

4b Analysis for Tenmile and Mill Creeks

The Washington Department of Ecology (Ecology) Integrated Report (IR), which was submitted to EPA in May 2008, has excluded four listings (18835, 20355, 18836, and 20356) for temperature in Tenmile Creek and one listing (29317) for temperature in Mill Creek from the 303(d) list and placed these waterbodies in category 4b of the IR. These water bodies were listed in Category 5 of the 2004 IR. Ecology's basis for excluding these waterbodies from the 303(d) list is outlined in this evaluation.

Identification of Segment and Statement of Problem Causing Impairment

Tenmile Creek is located in Asotin County in southeastern Washington. Mill Creek is a tributary of Tenmile Creek (see map on page 6). Tenmile Creek drops 2000 feet from the fringes of the Blue Mountains to the Snake River. The canyon created by the creek provides habitat for a variety of wildlife including deer, elk, coyote, and many species of birds. Even cougar are known to frequent the area. Tenmile Creek is also home to threatened Snake River Steelhead trout.

The Tenmile Creek canyon is important range for cattle. It also provides an excellent location for winter feeding. Feeding at the canyon's base protects livestock from harsh winter weather. However, a century of these activities left the stream corridor in poor condition. Many of the trees were damaged or removed, and stream banks were trampled and overgrazed. Winter feeding and uncontrolled livestock access to the stream had eliminated much of the vegetation within the stream corridor. This degraded riparian area could not provide shade to the stream, resulting in high water temperatures.

This is a sparsely populated area. There are no towns in the watershed and no point sources of pollution.

The impaired segments are:

- 18835, temperature, on Tenmile Creek between river kilometers 0 and .8.
- 18836, temperature, on Tenmile Creek between river kilometers 8.8 and 10.9.
- 20355, temperature, on Tenmile Creek between river kilometers .8 and 2.7.
- 20356, temperature, on Tenmile Creek between river kilometers 14.8 and 16.5.
- 29317, temperature, on Mill Creek between river kilometers 3.4 and 5.1

The impaired segments are illustrated on the map on page 7.

Monitoring data for these five segments was collected by the Washington Department of Fish and Wildlife, and covers the years 2000 through 2002. For segment 18835, the highest daily temperature occurred in 2001. Data show a 7-day mean of maximum daily temperature of 22.8 degrees Centigrade, with a maximum daily temperature of 23.8 degrees Centigrade from continuous measurements. For segment 18836, the highest daily temperature occurred in 2002. Data show a 7-day mean of maximum daily temperature of 17.9 degrees centigrade, with a maximum daily temperature of 20.1 degrees Centigrade from continuous measurements. For segments 20355, 20356, and 29317, data was collected only in 2000. For segment 20355, data show a 7-day mean of

maximum daily temperature of 24.2 degrees Centigrade, with a maximum daily temperature of 25.3 degrees Centigrade from continuous measurements. For segment 20356, data show a 7-day mean of maximum daily temperature of 25.5 degrees Centigrade, with a maximum daily temperature of 26.2 degrees centigrade from continuous measurements. For segment 29317, data show a 7-day mean of maximum daily temperature of 20.4 degrees Centigrade, with a maximum daily temperature of 21.6 degrees Centigrade from continuous measurements.

Description of Pollution Controls and How They Will Achieve Water Quality Standards

Water Quality Target

The designated uses for listings 18835, 18836, and 20355 are spawning, rearing and migration, and the temperature criterion is 17.5 degrees Centigrade, with a supplemental spawning criterion of 13 degrees Centigrade from February 15 to June 1.

The designated use for listings 20356 and 29317 is core salmonid habitat, and the temperature criterion is 16 degrees Centigrade, with a supplemental spawning criterion of 13 degrees Centigrade from February 15 to June 15.

Controls that will achieve water quality standards

The Department of Ecology's Eastern Regional Office has established a Livestock and Water Quality Program that uses a unique collaborative approach to address livestock-related problems. Instead of using the standard process that starts with a Category 5 listing, establishing a TMDL for the stream, writing an implementation plan, and finally getting to actual implementation, this strategy goes straight to implementation. The strategy is applied in watersheds in which the cause of a water quality impairment is clear.

Ecology encourages implementation of a wide variety of best management practices, however, a primary focus of the program has been to restore degraded riparian corridors and eliminate unlimited animal access to streams. Healthy riparian areas can improve water quality and stream health in multiple ways, which make them a particularly valuable and cost-effective management practice. Healthy riparian areas

- Slow bank erosion by holding soil in place during periods of high water.
- Reduce flood damage and sedimentation by slowing runoff and capturing the sediment that would otherwise be carried downstream.
- Help keep water cool in summer by shading the stream.
- Improve water quality by capturing sediment, nutrients, pesticides, pathogens, and other pollutants before they reach the stream.
- Enhance summer stream flow by improving water infiltration and storage.
- Create fish and wildlife habitat.
- Limit livestock manure inputs to the creek and riparian areas.

Ecology has a three-step riparian restoration strategy, which allows the department to efficiently apply resources to priority problem areas. The first step is to address the

source of degradation – unlimited livestock access to streams and winterfeeding operations in close proximity to the riparian corridor. Ecology relies primarily on livestock exclusion, and off-stream water supply to restrict livestock access to the riparian area. In implementing this BMP, Ecology uses NRCS riparian buffer standards, which requires a minimum 35 buffer between the livestock fence and the mean ordinary high water mark of the nearest stream bank. In many cases, the buffer width may be larger depending on the stream and site conditions.

By first addressing livestock access, Ecology seeks to abate the primary pollution sources—livestock in the stream, eroded streambanks, increased runoff, increased sedimentation, and subsequent transport of fecal matter. As vegetation naturally returns in the riparian area, site conditions become stabilized and the pollution sources are dramatically reduced. Also, this approach works to arrest morphological changes to the entire stream that are induced by erosion and sedimentation.

Ecology has spent much of its efforts and resources implementing this first step, in large part, because we have taken a holistic, watershed approach to protecting streams. By first addressing the primary sources of pollution and geomorphic change, Ecology can establish the necessary site conditions for successful restoration. Moreover, Ecology ensures that, first and foremost, the root problems are addressed for *the entire stream*, before resources are focused on site or segment specific restoration.

The second step occurs after a majority of site conditions have been stabilized, and the stream's entire geomorphic integrity is no longer jeopardized by the adjacent management practices. Ecology conducts a reach by reach assessment to determine the appropriate trees and shrubs to be used for restoration. Ecology is currently partnering with universities to study the genetic make-up of local riparian seed banks. Ecology then establishes nurseries to propagate the site appropriate plant material. In some cases federal programs require revegetation as part of the cost-share program, and so restoration work occurs simultaneously with livestock exclusion.

The third step is to work with local land owners to promote continuous and proper management of upland grazing lands.

Ecology teams with conservation districts, local governments, and landowners to provide technical assistance and funding for implementation of best management practices. Ecology uses a traditional regulatory process only when collaborative efforts fail. Chapter 90.48 RCW gives Ecology the authority to take enforcement actions against nonpoint polluters. We have, in fact, issued enforcement orders to two landowners in watersheds in which we are implementing the Livestock and Water Quality Program.

The result of these partnerships has been the implementation of best management practices at hundreds of sites where water quality and fish habitat issues exist. By using a collaborative strategy, backed up by enforcement when necessary, Ecology has been able to create relationships and build trust with rural residents while improving water quality.

In the Tenmile Creek watershed, work with landowners began in 2002. Twelve miles of riparian buffers were installed. The creek was fenced to protect it from livestock, and thousands of native trees and shrubs were planted in the stream corridor. Buffers are constructed using Natural Resource Conservation Service standards, which require a minimum width of 35 feet. For buffers installed with state or federal financial assistance, we require an agreement with the landowner stipulating that the buffer and fence will be maintained for at least 10 years.

As shown on the map on page 7, fencing was generally installed adjacent to or upstream of the impaired segments. However, we have also fenced portions of the stream where there are presently no Category 5 listings, but where there was unrestricted cattle access to the stream. Riparian buffers are left to revegetate naturally in those areas in which there is enough live native vegetation left to recover. In all other areas we are installing buffers by planting native plants. The program is just finishing a large fencing and buffer installation project near the mouth of the creek. At this time, most of the upstream riparian areas have been restored. Planting is continuing where buffers need additional plants.

In addition, farmers in the watershed are adopting direct seed technology, which is the practice of seeding a new crop into the standing stubble of a recently harvested crop without the traditional tillage of the ground. By doing so, soil erosion can be reduced by as much as 95 percent. This significantly reduces the volume of sediment washing into Tenmile Creek. All of these efforts will help address the temperature impairments.

Our experience has shown that it is not always necessary to create buffers on entire creeks in order to achieve compliance with standards. For instance, in this area, which is largely arid, not all riparian areas can support trees and shrubs. Also, many small streams pass through areas of ravines and steep topography, which naturally limit animal access and at the same time shade the stream. There are also some areas where cattle are not grazed, so the riparian areas are in good shape now.

One thing we expect to learn through this program is exactly how much riparian restoration is required to get these streams into compliance with water quality standards and keep them in compliance. The intent of the Livestock and Water Quality Program is to restore the watershed so that all streams consistently comply with standards for all pollutants. We will continue installing buffers and other management practices until this goal is met.

Each year, the benefits to water quality and fish habitat are more dramatic. Native cottonwood, alder, and willow trees are quickly returning to the stream banks. Grasses along the stream are healthier and more deeply rooted. Additionally, manure and exposed soil are no longer visible near the creek. Steelhead trout are returning to the creek to spawn in greater numbers than have been recorded in several decades.

Description of requirements under which pollution controls will be implemented

It is Ecology's best professional judgment that the pollution controls that have been installed will result in the water quality standards being met. Maintenance of these controls has been ensured through 10-year landowner agreements that were established as part of the funding agreements for these projects.

Estimate or Projection of Time When Water Quality Standards Will be Met

It will take time for the riparian corridor to fully recover and for the stream to re-establish its natural geometry. Ecology estimates that the riparian buffers will have grown enough to be fully effective in 10 years, so Tenmile Creek will be meeting the temperature standard throughout the entire watershed by 2017.

Schedule for Implementing Pollution Controls

As described earlier in this report, Ecology has worked with the conservation district, local governments, and landowners to implement a variety of best management practices in the Tenmile Creek watershed, and landowners are continuing to implement best management practices that protect the stream corridor and improve water quality. It is our best professional judgment that this work will remedy the pollution problems in the impaired segments. Because it is our intention to restore the entire watershed and to prevent future pollution problems, we will be using monitoring data to track water quality improvements and to identify any new problem areas so they can be addressed. It will be an on-going process to get water bodies into compliance and to keep them in compliance. Ecology's Livestock and Water Quality Program will continue to have an on-going presence in the watershed, and will continue working to achieve compliance with state water quality standards.

We will use monitoring data and evidence of additional work completed in this watershed to determine whether these listings will stay in Category 4b in the next Water Quality Assessment.

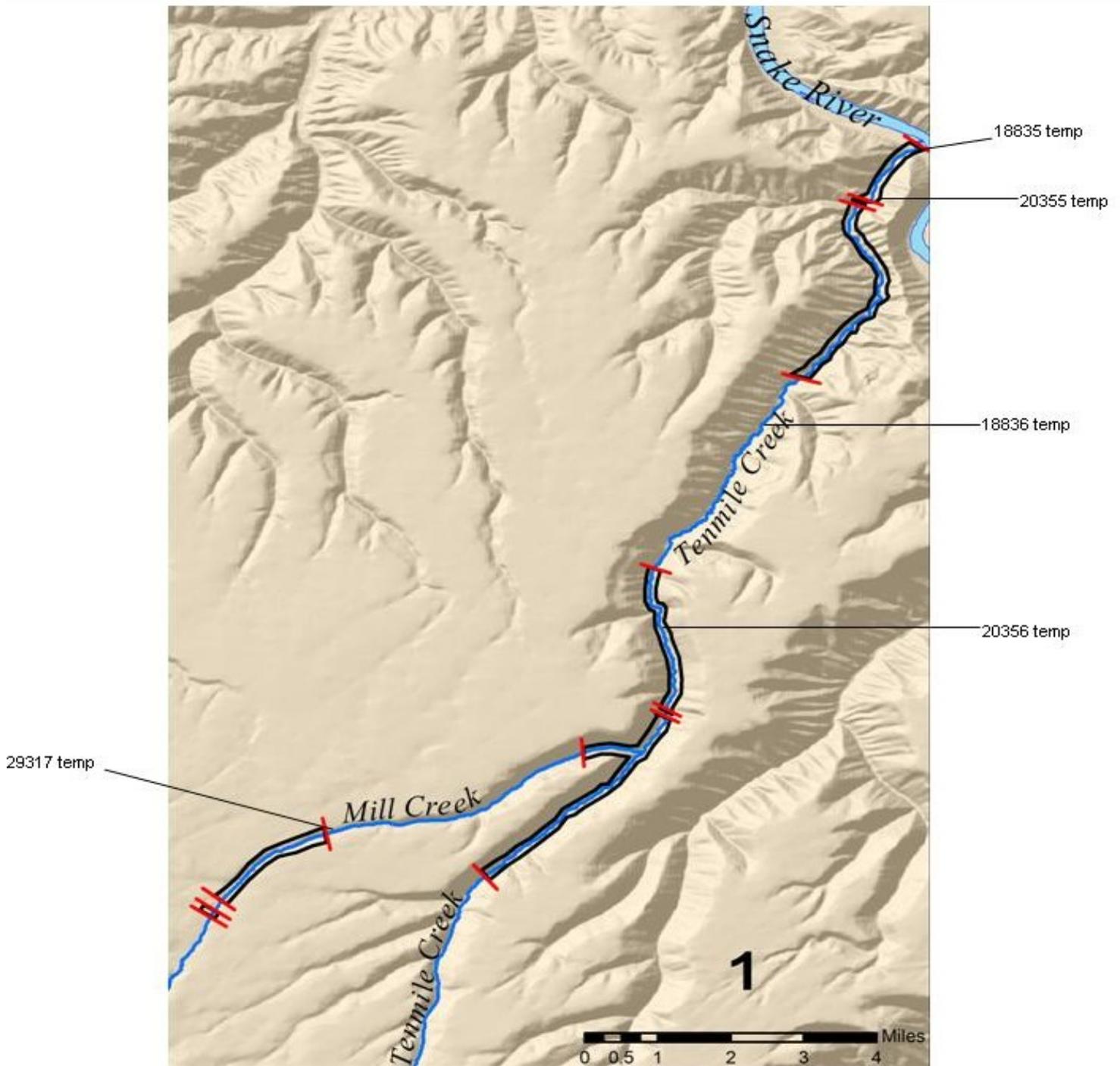
Monitoring Plan to Track Effectiveness of Pollution Controls

Asotin County Conservation District is monitoring water quality in Tenmile Creek to establish whether these projects are improving water quality and overall stream health. Monitoring data can also help to identify additional problem areas that should be addressed. Monitoring results will be reported to the public and EPA through Ecology's IR report development process.

Commitment to Revise Pollution Controls as Necessary

Ecology will maintain a presence in the Tenmile Creek watershed to ensure that water quality continues to improve. We fully expect the Eastern Regional Office livestock and water quality program to achieve compliance with water quality standards. However, if it

does not, Ecology will work with the conservation district, local governments, and landowners to determine other controls that could be used to achieve compliance.



Map shows locations of fencing installed, shown by black lines, which are not to scale. In areas in which some riparian vegetation was intact and expected to recover once cattle were removed, we are depending on natural revegetation. In all other areas, riparian buffers were installed by planting native plants. Part of the project is to continually assess condition of the buffers and to plant or replant those that are not recovering quickly enough.

Category 4b listings are labeled by listing identification number and pollutant.