed water does have to meet a monthly total coliform average whereas the wastewater discharge requires a weekly and monthly fecal coliform standard.
- *Why do these wastewater discharge standards differ from the reclamation guidelines?* Craig explained that this is because the wastewater mixing zone is not meant for human contact. Jim said the difference in standards is a good topic and brings up the issue of what degree of water quality is necessary to protect public health.
- *Could the reclaimed water requirements become less stringent when they are written into the rule?* Kathy said it is possible, but Ecology would have to justify the change.
- *Are the current standards achievable?* Kathy said they are not achievable at all times.
- *Are these standards for the receiving waters?* Kathy said the standards are for ambient water.

Kathy distributed several reports regarding methods for evaluating water quality and summarized the key findings from each report. TAP discussed potential pathogen standard recommendations:

Questions/Comments:

- Frank asked if the TAP needs to develop one standard for all uses. Kathy said there can be more than one standard for different uses. Frank thought the standards should be broken out by use and suggested starting with human contact.
- *Are there different levels of human contact?* Frank proposed that the treatment technology criteria should ensure a five log removal of bacteria and protozoa. Jay asked why a five log removal for bacteria and protozoa would be necessary. Frank explained that most people focus on viruses, but bacteria and protozoa are the constituents of concern and if the system meets a five log removal it would prove to be robust. Craig added that extremely impaired water sources should go to a six log removal for giardia.
- *Would the log removal be required for a tertiary treatment system where the water has already gone through secondary treatment?* Frank confirmed that the removal requirements would be applied to a system after secondary treatment. Denise thought the viruses would drive this system and there should be a requirement included to document removal of the viruses as well as bacteria and protozoa.
- *Would the facility have to document that the treatment system will meet criteria before it is built?* Frank confirmed that under the system he suggested the design of the system would have to prove it meets the standards before it goes into operation. There would also be ongoing operation, maintenance and monitoring to ensure the system continues to meet standards. Frank said this would require each design to be dealt with on a case by case basis and the demonstration would have to be done in a challenge study (engineers would have to challenge the system to prove it works). John thought there should be some acceptable terms from systems that have proven they meet the standards, so if a facility uses the same system they know it will meet the standards. John also thought this could prove to be an expensive procedure. Jay said there could be issues with whether the scale up from the tested reactor is done in a way that replicates what was done in the model. Jay was not sure the tests that lead to full scale operation have worked very well.
- Kathy asked whether Washington would use technology studies done in other states. Kathy said Idaho has decided that if the treatment is accepted in the state of California treatment technology report then it is acceptable in their treatment standards.
- *What is different about what is being proposed than what the state is doing today?* Frank said the proposed system gives the engineers the ability to be creative and forces people to demonstrate that a system works before it can be built. Frank said some systems that were built in the 1990's were not engineered properly and have had problems. Craig said other methods may be required to verify the treatment technology will meet the standards.
- Jay said he was not sure how applicable the MS2 bioassay would be for cryptosporidium. Frank suggested including a secondary requirement of removing cryptosporidium; particles could be used as a surrogate for protozoa because most

standard treatment systems have enough particles going in that they can be measured easily.

- John asked if the existing requirements are adequate and if a five log removal would really be effective. Don said the Lakehaven Utility District just did some testing on their plant and a five log removal on untreated would get them down to 1.9 fecal coliform which is lower than surface water standards. Don said he thought a numerical system might be better because a five log removal may be greater than what is needed. John thought Don's point about a numerical system was important because in some cases a five log removal could be too low and in others it could be too high. Denise said you could end up punishing a plant for having an effective treatment system. Jay said MBRs and reverse osmosis have a two log removal so the disinfection system would need to remove the rest. Craig said no one is willing to stand behind the numbers for the removal credits with membranes.
- *Should membrane bioreactors (MBRs) be categorized as part of secondary or tertiary?* Frank thought that if a decision was made that a change from the existing standards, this issue would need to be addressed.
- John said the reports Kathy reviewed show that the standards need to change, but there has to be some flexibility with addressing those in the rule. Kathy suggested there might be a way to do testing real time. Denise said the guidance and the rule could require some level of monitoring that shows the standard is met. Kathy thought the guidance could be updated faster than the rule. Denise agreed that if the standard is set at a five log removal in rule it would not be easy to modify, but if the rule said the "equivalent or equal treatment" that would allow flexibility in changing it. Kathy said it is important for the regulators reviewing the rule to be comfortable interpreting it; the utilities need to know what is expected, and the consultants need to know what the design requirements are.
- Ken explained that LOTT has two plants, one that treats advanced secondary treatment (UV treated water goes through sand filtration), and a MBR plant. Ken emphasized that there are many variables in the different technologies and they are changing all the time. John said the regulation should look at the flexibility for satellite facilities and the small decentralized facilities as well. Craig said Ken has redundancy in his system because of the way the system was designed.
- Frank said another alternative is to specify a log removal standard across the whole treatment train independent of the coliform concentrations at the end. This approach focuses on health in a different way. John said there is an important distinction between a system designed for removal and a system that needs to demonstrate removal at the end. Frank said the technology would have to prove that it provides the removal it says it will.
- Jay asked if there are any scale pilot reactors that could be allowed for the full scale system and if there would be validation requirements for chlorine. Don said the health department regulates the chlorine in swimming pools and it might be worth looking at their standards because they deal with the same critters in the wastewater system that allow for exposure.

- Ken said recent research provides a consensus that the current practice will not necessarily address the health risks of reclaimed water. Ken felt now is the chance to set a standard for reclaimed water. Denise said a new standard is not necessarily the answer. Kathy said a recommendation does not have to include just one option. Kathy said the argument could be made that Washington should be consistent with the region.
- *Would any of the proposed standards be affordable?* Frank said setting up a standard across the whole treatment process would not necessarily require specific treatment technology. Denise said the priority is to protect public health and the environment and a main conclusion from the recent studies is that indicators used today are not effectively measuring risk. Craig said the standards should address the laboratory techniques and consider what is affordable. Some things are very difficult to measure consistently and others require large volumes which makes sampling expensive.
- John suggested that emerging constituents of concern will be more important than the ones currently monitored. Some of the constituents in reclaimed water cannot effectively be measured yet. John said the rule needs the flexibility to adopt new criteria as information becomes available in these studies. John said the group should also consider what other technologies may replace some of the current systems.
- Larry thought Frank's suggestion for log removal is a model that could be followed for human contact as well as other uses. Larry said the group needs a basis for consistency and liked the idea of emphasizing the raw waste stream effluent with a continuous monitoring system. Turbidity monitoring could be a reasonable test in terms of cost and time.
- Denise said coliform bacteria may not be the best thing to use as an indicator. Denise thought that public perception is a big issue with reclaimed water and the panel needs to consider consistency with existing regulations and the current messages that are given to the public regarding what is "safe". Denise said she did not know whether or not the public accepts coliform as indicators, but said the public thinks of coliform as the "bad stuff".
- Frank said everyone in the reuse industry identifies the Pomona County study as the basis for the standards that are in place today. Those link back to a fortified log removal which leads to risk and is understandable to the public. If you look in the reports that Kathy reviewed, it shows the indicators do not address risk and better indicators are needed. The existing state of knowledge on pathogen concentrations is unacceptable and needs to be better understood before standards can be developed.
- Denise asked if the panel is back to recommending the existing standards for demonstrating continued compliance. Frank said documentation that the system will work as well as continuous monitoring will be needed. Craig thought that a suite of indicators could be used to demonstrate that the process is operating smoothly and supports water quality.
- *Why has coliform lasted as an adequate indicator?* Frank said coliform originated from epidemiology studies that made linkages between indicators and illness. The specific values at which the link between indicators occur differs from study to study.

Frank said the indicator breaks down at a regulatory level because the study just demonstrates a relationship but regulators are trying to use it at a specific value. Studies have shown great variation in coliform and health effects, so there is not a conservative number that is effective. Agencies basically set it at a non-detect limit.

- Craig asked how the panel would demonstrate that a level is meaningful if a change was made from the non-detect system. Kathy said other states say the standards need to be met 95% of the time and set a maximum value. Washington says the standards have to be met 100% of the time but there are blips in the system and facilities are getting violations for no real reason. Jay suggested that maybe the blips could be a trigger level requiring consecutive samples instead of a violation. Craig said there are a lot of small systems that use UV which kills the indicator organisms, but you do not know what else is in there. Craig said this is why he has advocated for using a suite of indicators. John agreed that contingencies need to be built into the system.
- Ron said he has concerns about automation and redundancy because of the maintenance that would be required. Ron said he would want to look at the sensitivity so he could build the costs into the design. Ron said he needs to consider the amount of risk he is comfortable taking on with a client and would want to consider the cost up front. Frank said the systems around the country that attempted to use redundancy failed because of the multiple layers of redundancy. The multiple layer system was set up so that any of the backup treatments could achieve the designated log removal throughout the treatment train. The system attempted 14-18 log removal across the treatment process and was intended to provide backup for failure, not for multiple barrier treatment systems. They ended up with a log removal that was higher than what they were aiming for because of all the redundancy.
- Denise said the panel may not be able to make a recommendation regarding pathogen removal yet, but the committee has identified some things that are important to consider: 1) the group has treatment expectations and would like to see a design that meets the standards and demonstrates this at startup as well as in ongoing compliance. 2) cost, technology, and meaningful indicators should be considered 3) consistency also should be considered in what is happening in other states and other uses of indicators.
- Angie asked what the group can do to prepare for this discussion at the next meeting. Frank said he thought the panel should continue to work through the issues specific to human contact and whatever is decided could be used to determine the standard for non human contact as well.

Angie summarized the proposals suggested so far:

1. Five log removal after secondary treatment (designed for or demonstrated) coupled with numerical standards
2. Log removal designed versus demonstrated cross the whole treatment system
3. Maintain existing standards

Angie outlined the additional elements the panel said they would like to evaluate:

1. Cost

2. What is possible to measure with current technology
3. Consistency between standards and use
4. Meaningful indicators
5. Consistency with state regulations, regional standards, and indicators used for other purposes

Questions/Comments:

- Larry said panel has not come to agreement on the question of log removal. If the indicators are not representative of risk, what else could be monitored and is demonstrative of risk?
- Larry asked if Ecology would be considering updates to the surface water standard as well. Kathy said Ecology will not be considering surface water standards any time soon. John said there may be an opportunity to make sure the reclaimed water uses are consistent with the definitions in the surface water standards. Consistency of terminology was suggested as an additional element to consider.
- Kathy asked how the panel would justify a reclaimed water requirement that is higher than drinking water. Craig said the log removal in the drinking water act is tied to the operations of the treatment technology and is set at a standard that is un-measurable. Frank said all log removals are based on a survey of what is going into the system. The drinking water agencies have to look at all the data and determine the removal they wanted to achieve based on what is present in the environment. John said there is a difference between the quality of the source versus the designation of the source, i.e. you can tie the standard to source without looking at whether it is industrial or not.
- *Would the log removal requirement go into guidance?* Frank said the guidance should require a system to be designed to provide a certain log removal but could be modified. Jim said this sounds like it would require pilot testing to define the source and then show what the system could remove. Frank thought the representative knowledge does not believe you can identify constituents reliably. If you take this path you will require people to look for pathogens in the source then remove those, but they would have to detect those organisms in a defensible way. Craig said the agencies know there is breakthrough and the non-detect does not really mean the constituent is not present. This goes back to how you react to differing samples. Ron suggested allowing facilities to demonstrate if the influent is below a certain level and lowering the log requirement accordingly. John agreed that an alternative approach to achieving that log removal should be allowed if you do a source water test to justify that a lower log removal could be used.
- Angie asked if there are parts of this discussion that could take place over sharepoint before the next meeting. Jay said the whole discussion should continue on sharepoint and stressed the importance of considering cost and not being over burdensome on the municipalities and small businesses.

- Angie asked if there were things panel members could do to help come to a resolution on some of these issues. Ron said he would like to spend some time reviewing the reports to get better educated on what has been done before. Other panel members agreed that the time to review materials would be useful. Frank said he would look into getting a copy of the Pomona County study he referenced but was not sure where a copy would be available. Ron said documentation on direct potable reuse examples would be useful too.
- John said there are questions in the handout that were not addressed during the meeting today and asked that those continue to be brought up at future meetings. Jay commented that the questions in the handouts are useful to frame a path forward. Jay suggested each panel member posting their answers to the questions on sharepoint. Frank said if the issues need to be resolved via sharepoint the discussion needs to be structured in the same way the meetings are facilitated.

Wrap-Up and Action Items

Source Water Recommendations:

1. The established pretreatment standards for POTW should apply to private entities for the purposes of producing reclaimed effluent.
2. The permit process for industrial, agricultural, municipal, and greywater are based on the same reuse standards independent of source water.

Possible pathogen removal standards:

1. Five log removal after secondary treatment (designed for or demonstrated) coupled with numerical standards
2. Log removal designed versus demonstrated cross the whole treatment system
3. Maintain existing standards

Additional elements to consider for pathogen standards:

1. Cost
2. What is possible to measure with current technology
3. Consistency between standards and use
4. Meaningful indicators
5. Consistency with state regulations, regional standards, and indicators used for other purposes

Comments:

John thought it was helpful to have input from the RAC attendees during the meeting and thanked participants for their attendance.

RAC members thanked the panel for their hard work. Kathy asked RAC members if they thought the panel was a good way to continue to approach the issues. Committee members agreed that the approach is effective.

Meeting Attendees

Department of Ecology
Katharine Cupps, Agency Lead

Angie Thomson, Facilitator
Emily Neff, Note Taker

Committee Members and Alternates	**Guests**
Emily Callaway, CH2M Hill	Tim Wilson, City of Lacey
Linda Macpherson, CH2M Hill	Doug Raines, Department of Corrections
Craig Riley, Department of Health	Clint Perry, Evergreen Valley Utilities
Denise Lahmann, Department of Health	Don Perry, Lakehaven Utility District
Larry Esvelt, Esvelt Engineering	Ken Butti, LOTT Alliance
Jay Swift, Gray & Osborne Consulting Engineers	Walt Canter, WASWD
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