Clean Water Services Advisory Commission

Meeting Minutes

October 26, 2011

Attendance

In attendance were Commission Chair Tony Weller and Commission members Molly Brown, Alan DeHarpport, Lori Hennings, Victoria Lowe, Judy Olsen, Stephanie Shanley, Jerry Ward, Sandy Webb, and Bill Young, and Clean Water Services District General Manager Bill Gaffi.

Commission members John Kuiper, Deanna Mueller-Crispin, and Julie Wilson were absent.

Clean Water Services District Deputy General Manager Diane Taniguchi-Dennis attended the meeting, along with Regulatory Affairs Division Manager Bob Baumgartner, Government and Public Affairs Manager Mark Jockers, General Counsel Jerry Linder, and Public Involvement Coordinator Sheri Wantland, all with Clean Water Services.

1. Call to Order

Chairman Tony Weller called the meeting to order at 6:32 PM in the conference room at the Clean Water Services Administration Building.

2. Review/Approval of Meeting Minutes from April 20, 2011

Mr. Weller asked for any corrections or comments regarding the April 20 meeting notes. Bill Young, who was unable to attend the April meeting, asked for clarification of a phrase regarding "...streams that should have had water..." (Page 3, third paragraph, second sentence). Bill Gaffi said "could" might have been a better word than "should," to reflect that even if flow is reduced by withdrawals the stream still has the potential for flow. Mark Jockers agreed, saying the study was looking at perennial streams in late summer and found that not all of them actually had water at that time.

Ms. Lowe moved to approve the minutes and Molly Brown seconded the motion. Motion passed.

3. Charge to Commission by Board of Directors for NPDES Permit Renewal

Mr. Jockers reviewed the Commission's charge from the Clean Water Services District Board of Directors: to review the District's NPDES permit renewal objectives and approach, provide a forum for stakeholder communication and outreach, and provide input to the District in responding to DEQ's draft permit conditions. He said Clean Water Services is also working with key community stakeholders on the approach, objectives, and timeline for the permit renewal. These groups include Tualatin River Watershed Council, Tualatin Riverkeepers, City Managers Group, City Technical Committee, the regulatory agency staff who will be writing the permit, and a focus group exploring use of natural treatment systems, such as wetlands "polishing" of treated water at Fern Hill and Jackson Bottom.

Mr. Jockers said Commission members and other stakeholder groups are being asked to identify any specific topics or issues they want to discuss in more detail, any missing parties that should be

involved in the permit renewal process and how best to reach them, challenges and opportunities in communicating information to the public about the permit renewal, and what issues should be anticipated from the public as updated TMDLs are put out for comment. Staff expect to return with this agenda item over the next 6-9 months, after which DEQ will issue a draft permit and conduct a formal comment period.

Ms. Lowe asked if the draft permit is available for review, but Mr. Jockers said not until it is actually issued by DEQ.

4. Clean Water Services NPDES Permit Renewal and Oregon DEQ Update to TMDLs

Bob Baumgartner spoke about the status of the watershed-based NPDES permit, the District's permit renewal goals, TMDL updates, and the permit process and schedule. Mr. Baumgartner began his presentation ***(attached)*** by sharing a list of no fewer than 22 common water quality acronyms, including NPDES (National Pollutant Discharge Elimination System), DEQ (Oregon Department of Environmental Quality), WWTF (Wastewater Treatment Facility), MS4 (Municipal Separate Stormwater Sewer System), TMDL (Total Maximum Daily Load), and NTS (natural treatment systems, or wetland polishing).

Mr. Baumgartner said the NPDES permit renewal and the TMDL updates go hand-in-hand; in order to meet some of the permit objectives some of the TMDL components must be updated to ensure compliance with state and federal objectives for water quality in the Tualatin basin. As described in the pre-meeting materials, Clean Water Services holds an NPDES permit which defines water quality parameters and standards. The current watershed-based permit integrated previous permits for the District's four WWTFs and the MS4 permit under one overall permit and was issued by DEQ in February, 2004 for a five-year period. Clean Water Services submitted a permit renewal application in August, 2008. When the current permit expired in January, 2009, DEQ issued an administrative extension and Clean Water Services has continued to operate under the requirements of that permit. Meanwhile, DEQ has been working to refine permit conditions and language to reflect new water quality standards and regulatory changes, including updating TMDLs, which are also described more fully in the pre-meeting materials.

The current watershed-based permit was innovative not only because it treated several individual permits as a single system but also because it allowed for "trading" within the basin to achieve the overall water quality requirements. The temperature trading program is a familiar example: instead of using chillers at WWTFs to cool effluent to the required temperature at a single point in the river, Clean Water Services has used flow augmentation and shade-planting programs to help offset thermal energy throughout the river system. The permit also allows trading to meet requirements for ammonia and CBOD (carbonaceous biochemical oxygen demand), which affect the amount of DO (dissolved oxygen) available in the water to support fish and other aquatic life. Discharged effluent can be balanced between WWTFs to cost-effectively minimize the impact on DO.

The permit renewal application proposes some changes from the existing permit. Clean Water Services is trying to look ahead not just through the next five years of the permit cycle, but beyond that to sustainably maintaining water quality with as small an environmental footprint as possible over the next 15, 20 or 25 years. Mr. Baumgartner described the objectives behind the permit renewal application:

1. ***Accommodate continued population growth.*** The current permit allows for year-round discharges at Rock Creek and Durham WWTFs, which have advanced treatment capabilities, and winter/wet month discharges at the Hillsboro and Forest Grove WWTFs. In the summer months wastewater from Hillsboro and Forest Grove is sent to Rock Creek. The permit renewal proposes year-round discharges from Hillsboro and Forest Grove to more fully utilize the existing facilities and increase capacity by developing natural treatment systems (NTS), or wetland polishing, to provide final treatment. The renewal also proposes an increase in the mass load allocation for Rock Creek and Durham to reflect the increased total pollutant load associated with population growth. Mass load is an absolute or total amount calculated as the amount of flow multiplied by the concentration of a pollutant. An increase in mass load would allow flexibility for adjusting discharges at Rock Creek and Durham and coordinating them with discharges from Hillsboro and Forest Grove. It would not result in more pollution in the river because TMDLs, which are based on concentration, would still be met.

2. ***Develop and use sustainable treatment technologies.*** Despite having very advanced facilities at Rock Creek and Durham, Clean Water Services is looking at better ways to treat wastewater more cost-effectively and with a smaller environmental footprint over the long term, such as using NTS.

3. ***Fully utilize the existing advanced treatment technology*** to get the most from that investment.

4. ***Continue integrating activities under the watershed-based permit,*** including enhancing and expanding opportunities for trading and other innovative ways to address pollution and water quality issues throughout the basin rather than solely at treatment plants.

5. ***Continue to meet all water quality standards.*** It is important to develop options that will provide flexibility in responding to future requirements, whatever they may be, while improving the overall ecological health of the Tualatin basin.

To meet these objectives, the existing TMDLs must be updated to reflect new requirements and approaches. Mr. Baumgartner described a TMDL as the maximum pollutant that a water body can receive and still meet water quality standards. A TMDL includes waste load allocation (WLA) amounts for point sources such as WWTFs and load allocations (LA) for nonpoint sources such as agriculture, plus a "margin of safety" (MOS) amount.

The Tualatin has TMDLs for ammonia because of its impact on DO in the river and for total phosphorus because of its impact on algal growth, pH, and aesthetics in the lower river. These were established in 1988 and revised in 2001. TMDLs for temperature, especially important for salmon and trout, and bacteria were established in 2001.

Mr. Baumgartner said that while previous TMDLs were written to resolve past problems or were done in response to litigation, this is the first time an entity is actually looking at future needs and asking how to develop a TMDL that will protect aquatic health in the future. He noted that it has been a collaborative process with DEQ and much of the language in the draft updated TMDLs was drawn from work done by Raj Kapur, Water Resources Analyst at Clean Water Services. The proposed updates primarily affect the temperature, ammonia/DO, and total phosphorus TMDLs.

The proposed update to the TMDL for temperature would:

1. ***Align its WLA and LA with Oregon's revised temperature standard***, adopted in 2005. The temperature standard protects salmon and trout thoughout their life cycle (spawning, rearing, migration).

2. ***Revise temperature WLAs for Rock Creek and Durham WWTFs and establish new WLAs*** for the Hillsboro and Forest Grove WWTFs. This would allow the opportunity to discharge from NTS at Hillsboro and Forest Grove.

3. ***Allow continued or expanded use of temperature trading programs*** to meet the WLA and LA. Having caught up with current growth by establishing more than 35 miles of stream plantings and reducing thermal energy in the Tualatin basin by 300 million kilocalories, Clean Water Services wants to plant another 2-3 miles per year to address future growth and offset another 300 million kilocalories.

4. ***Establish temperature WLAs for reservoirs and water released from them***, and identify DMAs (designated management agencies) which would be responsible for management plans. Clean Water Services has been working with other agencies regarding a consistent response to DEQ on this new requirement, what role to take in developing management plans, and how it may influence efforts to maintain cool water in the river with releases from Barney Reservoir and Hagg Lake.

The proposed amendments to the TMDLs for ammonia/DO and total phosphorus would:

1. ***Establish a WLA for each parameter from the Hillsboro and Forest Grove WWTFs*** in the upper river. The current TMDLs include WLAs only for the lower river because summer discharges from Hillsboro and Forest Grove have been routed through the Rock Creek facility. The amendments would not change the ammonia/DO and total phosphorus WLAs for the lower river but would allow Clean Water Services flexibility to discharge a portion of each WLA from the Hillsboro and Forest Grove facilities during the summer. This would help create the opportunity for use of sustainable NTS at those two facilities.

2. ***Expand the existing "bubble" concept.*** As described in the pre-meeting materials, the current NPDES permit includes a bubble WLA for ammonia/DO from Rock Creek and Durham, treating them as one unit so discharges could be adjusted back and forth between plants according to treatment capacity and river conditions. Clean Water Services has not utilized this aspect of the permit so far. The amendments would include the WLA for phosphorus in the bubble and create a new bubble for the Rock Creek, Hillsboro and Forest Grove WWTFs so discharges could be adjusted to minimize impacts on the river and realize some cost savings for Clean Water Services.

3. ***Change the required phosphorus removal period*** from May-October to May-September. This is a minor amendment as DEQ acknowledges the river is not appreciably affected by phosphorus during October.

Ms. Hennings asked how the temperature TMDL update relates to the Willamette River TMDL. Mr. Baumgartner clarified that the state water quality standard for temperature, not the temperature TMDL, changed in 2005 at about the same time DEQ was developing the TMDL for the Willamette River. DEQ wants to be sure that the temperature TMDL for the Tualatin, which helps guide efforts to achieve the temperature standard, is consistent with the requirements for the Willamette. The standard changed from degrees Fahrenheit to degrees Celcius but the actual temperature requirement stayed about the same, with minor changes depending on use. However, the standard became much more explicit about where each use was expected to occur, primarily whether salmonids were present, what kind, and at what stage of their life cycle. It is tied to critical salmon habitat designations in that DEQ relied on information from Oregon Department of Fish and Wildlife (ODFW) about distribution of salmonids, which was based on those designations. The standard also became a bit more generous regarding point source discharges.

Ms. Lowe asked if year-round compliance with the old (temperature) standards was ever attained. Mr. Baumgartner said the lower part of the Tualatin River (downstream from the Rock Creek WWTF) does not achieve either the old or the current temperature standard during the peak of the summer. However, if the numerical standard cannot be met, the "natural thermal potential"—an estimate of what the temperature would be without human influence—becomes the target. The natural thermal potential isn't the same in all parts of the river—the lower river is naturally warmer, for instance. Some parts of the upper river (upstream from the Rock Creek facility) are actually cooler than the temperature standard, but it naturally becomes harder to meet the standard as the water flows downriver, even while it is still upstream of the WWTF discharge points. Mr. Gaffi pointed out that with no real snow pack in the watershed, summer flows are naturally low and relatively warm; sometimes the river even in its natural state would be warmer than the standard. While the standards are set primarily to protect salmonids, they don't necessarily reflect naturally-occurring conditions in all salmonid habitat.

Sandy Webb asked if the new Intel plant (in Hillsboro) was a factor in the plans for summer discharges from the Hillsboro and Forest Grove treatment plants. Mr. Baumgartner said estimates for the future do account for both industrial and municipal growth, but as Mr. Jockers pointed out, discharges from Intel plants are and will be actually processed through Rock Creek.

Ms. Hennings wondered if temperature increases due to climate change would overwhelm efforts to plan for growth while the temperature requirement is staying about the same. Mr. Baumgartner said no one knows how climate change might influence flow amounts, flow patterns, ambient air temperature, stream temperature.... Models can help predict the effects once conditions are known, but cannot accurately pinpoint what the conditions will be. The TMDL update does reflect some thinking about how to stay adaptable, including how to set up flow to mitigate temperature changes. There have been some discussions with DEQ about addressing climate change, but they are not yet ready to deal with that question for all of the TMDLs.

Mr. Weller commented that the permit renewal partly addresses this as there are new stormwater regulations to encourage more low impact development, such as putting flows back into groundwater recharge or at least the opportunity for that. Mr. Baumgartner agreed that flow, or managing flow, is part of the response in trying to maintain flexibility for a future that includes climate change. Mr. Gaffi added that climate change is something of a wild card--depending on which predictions you rely upon, salmonids could have a rather dismal future in some of these systems and 20-30 years

from now we may be saying that we cannot fully protect salmonid populations.

Alan DeHarpport asked if the TMDLs for Coast Range basins are the same as those for Cascade Range basins. Mr. Baumgartner explained the standards are the same because they are based on how salmonids respond to temperature change, and the process DEQ uses to develop TMDLs is the same. However, the estimates of natural thermal potential vary with elevation and other factors, so the temperature TMDLs do vary by area.

Ms. Lowe asked if that means there are two TMDLs that apply to Barney Reservoir, as releases go both directions. Mr. Baumgartner said there is a North Coast temperature TMDL which applies to the Trask River, but does not address Barney Reservoir or releases from it. There are not many point sources on the Trask so there is not the regulatory need for temperature WLAs as there is on the Tualatin and in the Willamette Valley. However, this is a timely question as DEQ now wants to look at temperature WLAs for reservoirs as part of all the TMDLs they issue. Mr. Baumgartner expects this to be one of the more controversial issues related to the TMDL updates.

Mr. DeHarpport asked about the salmonid count in the Tualatin and wondered if they would actually live in such a slow-moving stream. Mr. Baumgartner said numbers vary greatly from year to year, but the Oregon Department of Fish and Wildlife (ODFW) fish biologist Tom Murtaugh estimated that a record 8,000 Coho entered the Tualatin last year however there is no official fish count. There is some data from biological monitoring done by Clean Water Services, but that is part of a broader ecological measure of what lives where in the basin and not specifically directed at salmonids. Mr. DeHarpport said if protection is the goal it would seem logical to track that with annual counts. He and Mr. Gaffi noted that there are wild variations in fish counts on rivers all over the world, and the reasons are not well understood.

Mr. Baumgartner further explained that DEQ identifies the main stem Tualatin as a migratory route, meaning that salmonids would only be expected there when adults are coming up to spawn or when juveniles are going out to the ocean. Steelhead spawn in the upper Tualatin River, in Gales Creek, and perhaps in Dairy Creek. Fanno Creek is also a spawning stream as defined by DEQ. Mr. Baumgartner added that Coho are a native species but are not native to the Tualatin—ODFW planted them in streams on the west side of the Willamette River years ago and had abandoned the idea but then some of those populations began to grow—but the standards are designed to protect them as well as the native steelhead. The spawning season as defined by DEQ begins in September because that is when Coho generally begin crossing Willamette Falls, but steelhead don't usually come up until January and February. It is easy to meet the temperature standard for the native steelhead because the river is naturally cooler then. It is much harder to meet the standard for the Coho in September when the river is naturally lower and warmer.

Mr. Baumgartner summarized the TMDL update process. DEQ has drafted updated TMDLs with input from Clean Water Services, Tualatin Watershed Council, and the federal Environmental Protection Agency (EPA), and has completed an internal review of the drafts. A 60-day public comment period began in September and DEQ will hold a public hearing November 16 at Tualatin Valley Fire and Rescue. DEQ anticipates responding to comments and finalizing the TMDLs by the end of this year or early in 2012 and will submit the draft TMDLs to EPA for approval immediately after that. The drafts are posted on the DEQ website and could be put on the Clean Water Services website if they are not already.

Mr. Weller said he had read in the pre-meeting materials that DO continues to be low in parts of the river even though ammonia levels have long been below the TMDL. Mr. Baumgartner said ammonia has a big impact on DO—it uses large amounts of oxygen as it converts to nitrate in the water. There have been significant improvements in DO in the lower part of the river as almost no ammonia is discharged from Rock Creek and Durham in the summer. However, DO remains low in places, especially in late summer, which is largely due to naturally-occurring sediment oxygen demand (SOD). When flow is low and water moves very slowly, such as above the Oswego diversion dam, there is a lot of time for sediment to pull oxygen out of the water. Historically, there was a lot more algae in the river which made SOD less of a problem, as algae produce oxygen. As Mr. Gaffi pointed out, in some very low-flow streams, a small amount of algae may be the primary source of oxygen. This is great unless the algae grow really well until poor weather causes a sudden die-off and the decomposition process sucks up all the oxygen, resulting in fish kills as happened in the Klamath River basin a few years ago. Mr. Baumgartner said although not required to do so, Clean Water Services has tried releasing water in the late fall to increase flow and move the water through more quickly. While Clean Water Services and others are continually trying to figure out how to manage DO levels and they are certainly better than they used to be, fairly low DO in the lower Tualatin would be expected even under completely natural conditions. Mr. Weller noted some irony in the fact that algae, which was reduced under the phosphorus TMDL, could actually help meet the standard for DO.

Following discussion of the TMDL updates, Mr. Baumgartner spoke about the MS4, or stormwater, portion of the permit renewal. He said DEQ negotiated the stormwater permits for all of Oregon's major urban areas at the same time, so Clean Water Services has collaborated with City of Portland, Clackamas County, City of Salem, and City of Eugene. Stormwater permit issues tend to focus on what must be maintained and implemented for urban stormwater following a construction project, and Clean Water Services has had post-construction requirements for a long time. DEQ is also looking for strategies and plans for retro-fitting those urban areas that were developed before stormwater regulations were established, although there are not any specific requirements yet. DEQ wants to emphasize LIDA (low-impact development alternatives) as a means to get water back into the ground and simulate the natural hydrology, and Clean Water Services will have to decide how to do that. Hydromodification, a term for the changes in runoff and stream flow that happen when rain falls onto paved urban areas and cannot infiltrate naturally into the soil, also must be addressed. Global climate change may change weather patterns, which will affect stormwater patterns, and plans will need to take that into account. DEQ also wants to see explicit, measurable goals for stormwater programs and Clean Water Services is working on that. Mr. Baumgartner expects a lot of comments on the stormwater portion of the permit renewal as it is a controversial and important issue at this time, and there are many different perceptions of how best to approach and regulate it.

Mr. Weller observed that governing agencies don't seem to make the connection between stormwater issues and increased density, as METRO bumps density from 12 units per acre to 20 in the expansion of the UGB (Urban Growth Boundary) when the average apartment complex is 22 and most townhome projects are 9-10. It's hard to find places to get water back into the ground when the area is covered with buildings, driveways, alleys, sidewalks, bike lanes, etc. Mr. Baumgartner said he thinks that is going to be a huge issue for everybody. He added that the low infiltration rates of clay soils in the area make it hard to match the natural hydrograph. He said DEQ has been responsive to these concerns and rather than issue a directive has allowed several years for Clean Water Services

and others to develop strategies. Mr. Weller also said the issue of dealing with reservoirs and who manages them should also be included in discussions about density. Ms. Lowe and Mr. DeHarpport expressed agreement.

Mr. Baumgartner further discussed the mass load increase aspect of the permit renewal. The mass load is simply the total amount of a pollutant, calculated by multiplying the total flow of the discharge by the concentration of the pollutant. Years ago, the Environmental Quality Commission set a policy to improve water quality over time by requiring that municipalities accommodate growth by improving treatment to maintain a constant mass load. Concentrations of two parameters, TSS (total suspended solids—the amount of material floating around in the water) and BOD (biochemical oxygen demand—the amount of sugar in wastewater, which bacteria will eat thus consuming oxygen) are used to evaluate effluent quality for this requirement.

Because the Tualatin TMDLs require removal of ammonia and phosphorus, Clean Water Services plants at Rock Creek and Durham use chemicals, filters, and other advanced technology which also removes almost all of the BOD and TSS, discharging about 4 mg/l during the driest part of the year. Mr. Baumgartner showed four graphs illustrating population growth and projections compared to treatment plant flow, mass loads, and BOD/TSS concentrations. While the population has doubled since 1980, and flows have increased similarly, concentrations have steadily decreased, even during the dry season, and the dry season mass load has held steady. Mr. Baumgartner said while the discharges are usually below 4 mg/l, the river itself is usually at about 10 mg/l, even above Rock Creek.

Mr. Baumgartner explained the permit renewal application seeks an increase in the mass load to reflect the projected growth, rather than maintaining the mass load by further reducing discharged concentrations which are already lower than those of the river itself. To do so would require MBR (membrane bio reactor) technology. This would cost about $44 million more than the existing advanced technology and would have more than double the carbon footprint. While it could reliably reduce discharged concentrations of TSS/BOD, it would not actually reduce in-stream concentrations of TSS or BOD, which are not at harmful levels anyway. Clean Water Services would prefer to move toward more sustainable approaches with ancillary environmental benefits, such as NTS.

Mr. Gaffi said it is easy to think increasing mass load means increasing pollutants, but it is the concentration, not the mass load, of a pollutant that determines whether it is harmful For instance, when Scoggins Dam was built, there was a big increase in mass load. With that much water the total poundage is significant but it is not harmful because it is so dilute. The additional water has also brought great environmental benefits. Simply pursuing maintenance of the mass load can actually result in negative environmental outcomes. Hagg Lake could not be expanded to provide water for stream flow restoration without an increase in the mass load. Mr. Baumgartner added that a mass load increase is an important step toward the opportunity for using NTS.

Ms. Hennings said this concept is going to be confusing to the public and it is important to find a good way to explain it, perhaps helping people to think about pollutants "per unit of water." Mr. Jockers said there has already been a Twitter message distributed asking recipients if they think the Tualatin River needs more pollution and indicating that Clean Water Services is asking to add pollution. Commission members can help determine what messages resonate with the public.

Mr. Weller recalled previous discussions about what summer river flow and water quality would be without discharges from Clean Water Services facilities, and suggested that point should be highlighted in communication to the public.

Ms. Lowe said comparing the $1.5 billion cost of raising Scoggins Dam with the $44 million cost of MBR technology, the less expensive option would seem preferable. Mr. Gaffi pointed out that is certainly true if you just looked at the dollars. However, you would have to wonder why you would spend $44 million to further remove something that is already diluted below existing river concentrations. MBR would only affect the lower river, while the real opportunities for restoration are in the upper river. Also, MBR would not address the need for storage capacity to provide for future irrigation, drinking water, and other uses such as flow augmentation. All sorts of interesting questions arise when you consider whether to take the broader ecological approach. Even if the costs were equal, the dam raise carries the greater environmental benefit, besides meeting storage needs.

Ms. Lowe said climate change may affect the storage capacity associated with the dam raise. Depending on which crystal ball you use, our weather may change such that there may not be enough rain to fill it and then it's a waste of money…or there may be plenty of rainfall to be stored and then it looks like a good investment.

Mr. Weller asked how NTS could help meet the water quality standard for temperature as there is not a lot of shade in wetlands, and all that exposed shallow water would just heat up. Mr. Baumgartner explained that the small plants of a wetland do produce a surprising amount of shade, but more importantly they have a large total surface area through which they transpire, using heat energy from the water which helps cool it. That effect is amplified by the generally cool night temperatures in this area. The water from NTS should approach the natural thermal potential of the river, and may actually be cooler during the hottest times of year. This cooling effect can be predicted using modeling programs and analyzing results from NTS setups in Albany and Salem.

Ms. Taniguchi-Dennis, who previously worked with NTS in both cities, said temperature was reduced by as much as 10°F. She added that the soil beneath the shallow water also functions as a heat exchanger, absorbing accumulated daytime heat during the night. Ms. Hennings recalled from discussion of NTS at a previous meeting that some of the water is absorbed into the soil and cooled as it travels to a stream as groundwater. Mr. Weller said if we can make NTS work it certainly seems like it would be preferable to chemicals, high energy demand, and other less sustainable techniques. Mr. Baumgartner summarized that NTS has a smaller carbon footprint and is more sustainable than the current or next existing level of technology and also provides ancillary environmental benefits such as habitat, etc. He said MBR technology may be appropriate eventually, but Clean Water Services wants to maximize use of sustainable approaches first.

Mr. Gaffi hopes to organize a trip for staff and Commission members to visit the NTS wetlands and "talking water garden" in Albany. Ms. Taniguchi-Dennis said the facility was designed by Hoichi Kurisu, one of the first curators of Portland's Japanese Garden and renowned for his designs of healing gardens around the country. It is called the "talking" garden because of the different sounds from the six waterfalls which provide aeration. The facility was recognized as the American Academy of Environmental Engineers Project of the Year and has been nominated for the International Water Prize. Ms. Taniguchi-Dennis hopes to apply similar design elements to any NTS facilities that Clean Water Services is able to establish.

Mr. Baumgartner outlined the permit renewal schedule, which is similar to the timeline for TMDL updates. He presented information about the mass load request at the EQC meeting on October 21. The EQC members are very interested in this and would like to learn more. The mass load increase request will be submitted to DEQ in December and DEQ hopes to act on it early in 2012. DEQ hopes to draft the permit renewal in mid-2012 and will release it for review and public comment before issuing a final permit. Clean Water Services has raised a number of broader policy issues that are of interest to DEQ and it has taken time to seek guidance from the EQC and work through those.

Mr. Baumgartner said staff will provide updates as actions occur on TMDLs or aspects of the permit renewal and will be happy to provide any additional information requested by Commission members.

Ms. Hennings commented that the benefits to wildlife habitat and connectivity should be emphasized in public information about NTS. Creating areas for habitat and connecting them so animals can move as needed is the best response to support wildlife in climate change.

Mr. Weller asked how best to provide the feedback the Board is looking for. Mr. Jockers said this could be done chronologically, looking at TMDL updates first as the comment period closes soon, then looking at the mass load increase after the December EQC meeting, and then the draft permit. Another way to do it would be to look at each aspect, such as stormwater, etc.

Ms. Lowe said it is important to understand the full force and implications of the basin-wide approach versus the point source approach of the past 30-40 years. It is a real philosophy change and while she can see some reasons for doing so, she and others also fear that the focus on a specific standard will be lost and the goals will never be met. She feels we've done 30-40 years of environmental work that no one else has done and it is quite a shift to pull back from that and risk jeopardizing what has won acclaim and worked so well for so many communities—development, farming, industry, etc.

Mr. Gaffi acknowledged that as a fair concern. He does not foresee "backing off" from the point source approach as it has, indeed, been wonderfully effective in getting us to where we are and in bringing some very troublesome situations under control. Many people in the national environmental community think that we cannot get to where we hope to be with watersheds without adding new approaches. Certain things are politically and legally beyond the reach of the existing statutory framework, but can be achieved through partnerships which are more effective investments and which produce greater environmental results.

Mr. Weller suggested using a graphic comparison of stream planting and treatment plant effects on temperature, showing what part of the river benefits from stream restoration work and what part would benefit if temperature was addressed only at the treatment plants. This could provide a holistic look at temperature in the basin and show that temperature trading, while motivated by the temperature TMDL, is not a "shell game" to avoid meeting regulations but a mechanism to enhance the entire basin.

Ms. Lowe voiced concern that unintended consequences of shifting the temperature focus could have a major effect on a food source for humans. We have seen in our lifetimes that degradation can happen swiftly and once something is gone it's hard to get back. The public mindset right now is not

to trust the government to save us. This change in philosophy away from point sources, which causes the work to happen at all levels throughout society, toward depending on a single government entity to do it for us does not fit the public mindset. Communication will be hard because Clean Water Services is a government agency saying, "Trust me-it will work." It is more and more expensive to provide water to citizens when they want it and trust is important for that moment when you must ask the public for more dollars.

Mr. Gaffi said this is an important point.

Sandy Webb asked if any sort of enforcement mechanism for individual point sources would be lost by taking a broader approach.

Ms. Hennings suggested that public information materials should mention that Clean Water Services is not the only DMA on the Tualatin. There are other agencies who influence whether the TMDLs are met. She said it would also be good to note that the permit renewal is addressing both point sources and nonpoint sources, and that WWTFs are not the only point sources.

Mr. Weller asked again how best to provide feedback. Mr. Baumgartner felt it would be useful to come back for input at milestones as suggested by Mr. Jockers. Commission members liked the ideas of email updates between meetings and knowing how public comments align with tonight's comments and what additional or different thoughts might come up.

5. Announcements

Mr. Jockers announced that Commission member Julie Wilson's term expires next month. She will not be applying for reappointment as she expects to move out of the area within the next couple of years.

Mr. Gaffi mentioned hearing a particularly moving presentation recently at WEFTEC (Water Environment Federation's annual international conference). Doc Hendley, founder of the nonprofit organization Wine to Water, spoke about "the power of one" in addressing polluted water as a leading cause of death around the world. Mr. Jockers will send Commission members a link to the presentation.

Mr. Weller said he appreciated Clean Water Services taking a futuristic look in the permit renewal and TMDL update process and being committed to the long term. He said everyone here tonight understands and can remind others that all water use is a long-term deal—it takes a long time to develop a water source or a basin strategy. Portland and Forest Grove took costly steps a long time ago as very small communities and are now well-positioned with their drinking water supplies.

6. Adjournment

Mr. Weller declared the meeting adjourned at 8:30 PM.

(Meeting notes prepared by Sue Baumgartner)

10/26/11 CWAC Mtg minutes
Attachment 1

~~11/16/2011~~

Tualatin River TMDL Update and Permitting Objectives

By Bob Baumgartner
Regulatory Affairs Division Manager

October 26, 2011

Clean Water Services

Outline

- Status of Watershed-based Permit
- Permit Renewal Goals
- TMDL Updates
- Permit Process and
- Schedule

Clean Water Services

Acronyms

• TMDL	Total Maximum Daily Load
• WLA	Waste Load Allocation
• LA	Load Allocation
• MOS	Margin of Safety
• DMA	Designated Management Agency
• CBOD	Carbonaceous Biochemical Oxygen Demand
• TSS	Total Suspended Solids
• NPDES	National Pollutant Discharge Elimination System
• AWTF	Advanced Wastewater Treatment Facility
• WTF	Wastewater Treatment Facility
• CWAC	Clean Water Advisory Commission

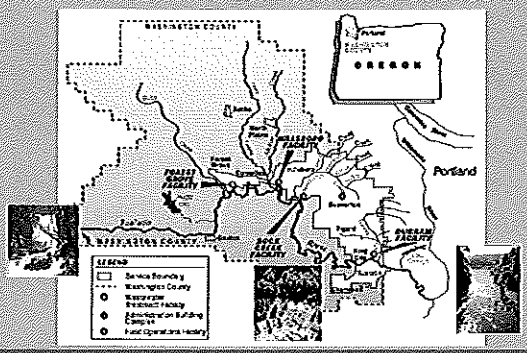
Clean Water Services

Acronyms

• MBR	Membrane Bio Reactors (Membrane filters)
• PO_4	Phosphate (Phosphorus)
• NH_3	Ammonia
• DO	Dissolved Oxygen
• DEQ	Department of Environmental Quality
• EQC	Environmental Quality Commission
• MS4	Municipal Separate Storm water Sewer System
• Bubble	Loads combined and shared between two or more WTF
• NTS	Natural Treatment Systems (wetland polishing)
• pH	Negative logarithm of hydrogen ion activity (acidity)
• LIDA	Low Impact Development Alternatives

Clean Water Services

Tualatin River Watershed

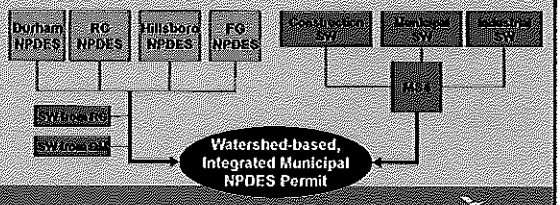


Clean Water Services

Watershed-based NPDES Permit

February 2004: DEQ Issues watershed-based permit to Clean Water Services

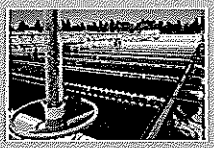
- Integrated permits for 4 WWTFs, Municipal Storm Water, and 2 WWTF industrial storm water
- Included water quality trading provisions for Temperature & dissolved oxygen



Clean Water Services

Watershed-based Permit Status

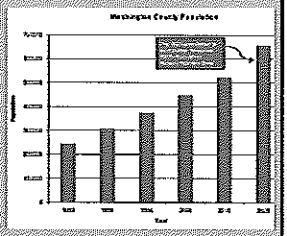
- Watershed-based NPDES Permit
  - Issued in Feb 2004
- Permit renewal application submitted in August 2008
  - Expiration date – Jan 2009
  - Administratively Extended
  - Operate under 2004 until DEQ issues a new Permit



Clean Water Services

Permit Renewal Objectives

- Accommodate Growth
  - Year-around discharges from Hillsboro and Forest Grove WWTFs
  - Obtain mass load increase at the Rock Creek and Durham AWTFs
- Use of sustainable treatment technologies
- Fully use investment in current advanced treatment technology



Clean Water Services

Permit Renewal Objectives
(continued)

- Continued integration of watershed based permit
- Expand Trading / Offsets
- Continue to maintain and improve ecological health of the Tualatin
- Meet Water Quality Standards
- Need to update TMDLs to meet some of these objectives

Clean Water Services

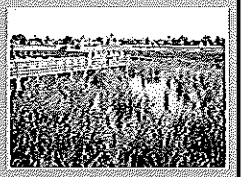
What is a TMDL?

- TMDL: Maximum pollutant that a water body can receive and still meet WQ standards
- TMDL = Sum (WLA) + Sum (LA) + MOS
- Tualatin TMDLs 1988, 2001
  - Ammonia
  - Phosphorus
  - Bacteria
  - Temperature
- Established Trading Programs for Temp. & Ammonia

Clean Water Services

TMDL Update

- Update
  - Temperature
- Amended
  - Ammonia/DO
  - Total phosphorus/ Algae & pH
- WLA upper river
- Sustainable treatment
- Protect Water Quality
- TMDL update being driven by planning rather than TMDL driving planning



Clean Water Services

TMDL Update (continued)

- Temperature TMDL
  - New temperature standard (2004)
  - Revised allocations to Rock Creek and Durham
  - New allocations for Forest Grove and Hillsboro
  - Expand trading program
  - Scoggins & Barney Reservoir
    - WLA and DMAs for the reservoirs
    - TMDL extended to spawning criteria
    - Management plan would be required

Clean Water Services

Amendments: Ammonia / DO and total phosphorus TMDLs

- New WLA for Forest Grove and Hillsboro
- Opportunity for sustainable treatment (i.e. NTS) at Forest Grove and Hillsboro
- Bubbled NH_3 and TP between Forest Grove, Hillsboro and Rock Creek
- Ammonia RCWTP Ammonia load (+decay/aeration) distributed upstream
- Maintain same allocations going into lower River
- No degradation lower river
- Phosphorus removal period to exclude October

Clean Water Services

TMDL Potential Issues

- Reservoir temperature allocations and management plans
- More DMAs, (TVID, BOR, WAPATO, DOA, DOF, DOGAMI, DSL)

Clean Water Services

Preliminary Comments

- Application of phosphorus allocations
- Upper river listings/reservoir allocations
- Designated management agencies
- Water quality management plans
- Editorial/clarification comments

Clean Water Services

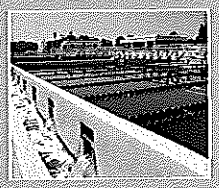
TMDL Update Status

- Draft TMDLs includes input from District, Watershed Council, EPA, and internal DEQ review
- Draft TMDL for public comment (Sept 2011)
- 60+ day comment period
- DEQ public hearing (November 16 @ TVF&R)
- DEQ anticipates responding to comments and finalizing TMDL (end of 2011/early 2012)
- Submit to EPA for approval (early 2012)

Clean Water Services

Permitting

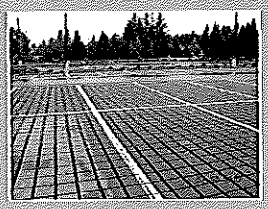
- Wastewater Facilities
  - Provide Summer Upper River Discharges
  - Sustainable treatment (Wetlands)
  - Maintain investment in current advanced treatment technology
  - Accommodate Growth
  - Mass Load Increase Request
  - Enhance Trading



Clean Water Services

Permitting
(continued)

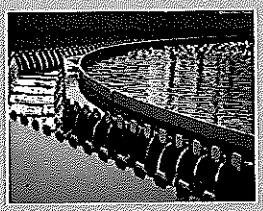
- Stormwater
  - Post construction requirements
  - Retrofit strategy and requirements
  - Low Impact Development Alternatives (LIDA)
  - Hydromodification
  - Measurable Goals



Clean Water Services

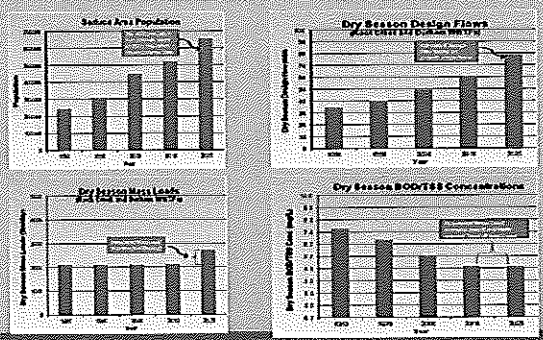
Mass Load Issue

- Meet all water quality standards
- Meet TMDL allocations
- Accommodate growth with Improved treatment technology
- Historically TSS and CBOD used to indicate level of technology



Clean Water Services

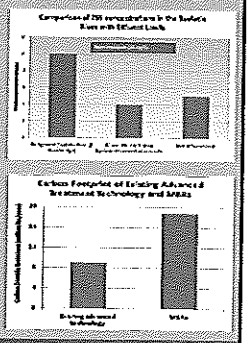
Mass Load Increase for TSS and CBOD at Rock Creek and Durham AWTFs



Clean Water Services

Mass Load Increase (continued)

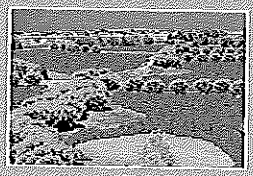
- Existing advanced treatment technology
  - Performs as well as MBRs
  - Produces effluent levels well below Tualatin River background levels
  - Significantly lower costs compared to MBRs
- MBR technology
  - Does not result in further improvements to stream water quality (TSS or CBOD)
  - Resource intensive (higher energy use/carbon footprint)
  - Expensive ~$44 million more than existing advanced treatment
  - Greater Reliability at low levels TSS 3 mg/l



Clean Water Services

Natural Treatment Systems

- Upgrade Forest Grove and Hillsboro
  - Nitrification
  - Biological phosphorus removal
- WWTF effluent directed to NTS for additional treatment
  - 82 acre natural treatment Forest Grove
  - 164 acre natural treatment Hillsboro
- Discharge to Tualatin River through existing outfall pipe



Clean Water Services

Permitting Schedule

- Mass Load Request
  - Information Item to EQC — Oct 21st 2011
  - Request — December 2011
  - Action — Early 2012
- Permit Schedule
  - Dependent on DEQ resources
  - Scheduled — Sometime 2012
    - Draft for review
    - Public Comment
    - Final Permit

Clean Water Services

Next Steps

- Update Information as TMDL or permit actions occur
- Review comments and issues from public process
- Provide additional detail presentation on any aspect of TMDL or permit as CWAC requests

Clean Water Services