From:	BNICKEL
To:	June.Bergquist@deq.idaho.gov
Subject:	Recalculated TP limit for Sandpoint
Date:	Tuesday, January 08, 2013 4:30:34 PM
Attachments:	TP_Limit_55-65_lb_LTA.xlsx

June:

I took another look back at the TP limits to see if they could be considered consistent with the facility's current loading. Estimating the current loading is difficult because the facility only monitored for TP quarterly, and the effluent flows are highly variable due to I/I issues (the average monthly flow rate varies from 1.6 to 6.7 mgd).

The average monthly TP limit proposed in the preliminary draft permit is 100 lb/day. Take a look at the "TP Load Max Q" sheet of the DMR Data Pull workbook that I sent to you. This sheet estimates the TP loads associated with each quarterly TP concentration sampling event by pairing the measured concentration with the maximum monthly average flow rate for the quarter. The 92nd percentile of a data set can be used as an estimate of the expected maximum monthly average value because it is the value that can be achieved 11/12ths (or 92%) of the time. The 92nd percentile TP load, estimated by pairing the quarterly measured concentrations with the maximum monthly average effluent flows for the quarter, is 99.2 lb/day, which is close to the proposed limit in the preliminary draft permit, so, arguably, 100 lb/day as an average monthly limit would maintain existing conditions.

However, in general, when attempting to "lock in" existing average loading, I've ended up starting with the actual average load and calculating average monthly and weekly limits based on the variability of the data, using the procedures in the Technical Support Document for Water Quality-based Toxics Control (TSD), instead of using the 92nd percentile approach. Other DEQ regional offices seemed to prefer the TSD approach as well.

The average loading estimated by pairing the measured effluent TP concentrations with the average effluent flows for the quarter, is 54.7 lb/day. If you pair the measured concentrations with the maximum monthly average effluent flows for the quarter, the average effluent TP load is 65.3 lb/day. The average monthly limits and average weekly limits that are consistent with these average loads are as follows:

54.7 lb/day long-term average (LTA):

73 lb/day average monthly

94 lb/day average weekly

65.3 lb/day LTA:

87 lb/day average monthly

112 lb/day average weekly

Due to the uncertainty in the average TP load (because of the infrequent concentration monitoring and the variability in the flow rate), I would recommend going with the more-generous estimate of the average load (65.3 lb/day) and the associated limits. This would require a mixing zone encompassing 43.5% of the river flow (as opposed to 50% as assumed in the preliminary draft permit).

Thanks,

Brian Nickel, E.I.T.

Environmental Engineer

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