Scenario 2

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303(d) listings:	Temperature
TMDL status:	Completed and loads allocated The water is no longer on the 303(d) list
Discharges:	POTW

Waterbody: This is a small perennial stream in eastern Washington with reproducing native fish populations. The area does not support a strong fishery use because the stream size is small and fish populations are sparse. Flows into the stream were naturally derived from groundwater inflow and local precipitation. Groundwater use over many decades has reduced inflow to the stream. The climate is generally dry with typical east-side higher flows in spring with snowmelt and lower flows through the remainder of the year.

Human Development and Discharges: There is one town (4,000 population) located on the waterbody. The land uses along the stream are primarily agricultural uses, and several small businesses are located in the town. The town is served by a secondary treatment plant (POTW) and a few storm drains located along the shoreline. The sanitary and stormwater collection systems are largely separate. This is an older community, and has historically had an agriculture-based economy. The POTW is the only permitted discharge to the waterbody. It would be possible to remove the discharge from the waterbody and discharge to ground, but the cost to the town would be high and the effluent is currently providing flows to the stream that help maintain the stream's perennial flows and reproducing fish populations.

303(d) listing information:

Temperature: The stream does not meet water quality criteria for temperature.

TMDL-based information:

Temperature: The stream does not meet water quality criteria for temperature.

- The TMDL source assessment shows that the predominant source of temperature impairment is loss of streamside vegetation and that significant temperature reductions can be made by restoring the nearshore riparian habitat with native trees to provide shade.
- The TMDL provides an estimate of 30 years for trees to grow to appropriate heights to provide maximum shade to reach the site potential. Prior to this time the stream will exceed temperature criteria, with temperatures decreasing gradually over the years as nearshore vegetation is restored.

- The TMDL also shows that modest decreases in solar heating can be made by decreasing the sediment loading to the stream. When sediment enters the stream it increases the ability of the stream to absorb heat, and riparian vegetation enhancement will stop much of the eroding sediment from agricultural fields from reaching the stream
- Allocations for temperature have been made in the TMDL. Because there is no assimilative capacity and only reductions are required, allocations are set to meet the temperature criteria at the end of the pipe.

Other parameters: TMDL modeling indicated that nutrients are entering the stream from both the POTW and with sediments and are causing dissolved oxygen decreases further downstream. Criteria are currently not being exceeded, but there is virtually no more assimilative capacity in the stream for nutrients, which could have implications for future growth in the area if more capacity is needed at the POTW.

The local city government and residents in the area have been very involved with the TMDL development. The major concerns have been (1) the fear that requirements for riparian restoration will remove land from agricultural use, and (2) that the POTW has no economically feasible way to cool its discharge to meet effluent limits based on criteria levels. In addition, even if the discharge were chilled to meet the criteria, the stream would reheat quickly because of solar exposure and there would be no overall gains to the waterbody from chilling the effluent. During the TMDL the local stakeholders, working with Ecology staff, developed a plan to focus on three temperature control strategies:

- Reduce temperatures by shading the stream: Plant shade trees and other vegetation along the riparian corridor. Because agriculture in this area is mostly crops the riparian corridor will need little fencing to exclude livestock. Local land owners agree to this approach and funds for purchase of plants and labor is provided by the town, Ecology grants, and local conservation district assistance. Local school and youth groups also provide volunteer labor to assist Ecology field crews in planting vegetation. Trees will reach full shade height in approximately 30 years.
- Reduce temperatures by removing sediment from the water column: Planting vegetation along the riparian corridor will result in significant sediment trapping, thus keeping sediment out of the stream. The POTW has a strong interest in this approach because of the dual benefits that sediment controls can have in removing nutrients as well as decreasing solar heating.
- Reduce effluent temperatures by providing shade at the treatment plant: The POTW will install shades over its clarifiers, and any other areas they identify where solar heating of the wastewater is occurring, to reduce heating during treatment. The benefits of this approach to the waterbody will be seen most clearly in the future when riparian vegetation grows and starts to shade the stream, and solar reheating of the effluent is diminished. In the interim these actions will be reasonable measures to decrease temperature in the effluent.

Municipal POTW - permitting under the current regulations:

The NPDES permit was being administratively extended by Ecology anticipating completion of the implementation plan for the TMDL. The old permit does not have a temperature limit. After TMDL completion Ecology proceeds with permit reissuance, with a focus on meeting the TMDL allocations and working with the community to make the permit requirements and temperature control solutions developed by the local community and Ecology implementable.

Can a Compliance Schedule for temperature be used for this discharge?

"In order to grant a compliance schedule in an NPDES permit, the permitting authority has to make a reasonable finding, adequately supported by the administrative record, that the compliance schedule "will lead {} to compliance with an effluent limitation …" "to meet water quality standards" by the end of the compliance schedule as required by sections 301(b)(C) and 502(17) of the CWA. See also 40 CFR Section 122.2, 122.44(d)(1)(vii)(A) (see EPA May 10, 2007 memo from Hanlon to A. Strauss, Region 9 EPA at http://water.epa.gov/lawsregs/guidance/wetlands/upload/signed-hanlon-memo.pdf). Thus, if there is some reasonable assurance that effluent limits will be met at the end of a 5 or 10 year compliance schedule, Ecology could issue a compliance schedule for the discharge. If this was the case for this discharge, the permit limits with a 10-year compliance schedule would likely look like this:

> The interim limits in the first 5-year NPDES permit are based on taking actions to reduce temperature. The final limits, based on the temperature criteria, are in the Fact Sheet that accompanies the first NPDES permit. In the second NPDES cycle of the 10-year compliance schedule both the interim and final limits will be placed in the NPDES permit. During the TMDL period the discharger evaluated effluent treatment options, and feasible methods to remove temperature from final effluent are not readily available. Some reductions could be made by shading parts of the POTW treatment processes. As part of the compliance schedule the discharger will need to formally investigate available treatment methods to reduce temperature. Under a compliance schedule, allowed under current regulations, the discharger would be expected to investigate and implement temperature control activities on a schedule that would meet water quality-based effluent limits at the end of the 10-year compliance period.

Can a Variance for temperature be used for this discharge?

A variance is probably a more appropriate regulatory tool for this type of discharge because of uncertainty about whether limits will be met within the term of the 5-10 year compliance schedule. One of the requirements for approval of a variance is that reasonable progress is being made to meet the original criteria (WAC 173-201A-420(1)(c). The current Water Quality Standards allow for a 5-year variance (WAC 173-201A-420(3). Permit requirements would be set to ensure that the treatment plant implements temperature control reductions by shading parts of the POTW treatment processes. The permit would likely include requirements to investigate available treatment methods to reduce temperature, and/or to investigate offset options. The variance is a rule change that must go through a formal rule-making procedure to modify the water quality standards. The final rule would then be

submitted to EPA for CWA approval, including ESA review and consultation if needed. The rule could be used in permits only after final approval by EPA. Under current regulations, Ecology would need to renew the variance via rule-making every 5 years until the waterbody attained standards.