

**CITY OF VADER  
Wastewater Facility Plan Update  
Project Meeting #2 MINUTES**

**DRAFT**

1. Attendees
  - a. City of Vader – Jill Nielson, Ken Smith, Kevin Flynn, Andy Wilson
  - b. Ecology – Al Bolinger
  - c. Department of Commerce – Cathi Read
  - d. BHC – Chris Kelsey, Tom Giese
2. Review of Design Criteria – Summary of the flow and load projections established with Meeting #1 were reviewed. The conservative nature of population projections was again discussed, with the need to effectively accommodate lesser flows at the WWTP initially. Projected permit limits were also reviewed, emphasizing the impact of different parameters on capital and O&M costs for WWTP upgrades. Specifically, the difference of a TSS monthly average concentration limit of 30 mg/l (customary technology limit for secondary treatment) and 75 mg/l (current City limit based on its lagoon system) is likely the need to include an expensive filtration process. Similarly, ammonia, copper, and temperature limits on Olequa Creek would likely necessitate capital and O&M costs associated with installing chemical addition systems, chillers, and filtration.
3. Alternatives Review and Discussion – For each of the 6 different treatment upgrade and outfall discharge alternatives for which life cycle cost analysis spreadsheets were completed, a review of each was presented. The presentation of each alternative included bulleted highlights and a listing of major facilities, a process flow diagram, and a conceptual site plan.
  - a. Lagoon Upgrade to the Cowlitz River – discussion points during presentation of materials included:
    - i. Potential to avoid relining of Lagoon #1 by reusing/repairing existing liner. This would require a leak detection survey to evaluate its condition.
    - ii. Use of Lagoon #3 for treated effluent storage under a power loss scenario to save cost in meeting reliability requirements. There was a question about needing to line Lagoon #3. The alternative did not include lining Lagoon #3 and it would not be required if storing fully treated and disinfected effluent.
    - iii. Evaluation of the turbidity impacts on the Cowlitz that might arise from a TSS discharge limit in excess of the normal standard of 30 mg/L. The current limit is 75 mg/L. Al indicated that a TSS limit in excess of 30 mg/L might be acceptable if the more detailed receiving water analysis for the Cowlitz River indicates water quality standards for turbidity are still met. Bill Fox will examine this as part of his further analysis.
    - iv. Potential to retain the outfall to Olequa Creek during winter months to save power costs associated with pumping.

- v. Potential consideration of the Blue Frog proprietary layout during design (if a lagoon upgrade is selected) as a new and developmental technology.
- b. Submerged Fixed Film to Olequa Creek – discussion points during presentation of materials included:
  - i. Cost of equipment package higher than expected, which made this alternative less favorable than expected.
  - ii. Improvements essentially same as the lagoon upgrade alternative with addition of the SFF media units.
  - iii. SFF media modules are very low maintenance, no mechanical components excepted electrically actuated valves and blowers located outside of the lagoons.
- c. Sequencing Batch Reactor (SBR) to Olequa Creek – discussion points during presentation of materials included:
  - i. This alternative was modified from what was originally discussed in Meeting #1 based on further research and feedback from vendors.
  - ii. This alternative was more simplified compared to the SBR alternative in the 2009 plan.
- d. In-Ground Activated Sludge – discussion points during presentation of materials included:
  - i. Question about odors related to this and other alternatives. It was explained that because all of the alternatives involve long sludge ages and relatively light loading compared to the volume and quantity of biomass, there is rarely any issue with odor except perhaps if an upset condition occurs due to an unusual or toxic discharge into the sewer collection system.
- e. Packaged Activated Sludge – discussion points during presentation of materials included:
  - i. It was discussed for this and other alternatives that there are limited opportunities for phasing. For example, this alternative includes two process trains, each with its own clarifier. Although both may not be needed to meet the initial flow and load projections, a minimum of two are required to meet Ecology’s redundancy requirements.
- f. Packaged Membranes – discussion points during presentation of materials included:
  - i. It was explained that this alternative includes membranes for treatment of normal flows, plus a peak flow treatment system to treat excess high flows. This is more economical than treating all flows through the membrane system. Even so, this was still by far the most expensive option, though did allow for more significant phasing.
- g. Supplemental Systems:
  - i. It was explained that all Olequa Creek alternatives are assumed to require a supplemental alkalinity system to buffer pH for nitrification (i.e., ammonia removal).
  - ii. It was explained that mechanical cooling via a chiller and heat exchanger would be required to meet temperature requirements for Olequa Creek and would be expected to run about 5 months each year.

- iii. It was explained that sodium trithiocarbonate was used as the basis for chemical dosing for copper removal and that it was expected that to meet the preliminary copper limits previously identified in Meeting #1 that filtration would be needed in addition to chemical addition.
  - iv. Upflow sand filters were used as the basis for filtration.
4. Comparison of Alternatives – Alternatives were compared with and without filtration.
- a. The lagoon upgrade with a new outfall to the Cowlitz River but without filtration was the least expensive alternative on the basis of a 20-year net present worth. This alternative is viable if a TSS limit at or near the current limit of 75 mg/L proves to be sufficient to meet receiving water quality requirements for turbidity.
  - b. The next least expensive option was in-ground activated sludge without filtration. However, given the preliminary analysis of copper limits, this alternative cannot be reasonably selected. Filtration would be required to meet the preliminary copper limits. Although these limits could be raised with further analysis, it is not possible to determine at this point if they could be raised enough to eliminate the need for filtration.
  - c. The next least expensive option is either a lagoon upgrade with a new outfall to the Cowlitz River and filtration, or in-ground activated sludge with a new outfall to the Cowlitz River but without filtration. The cost of these two alternatives are within 6% of each other, and so considered essentially equivalent.
  - d. Councilman Flynn mentioned that the cost estimates indicated bonds and insurance were accounted for in two different markups. The accounting is correct, but the descriptions need to be fixed to eliminate the duplicate description for bonds and insurance.
5. Recommendations – BHC made the following recommendations:
- a. Construct a new outfall for discharge to the Cowlitz River. This is both less expensive compared to alternatives for discharge to Olequa Creek and also provides greater flexibility and less vulnerability concerning potential future discharge limits.
  - b. Pursue a lagoon upgrade without filtration if the more detailed analysis of the Cowlitz River indicates a higher TSS discharge limit can be supported.
  - c. Pursue either a lagoon upgrade with filtration or in-ground activated sludge if a higher TSS discharge limit cannot be supported. If filtration can be phased, then a lagoon upgrade would be the more favorable alternative. Otherwise, the decision will be made based on non-cost factors such as longevity, water quality impacts, etc.
6. Discussion of Recommendations
- a. The City expressed some concern about a new outfall. They said that the side of the hill facing the Cowlitz River steadily moves a few inches each year. There was concern how this would impact a new outfall.

- b. The City expressed their great concern over how the cost of this project and subsequent rate increases to pay for the project could impact the City's population. People may move out of the community if rates increase substantially. This reinforced the need to minimize the project cost and look for opportunities to phase improvements where possible.
- c. There was discussion about potential funding. Cathi suggested going to Ecology first as the primary source of funding and also pursuing CDBG and USDA funding to supplement funding from Ecology.
- d. Al brought up the possibility of sharing the expense with the County if the plant was located closer to I-5 and could serve some areas of the County. After discussion, this idea was abandoned from further consideration as it would increase the project cost and the City did not believe there was sufficient interest from the County.

#### 7. Action Items

- a. BHC – Will follow up with Cosmopolitan to expedite assessment of TSS limits for the recommended outfall discharge to the Cowlitz River and potential for phasing filtration if required, refine recommendations based on this further evaluation, and organize a conference call to discuss the refined recommendations.
- b. City – Convene internal discussions on the recommended alternatives to develop consensus and provide feedback to BHC.
- c. BHC – Will look into mitigation measures for a new outfall given the City's report of the ongoing hillside movement.
- d. BHC – Continue with development of the full improvements surrounding the selected alternative.