Clean Water Services

Clean Water Advisory Commission

Meeting Notes

November 8, 2017

Attendance

Commission members in attendance included Chair Tony Weller (Builder/Developer), Vice Chair Mike McKillip (District 3-Rogers), Lori Hennings (Environmental), John Jackson (Agriculture), Art Larrance (At-Large-Duyck), Judy Olsen (Agriculture), Erin Poor (District 1-Schouten), Richard Vial (District 4-Terry), and Matt Wellner (Builder/Developer), and non-voting members David Waffle (Cities) and Bill Gaffi (Clean Water Services District General Manager).

Commission members Molly Brown (District 2-Malinowski), Stu Peterson (Builder/Developer), and Kevin Wolfe (Business) did not attend the meeting.

Attending from Clean Water Services were Nora Curtis (Conveyance Department Director), Shannon Huggins (Public Involvement Coordinator), Mark Jockers (Government and Public Affairs Manager), Anne MacDonald (Senior Water Resources Program Manager), Damon Reische (Development Services Division Manager), and Ken Williamson (Regulatory Affairs Director).

1. Call to Order

Mr. Weller called the meeting to order at 6:37 PM. The meeting was held in the Tualatin Room at the Clean Water Services Administrative Building Complex in Hillsboro, OR. Prior to the meeting, Clean Water Services staff hosted an optional tour of the new Materials Processing Yard ***(information attached)***.

2. Previous Meeting Notes

There were no comments regarding the Meeting Notes from July 12, 2017.

3. Oregon Solutions Team Cedar Mill Creek Flood Remediation Collaborative

Ms. MacDonald ***(presentation attached)*** described the Cedar Mill Creek Flood Remediation Collaborative, which was designated as an Oregon Solutions project by Governor Kate Brown in June. The Oregon Solutions program provides a framework to convene broad, diverse stakeholder groups around complex issues which have no easy solutions. The program is managed through Portland State University. Examples of other Oregon Solutions projects include disposal/placement of Columbia River dredge material, redevelopment of the Troutdale Reynolds smelter site, and issues related to the Jordan Cove LNG terminal and pipeline.

The Cedar Mill Creek watershed is in the northeast corner of the Clean Water Services District. The entire watershed is within the UGB (Urban Growth Boundary) and is

heavily developed, with the flatter lowland areas around the Nike campus near Beaverton flooding year after year. The Oregon Solutions evaluation team determined that the watershed was significantly altered and impaired after decades of various development activities and changes in land use, and that collaborative efforts by multiple stakeholders would be appropriate and even necessary as the flooding affects commercial, residential, and public facilities.

The three-person convenors and co-chairs of the Project Team for the Flood Remediation Collaborative includes Clean Water Services Board of Directors Chair Andy Duyck. The Project Team of stakeholders oversees a Steering Committee and a Technical Advisory Committee, both with sub-committees. Ms. MacDonald and several others from Clean Water Services are serving on committees and sub-committees. Besides the original commercial and residential interest groups, there are now more than a dozen stakeholders involved—public, private, and nonprofit; local, regional, and national. In addition, there is a resource team of numerous others who are not members of a committee or subcommittee but who have expressed their willingness to help in various capacities as needed.

Ms. MacDonald noted that like most participants Clean Water Services is not specifically in the business of flood control, but its responsibility for stormwater and its NPDES (National Pollution Discharge Elimination System) permit requirements are a natural tie-in. Flood mitigation could be incorporated into sanitary sewer or stormwater system projects. There may also be opportunities for Clean Water Services to address hydromodification (changes in natural water movement due to development), as now required by the NPDES permit, by doing some capital projects in partnership with Oregon Department of Transportation or others—meeting requirements for several agencies with a single coordinated project rather than each group working in isolation and duplicating some functions and expenses. In addition, Clean Water Services and other agencies may be able to streamline such projects through programmatic permitting (rather than multiple separate permits).

Ms. MacDonald outlined the ambitious timeline for the collaborative. Stakeholders on the Steering Committee are currently working to identify shared vision and values. The Technical Advisory Committee and subcommittees have also begun meeting, looking first at existing or planned projects for possible modifications that could help address flooding and then looking at projects that may have been previously recognized as good ideas but which lacked funding or opportunity to implement, as well as any new ideas that may arise. Ms. MacDonald expects that a mix of social and engineering approaches will emerge from the committee work. These ideas and any preliminary plans will be presented to the community for feedback next spring. Once the preferred directions/tasks are finalized, the committee(s) will look for funding and other appropriate partners. A "declaration of cooperation" among stakeholders and partners is expected by next summer.

Ms. Huggins outlined community outreach efforts already underway. A website (www.cedarmillcreek.org) has been set up and an online open house is in the works,

door hangers and surveys will be placed to gather and share information throughout area neighborhoods, and information will also be shared through CPO (Community Participation Organization) #1 and CPO #7.

Questions and comments regarding the Cedar Mill Creek Flood Remediation agenda item are included in Appendix A.

4. Clean Water Services Research Portlfolio

Dr. Williamson ***(presentation attached)*** noted that Clean Water Services staff members have been doing applied research for a long time, but this is the first year there has been a formal call for proposals and selection process. Staff submitted ideas for projects that could optimize plant operations, develop new innovative technologies, verify operational data to guide the purchase or design of new technologies, and reduce the risk of regulatory noncompliance. Dr. Williamson described the nine projects chosen:

1) **Determine design parameters for ammonia-based dissolved oxygen (DO) control.** If chlorine disinfection can be accomplished at lower levels of DO, there may be fewer undesirable by-products and less aeration may be needed. This could reduce treatment plant energy requirements by 2%-10%.

2) **Optimize fermentation operational and design criteria development.** Clean Water Services already uses a patented fermentation (UFAT) process to produce volatile fatty acids (VFAs). The VFAs feed specialized bacteria which remove phosphorous from sludge. Any phosphorous left must be removed chemically using lime and/or alum. The next NPDES permit is expected to restrict use of alum, so it is essential to be able to produce enough VFAs to remove all the phosphorous biologically. This project will investigate heating, sludge mixing practices, and other ideas for enhancing VFA production.

3) **Evaluate feasibility of selective wasting for stable settleability.** Sludge with higher settleability would increase sludge capture, reducing the TSS (total suspended solids) in treatment plant effluent and improving biological phosphorus removal. Using a "cyclone" to separate lighter material from heavier material and continuously recycling the heavier material through the equipment could improve the texture of the solids for better settleability and leave fewer TSS in the lighter material/effluent that goes into the NTS (Natural Treatment System) at Forest Grove. This project will pilot test the equipment and process being used at only one other treatment facility in the US.

4) **Develop data management platform for treatment facility operation.** Treatment plant data is currently stored in three different systems, depending on the source. This project would create a system that would allow a plant operator to look at a single "dashboard" on a screen to see how the plant and all its processes are running in real time. The system could eventually be used to electronically submit required reports.

5) **Evaluate bioretention soil mixes amended with water treatment residuals.** Toxics in stormwater runoff from heavy-traffic streets are highly toxic to Coho fry in streams that receive the runoff, and regulations to address this are expected soon. Toxics can be removed from stormwater as it passes through sorptive media such as soils. One such medium could be engineered soils created by using leftover materials or byproducts from water treatment plant processes or other industrial sources (waste alum, organic matter, biochar, etc.). Different mixtures of materials will be tested in planters at the District's Materials Handling Facility to determine what if any combination will effectively remove the toxics and other pollutants of interest (like phosphorus) and protect Coho fry.

6) **Optimize Fernhill NTS operations for DO and temperature control.** The purpose of the NTS (natural treatment systems) wetland is to lower water temperature to meet regulatory requirements. However, the requirements for DO (dissolved oxygen) must also be met. When temperature is higher, DO is lower and vice versa. This project will look at continuous measurement of daytime and nighttime temperature and DO to determine timing and rate of effluent discharges and when/how much colder lake water should be added to the discharges, ultimately developing operational protocols based on weather, monitoring, and other information.

7) **Develop design criteria and flow parameters for wood chip denitrification.** Pilot tests with a wood chip reactor show that bacteria feeding on decomposing wood chips can convert nitrate to nitrogen gas, an inexpensive way to remove nitrogen from wastewater. Removing nitrate prior to sending water to the NTS will prevent excess algal growth in that system. Interestingly, copper is also removed during this denitrification process. This simple technology could possibly meet regulatory requirements for nitrogen, copper, and TSS (total suspended solids). A 3-acre wood chip reactor could treat an estimated 10-15 MGD (million gallons per day) of wastewater. Various organisms that convert ammonia to nitrite to nitrate to nitrogen gas will grow in the wood chip media, but pilot tests are already being done to develop a way to quickly produce large quantities of Anammox, a form of bacteria which converts ammonia and nitrite directly to nitrogen gas without going through the nitrate stage. If this is successful, denitrification could be accomplished faster with a smaller reactor volumn.

8) **Determine design parameters for floating islands and use of sonic probes for algal control.** Plastic "islands" can float in wastewater lagoons, with plant roots removing nutrients (such as ammonia, nitrate, and phosphorous, which contributes to algae growth) from the water. Fish are grown in the ponds to keep the apparatus clean by eating any growth. Floating islands cost about $2 million per acre; Clean Water Services hopes to develop an alternative that would cost 1%-10 % of that amount. Another interesting technology is a sonic algae dispersal probe—sort of a giant cousin to a dentist's sonic tooth cleaner— which runs on attached solar panels and can be tuned to certain wavelengths to kill

specific types of algae. One small probe can clean an area of 1,000-2,000 square feet. Clean Water Services would like to study and further refine this approach.

9) **Develop operational protocol for WWTP sensor networks.** Data from the many different types of sensors and monitoring equipment in the wastewater treatment plants currently goes to different platforms. Clean Water Services spends about $2 million per year on monitoring activities. Along with developing a single platform that would show minute-by minute data in a useful way (a "dashboard" as mentioned earlier),staff will look at maintenance practices for sensors, what sorts of monitoring can be done by using sensors instead of more costly and time-consuming lab analysis, and how to validate and store that data. Dr. Ting Lu serves on several national committees studying this issue and results of CWS research in this area could be rapidly deployed nationally.

Dr. Williamson said he will be back in a year to share results with the Commission.

Questions and comments regarding the Clean Water Services Research Portfolio agenda item are included in Appendix B.

5. Announcements

Mr. Jockers said there is a scheduling conflict with the next meeting, which is on the calendar for December 13. He will keep Commission members informed about meeting plans.

6. Adjournment

Mr. Weller adjourned the meeting at 8:01 PM.

(Meeting notes prepared by Sue Baumgartner)

Appendix A

Clean Water Services Advisory Commission Meeting Notes
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Questions and comments regarding Cedar Mill Creek Flood Remediation:

1. Would this be an opportunity to develop regional stormwater facilities where infill development might occur?
   1.1. It certainly could be. It is advantageous for Clean Water Services to invest in the larger purpose and success of this Oregon Solutions work, but District initiatives may also be advanced along the way.

2. How does programmatic permitting work?
   2.1. Instead of doing permits project by project, programmatic permitting streamlines the process by allowing certain activities within certain parameters for any project that meets certain criteria.
   2.2. For instance, a few years ago ODOT (Oregon Department of Transportation) obtained a programmatic biological opinion from NMFS (National Marine Fisheries Service) which allowed certain types of projects to proceed without seeking new permits/approval for each one, as long as the work was within the constraints outlined in the opinion.
   2.3. SLOPES (Standard Operating Procedures for Endangered Species) is another example of a set of programmatic permitting documents which allows for certain activities that Clean Water Services could possibly use in partnering with other agencies or groups on projects.

3. Is there any developable land left in the Cedar Mill Creek watershed?
   3.1. There is still a very small amount of undeveloped land. However, much of the existing development is getting old enough that it is being or will be redeveloped and that triggers the stormwater aspects of the NPDES permit.

4. Even though it is not well connected, that throughway is still one of the only remaining wildlife corridor links to Forest Park. Please include some thinking about wildlife as you go along with the flood remediation work.
   4.1. Yes, a THRPD (Tualatin Hills Parks and Recreation District) representative is involved in the processes.

Appendix B

Clean Water Services Advisory Commission Meeting Notes
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Questions and Comments regarding Clean Water Services Research Portfolio:

1. What would you do with the decomposed wood chips?
   1.1. They would likely be used as a biosolid for agricultural applications.
   1.2. Other materials have been evaluated but wood chips are easy to come by and seem to decompose fastest, and waste from the reaction process could likely be used for agricultural applications.

2. Is the copper coming from things like auto brake pads, fungicides, or something else?
   2.1. Copper comes from various sources, including copper pipes and solder in homes and other buildings. There is an industrial source of copper in Forest Grove, but the copper levels at the Forest Grove plant really aren't that much higher than at other Clean Water Services treatment facilities. The issue is that the regulatory limit for copper is very low because there is so little natural copper in the Tualatin River.

3. Does the type of wood chip make a difference?
   3.1. We have only used poplar, as it degrades easily and there is a good supply.

4. Can native fish species be used in the pond with the floating island?
   4.1. Yes, any species of fish will do, so there is little worry about non-native fish "escaping" during flooding or being moved elsewhere and interfering with native stock.

5. Who are the people who will be doing this research?
   5.1. The proposal sponsors are all employees, but Clean Water Services will also involve others from institutions such as University of Portland, Washington State University, and Oregon State University and will contract with Ostara, a private company. Clean Water Services will also hire two full-time Ph.D.-level research staff.

6. There a lots of us with questions about toxics, engineered soils, and Coho, such as functionality of different soil mixtures, how it affects the gravel underneath, can it be stratified differently, etc.
   6.1. We will be looking at strata. Compost-based amendments are good at scavenging metals and organic compounds but as they degrade they export phosphorous. The water treatment residuals are intended to not only assist with binding metals but also making sure the phosphorous isn't exported. When Coho fry and adults are exposed to dirty stormwater, they all die. When they go through these compost mixes, they all live. We want to make sure we aren't altering that success by adding water treatment residuals.