



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

4601 N Monroe Street • Spokane, Washington 99205-1295 • (509)329-3400

October 10, 2014

Mr. BiJay Adams
General Manager
Liberty Lake Sewer and Water District
22510 E. Mission Ave
Liberty Lake, WA 99019

RE: Liberty Lake Sewer and Water District – NPDES Permit No. WA-0045144
Water Reclamation Facility Phase 2 Upgrade Contract Documents and Construction Drawings

Dear Mr. Adams:

The Department of Ecology (Ecology), Eastern Regional Office, received two copies of the Phase 2 Upgrade draft construction documents on September 18, 2014. Bid and contract documents for the supply of goods and special services for the Membrane Filtration System Procurement were hand delivered and received on October 6, 2014. Ecology reviewed the submitted documents against requirements set forth in the current NPDES Discharge Permit and standards set forth in the *Criteria for Sewage Works Design*. Comments generated during the review must be addressed prior to submittal approval.

1. Sheet OP1: Please remove the concentration design limit of 0.05 mg/L for total phosphorus from the table. The listed concentration of 0.05 mg/L does not correlate to the Spokane River dissolved oxygen (DO) total maximum daily load (TMDL) or the facility's design flows based on the approved wasteload allocation. The listed loading of 0.45 lbs/day will apply as the seasonal average as stated in the DO TMDL. Concentration based limits shall reflect actual flows seen by the facility. Ecology will work with the District during permit development to discuss how compliance will be assessed for meeting the seasonal average.
2. Sheet OP2: Please provide average daily flux, expected duration of peak flux and maximum daily flux within the Membrane Filtration Units Design Parameters. In addition, please include the time for membrane recover after reaching the peak flux rate and the expected frequency of operation at peak flux.

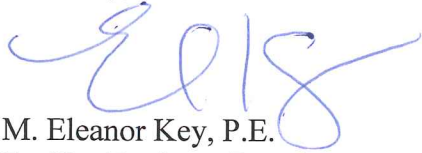


3. Please include detail on balancing flux and transmembrane pressure (TMP) as it relates to the air scour frequency, flow balance between trains, and maintenance vs. recovery cleaning in the Operations and Maintenance (O&M) manual following construction and initiation of operation.
4. Please indicate if the membranes will be relaxed prior to initiation of the backpulse sequence. In addition, please indicate how damage to the membranes will be minimized during the backpulse sequence as hollow fiber membranes are susceptible to damage during the backpulse cycle.
5. Please clarify if the specified maintenance cleaning frequency of one per 24 hours is based on the manufacturer's recommendation. While Ecology understands this will be an automated process, industry standards are slightly more relaxed with a semiweekly to weekly occurrence.
6. The recovery cleaning interval of 30 days also exceeds typical frequencies of every 3 months to once per year. Please indicate if this is also based on manufacturer's recommendations. Once construction completes, please provide guidance for assessing need for recovery cleaning in the O&M Manual. Ecology hopes that the Liberty Lake Sewer and Water District (District) will work to find the optimal cleaning frequencies so that a balance can be achieved between optimal operation and O&M requirements.
7. Please provide approximate storage times for clean in place chemicals and coagulants based on maximum demands. A minimum of 30 days storage is required unless the facility can demonstrate local chemical delivery within 24 hours.
8. Sheet FP8 shows a possible extra cassette for membrane trains 1, 2, and 3 totaling 5 cassettes in a series (the future 4th train also shows a provision for an additional cassette). This additional cassette would seem to increase air scour needs to 2,850 scfm per train. Standards recommend selected membrane scour blowers should be oversized to provide air needs for planned phase expansions. Specification 43 11 33 – Rotary Lobe Blowers does not provide information on the maximum air flow to be delivered per unit and only provides performance criteria based on maximum blower and motor speed. In addition, the air flow meter (M-F-Air-1) has a range from 0- 2,500 scfm, falling below the 2,850 scfm needed for a 5 cassette train. Please consider over sizing the specified blowers to account for the possible addition of the 5th cassette in the first three membrane trains or justify the sizing as designed. It is Ecology's position that addressing this prior to construction of the membrane facility will be more cost effective than a retrofit in the future.
9. Please confirm the secondary containment volume for the coagulant storage.
10. Please detail the air release (vacuum air separator or other) for the membrane filter permeate pumps (P-F-MFE-1, 2, and 3) or clarify why one is not needed.

11. Please provide detail on the time it will take to drain the membrane tanks. Typically, this should be less than 30 minutes to avoid membrane dry out from air exposure.
12. Please ensure the final O&M manual contains a procedure for regular membrane integrity inspection. This procedure should include detail on pressure leak testing to find minor defects in individual membrane fibers.
13. For your future consideration, a spill plan will be required in the Districts next NPDES Discharge Permit due to the cleaning and coagulating chemicals to be used with this upgrade.
14. Sheet HP1 shows no RPBA assembly, air gap or other cross connection control at the potable water connection to the new fine screen. Please verify that the treatment plant's water service contains an air gap per WAC 246-290-490.
15. Sheet SC2 is missing callout N7.
16. In general, several final details are missing throughout the construction drawings. Please complete prior to submission of revised documents.

Ecology supports the District in separating out the bid and procurement for the membrane system from the rest of the Phase 2 upgrades. If successful during the FY 2016 SRF funding cycle, we will help streamline the procurement process with Financial Management once the draft offer list is published. All inserts for the SRF and Centennial Clean Water Fund are complete. If you have any questions, please contact me at (509) 329-3519.

Sincerely,



M. Eleanor Key, P.E.
Facility Engineer/Permit Manager
Water Quality Program

MEK:jab

cc: Alison Esvelt, P.E., Esvelt Engineering
Dennis Fuller, P.E. Century West Engineering Corp.