February 13, 2018
Leana Johnson, City Administrator
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City of Stevenson
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Leana and Eric:

I am writing to summarize the conclusions and recommendations of my review of the City’s recently completed General Sewer Plan/Wastewater Facility Plan (referred to as the Plan) per our agreement dated January 25th. That review effort included the review of the information available on the City’s website, including Council meeting summaries and memoranda – hereinafter referred to as the Record. Additional information was provided by City staff during three meetings at City Hall and a meeting with Port of Skamania County officials at their office.

Our comments follow:

1. The treatment plant improvements recommended by the Plan appear to be the best possible long-term option. We reviewed and agree with the projected loadings, as well as the proposed unit processes and their sizing. We looked hard for more affordable long-term options and found none, we did identify a potential alternative to the Phase 1 project that was mentioned in the Plan. This is discussed in Item #5 below.

2. It is our understanding that the City intends to move the project forward with design of the proposed long-term improvements while continuing to aggressively pursue grant funding. We agree with this approach; however we believe that in doing so the initial design effort should first revisit the project phasing as discussed below.

3. The Plan presents a Phase 1 project that offers the City a lower-cost fallback option should significant grant funding not become available. However, the Plan was not explicit as to whether or not that project will provide additional capacity. This presents the risk that the Phase 1 project could get constructed and the City not obtain the additional treatment capacity that is sorely needed. We think it advisable for the City to investigate alternative lower-cost fallback options. If one is found to be feasible, we think it advisable to integrate its implementation into the phasing of the long-term improvement project. Please see Item #5 below.

4. When the planning process started, the treatment plant was overloaded with BOD and performing poorly. It appears that concern about the consequences of additional NPDES permit violations drove the decision to require high-strength BOD discharges to provide pretreatment. Now that operational changes have improved the performance of the treatment plant, we believe there is an opportunity to revisit that decision. A very limited
review of options suggests to us that there may be an opportunity to have pretreatment facilities constructed at the treatment plant site instead of at the individual sites. Doing so would avoid having the new industries deal with pre-treatment and thus free them up to focus on growing their businesses. It would also avoid detracting from waterfront property; property that is going to increase substantially over time in value to the community. Please see item #5 below.

5. In light of the fact that the treatment plant is out of compliance in regards to influent peak flows and BOD loadings, near-term “maintenance/performance” improvements will likely be required by Ecology as part of a plan to maintain capacity. As a first step in the design process, we recommend developing a plan for implementing these improvements as a part of the project phasing. The maintenance/performance improvements should consider opportunities to either avoid the need for high-strength BOD pretreatment entirely, or have those pretreatment facilities constructed at the City’s treatment plant site. We also recommend addressing opportunities and costs for phased improvements to the collection system, including I/I efforts. In short – we think it advisable for the City to have a comprehensive plan for the phased implementation of the long-term improvements proposed in the Plan. This would provide the flexibility to address grant and rate impact uncertainties. We believe that having stakeholders from the industries and Port of Skamania County closely involved in that plan would also be an opportunity to help strengthen community support for the project.

Phasing: Regulatory & Documentation Issues

The Facility Plan presents a Phase 1 project costing about $8 million. However, the capacity associated with the Phase 1 improvements is contingent on re-rating the existing two clarifiers to higher hydraulic and solids loading rates than the original design criteria. It is important to note that the Facility Plan provides the possibility – rather than the guarantee – that a Phase 1 capacity increase can be obtained. This is apparent in Appendix K, which establishes the interim capacity and includes the following note:

Ecology will consider evaluating existing clarifier overflow rate (and potentially re-rating from 580 gal/day/sq foot to the design value of 800 gal/day/sq foot) after new biological reactors are operational and sufficient performance data has been collected and submitted to demonstrate acceptable, consistent sludge settleability.

Based on the Facility Plan alone, Ecology is not in a position to issue an NPDES permit with increased capacity after the Phase 1 improvements are constructed. The Facility Plan outlines two steps which must be completed after construction to get a Phase 1 capacity increase: 1) data must be collected showing that the clarifiers can perform adequately at higher loading rates, and 2) Ecology must accept this data and re-rate the clarifiers. Regardless of whether the clarifiers can perform adequately, there is uncertainty whether Ecology will accept this and re-rate the clarifiers. Ecology’s goal is to get the full project constructed. We have seen instances with other
cities where Ecology pushed for improvements, even when data suggested that they were not necessary.

It is my opinion that presenting a phased approach with this uncertainty regarding the interim capacity undermines one of the essential goals of facility planning – to provide assurance to the community that if they move forward with the expenditure of money, they will get something of value in return – in this case, an NPDES permit for additional capacity. As it stands, there is no assurance that the City will be able to obtain additional capacity for the $8M Phase 1 investment.

To fully understand this issue, it is important to understand the function of a Facility Plan within the NPDES regulatory structure. A Facility Plan is the regulatory basis for establishing the influent and effluent limits when an NPDES permit is issued after the construction of a treatment plant. In essence, a Facility Plan acts as a contract between the City and the state regulatory agency (Ecology): if the City constructs the improvements in the Facility Plan, Ecology will recognize the capacity established in the Plan. Except in rare circumstances, the influent permit limits in the NPDES permit are those established in the approved facility plan. Typically, the treatment capacity is established by design criteria in the Facility Plan. By stating that the design criteria for the Phase 1 improvements must be confirmed by performance data, the Facility Plan does not provide certainty that the Phase 1 improvements will increase capacity in the same way that it provides certainty that the full project improvements will increase capacity.

Again, the primary issue with the phasing presented in the Facility Plan is that it does not explicitly establish the capacity of the plant after the Phase 1 improvements are constructed. If Ecology does accept performance data and re-rate the clarifiers, there is a possibility that Ecology would require the City to construct Phase 2. The financial plan should therefore take this risk into account. It is important to note that if the City intends to construct both phases simultaneously, or to construct Phase 2 immediately after Phase 1, then assurance of obtaining additional capacity is not necessary. However, if the City is relying upon a Phase 1 capacity increase, there is a risk that it cannot be obtained – requiring a significant and unanticipated expenditure to construct Phase 2. We recommend that the City discuss this issue with Ecology to determine the criteria by which Ecology will evaluate the clarifiers when considering whether they can be re-rated. We also recommend considering alternative phasing options can provide more certainty that an interim capacity increase can be obtained, if an interim capacity increase is desired.

**Maintenance Upgrade (Interim Improvement) Options**

There are several interim improvements that can be constructed to improve the performance of the plant. The two most promising low cost means of improving plant performance are installing density current baffles (referred to as Stamford baffles) in the clarifiers, and installing additional aeration in the oxidation ditch.

Stamford baffles have been shown to improve TSS removal by up to 30%. This is a standard item on most new clarifiers, and a relatively simple retrofit. This retrofit is recommended regardless of other improvement options, as the cost is low compared to the potential benefits.
Additional aeration in the oxidation ditch can improve BOD removal, and could possibly help the plant meet Ecology’s redundancy requirements. As discussed above, it is likely that the oxidation ditch is only able to treat the high BOD loads using both aerators, which means that the plant is susceptible to BOD violations in the event of aerator equipment failure. Depending upon Ecology requirements, this may be needed as part of the plan to maintain adequate capacity. In addition, if the City desires to pursue an interim capacity increase via project phasing, additional aeration would be a critical item in order to rate the oxidation ditch capacity.

Another option is the construction of a biological selector basin as recommended in the Facility Plan to improve sludge settleability. If the City desires to phase the project, constructing the selector basin as part of interim improvements will likely improve treatment plant performance.

Finally, there is the option of installing additional aeration basin capacity which could possibly be constructed in conjunction with industrial pretreatment facilities at the treatment plant. As mentioned previously, we recommend that this option along with the other items mentioned above, be evaluated as a lower cost Phase 1 option.

It is my understanding that Ecology is recommending an additional operator. It is also my understanding that the City is aggressively pursuing I/I removal and also working diligently to improve operational performance. Both of these efforts will help avoid effluent NPDES violation.

**Concluding Remarks**

After a review of the Facility Plan, we have concluded that the long-term improvements presented are the best option for the City. We believe however that the City would be well advised to have a lower cost “fallback” option that will provide additional capacity, and to integrate the potential implementation of that option into the project delivery plan for the proposed long-term improvements.

If you or anyone else have any questions, I would be happy to answer them. If you, Council members, or stakeholders would like to meet and discuss this letter, or call and discuss, please let me know.

Sincerely yours,

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