



Chehalis Best Management Practices Evaluation Project 1997-98 Annual Report

Abstract

This is the fourth annual progress report for a six-year monitoring project being conducted by the Washington State Department of Ecology. The purpose of this project is to determine the effectiveness of best management practices (BMPs) installed in the Chehalis River basin to improve water quality and fish habitat. Accomplishments this year include: updating the quality assurance project plan (QAPP) for the project; conducting water quality monitoring in the Bunker/Deep Creek basin and the Beaver/Allen Creek basin; and temperature monitoring in the Mohny Creek basin and the Salzer Creek basin.

Introduction

In the Chehalis River basin, poor water quality has been identified as a threat to the fisheries resource. In an effort to protect and restore the fisheries, the U.S. Fish and Wildlife Service (USFWS) set up the Chehalis Fisheries Restoration Program (CFRP), which provides funds for projects to restore anadromous fish to the Chehalis basin. Types of projects funded by the CFRP include habitat restoration and installation of best management practices (BMPs) to improve or protect water quality.

Water quality monitoring is essential for determining the effectiveness of BMPs, and can be used to adjust and refine land treatment practices designed to control nonpoint source pollution. This was one of the conclusions of the Rural Clean Water Program (RCWP), a federally-sponsored nonpoint source control program that studied the effectiveness of BMPs to control pollution. The Chehalis BMP Evaluation Project is funded by the CFRP, and its purpose is to monitor the effectiveness of the BMPs installed and to document improvements in water quality. This report describes progress made during the fourth year of the proposed six-year monitoring project.

Project monitoring areas were selected in consultation with USFWS. Only a few CFRP project areas were selected to demonstrate results, since trying to monitor all areas would result in too dispersed an effort. The RCWP found that detection of water quality improvements is more effective if monitoring focuses on collecting samples at a relatively high frequency and analyzing them for a small number of relevant variables. Project monitoring areas for 1998-99 will be scoped by September 1998. An addendum to the current QAPP will be developed to describe 1998-99 monitoring activities. The addendum will be available in the fall of 1998.

An additional element of this project is providing technical assistance to local governments, tribes, and citizen groups.

Completed Reports

Water quality reports and quality assurance project plans (QAPP) completed this year include the 1997-98 Addendum to the QAPP (Sargeant, 1997c) and the 1996-97 Beaver/Allen Creek Water Quality Data Report (Sargeant, 1998). Additional reports scheduled to be completed in 1998 include the 1996-97 Bunker/Allen Creek Water Quality Data, the 1995-96 benthic macroinvertebrate data findings, and the 1995-96 temperature data findings. Reports and plans can be obtained by calling either Debby Sargeant at (360) 407-6684 or Shirley Rollins at (360) 407-6696.

Water Quality Monitoring

In July 1994, USFWS and the Washington State Department of Ecology (Ecology) chose four project areas to survey water quality for BMP effectiveness: the Beaver/ Allen Creek sub-basin; the Bunker/Deep Creek sub-basin; the Black River adjacent to a dairy at river mile (RM) 12.2; and the mainstem Chehalis River at RM 70, also adjacent to a dairy operation. A QAPP was completed in 1994 (Sargeant, 1994). The QAPP describes in detail the monitoring plan for each project area, and includes a basin map and maps of the project sites. Each year an addendum to the QAPP was developed for changes to the work (Sargeant; 1995a, 1996a, 1997c). In 1995-96 macroinvertebrate sampling was added and water quality sampling on the Black River was concluded. In 1996-97 pre-BMP sampling on a dairy adjacent to the Chehalis River was concluded; post-BMP sampling will begin after BMPs are installed.

Beaver/Allen Creek Sub-basin

Wet season BMP monitoring has been conducted since 1994 on Beaver and Allen Creek (a tributary to Beaver Creek). The Beaver Creek sites were chosen to evaluate a significant pollutant source above Allen Creek originally identified in the Black River Total Maximum Daily Load (TMDL) studies (Coots, 1994; Pickett, 1994a) and now the site of a major dairy BMP project, as well as several other proposed CFRP restoration projects. The Allen Creek site was chosen to follow up several CFRP fencing and riparian restoration projects.

Water quality data reports describe the complete results for 1994-97 (Sargeant; 1996b, 1997a, 1998). The 1996-97 results are for post-BMP wet season monitoring conducted on Beaver and Allen Creeks. Results show fecal coliform levels exceeded water quality standards at four out of five stations and nitrogen loading was elevated on Beaver Creek at stations downstream of the Beaver Creek dairy BMP site. Fecal coliform concentrations and loading did decrease in 1996-97 as compared to 1995-96. This decrease may be explained by the average 48-hour rainfall before sampling (less in 1996-97 than in 1995-96) but it may also be due to the implementation of BMPs. Fecal coliform loading was greater in 1994-95 when average previous rainfall was less, suggesting that BMPs may indeed be producing some improvement.

Four sites on Beaver Creek and one site on Allen creek are being monitored in 1997-98 during ten winter sampling events. Sampling for 1997 occurred on: November 18, 24, and 30, and December 16. Sampling for 1998 has occurred on January 6 and 13, February 22, and March 1, 9, and 23.

Sampling recommendations for 1998-99 include five wet season sampling events on Beaver\Allen Creek.

Bunker/Deep Creek Sub-basin

This was the third year of dry season BMP monitoring for Bunker and Deep Creek. This area was chosen because several CFRP fencing, riparian restoration, and erosion control projects took place in this basin. The site at the mouth is also a follow-up location for Ecology's Upper Chehalis TMDL Study (Pickett, 1994b).

Water quality data reports describe the complete results for 1994-96 (Sargeant; 1996c, 1997b). Results from the 1996-97 sampling season will be available in summer 1998. In the Bunker/Deep Creek drainage, four sites were sampled three times during the 1997 dry season. Sample events occurred on July 1, August 5, and September 8, 1997. This was the second year of post-BMP monitoring.

Sampling recommendations for 1998-99 include five wet season monitoring events on Bunker/Deep Creek.

Benthic Macroinvertebrate Monitoring

An interim report on 1995-96 benthic macroinvertebrate sampling results will be available in summer 1998. Benthic macroinvertebrate sampling was not conducted this year due to budget constraints. Recommendations for 1998 benthic macroinvertebrate monitoring include continued sampling of the Mohny Creek tributary sites.

Temperature Monitoring

The USFWS requested temperature monitoring on a number of riparian restoration sites in the Chehalis basin and at the mouths of some of the larger tributaries. A QAPP for the temperature monitoring was completed in May 1995 (Sargeant, 1995b).

Hourly temperature data on the larger tributaries were collected from early July through late August 1997. The following sites were monitored: South Fork Chehalis River; Newaukum River; Chehalis River upstream of the Newaukum; Lincoln Creek; and the Black River.

In 1997 two BMP sites were monitored: a tributary to Mohny Creek and a tributary to Salzer Creek. For the BMP sites upstream and downstream water and air temperature probes were installed in early July and removed in late August.

Results from the 1996-97 sampling will be available in 1998. Sampling recommendations for 1998 include continued monitoring at the mouths of the larger tributaries and the two BMP sites, the tributary to Mohny Creek and the tributary to Salzer Creek.

Ambient Monitoring

Monthly ambient water quality monitoring was conducted at two stations in the Chehalis basin: the Chehalis River at Porter, and near Grand Mound. Data collected from these two stations can be obtained by calling Brad Hopkins from Ecology's Ambient Monitoring Section, at (360) 407-6686. Ambient monitoring at both stations will continue in 1998-99. Monitoring conducted in 1994-97 at the Chehalis River at Dryad and the Black River at Moon Road was discontinued due to budget constraints.

Technical Assistance and Coordination

Project staff coordinated with Thurston, Lewis, and Mason Conservation District staff in selecting sites for monitoring and in gathering information on the status of BMP implementation. Completed reports and plans were sent to appropriate District staff.

Project staff met with staff from the Chehalis Tribe to discuss water quality monitoring issues and share information. Technical assistance and relevant reports and plans were provided to Tribal staff. Water quality monitoring equipment was loaned to the Tribe for a month to replace equipment that was being repaired.

References

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