

Feasibility Study of Proposed Water Quality, Stream Flow and Habitat Improvement Activities in the Fisher and Carpenter Creek Watershed of Skagit and Snohomish Counties, Washington



Prepared Pursuant to Washington Department of Ecology
Centennial Clean Water Fund Grant No. G0400195
“Fisher/Carpenter TMDL Implementation”

Skagit Conservation District
March 2006

Executive Summary

Background

Fisher/Carpenter Creek is located in southwestern Skagit County and northwest Snohomish County, Washington. The watershed's several upland tributaries, manmade drainage channels, and natural slough drain an area of about 25.5 square miles. The watershed is included in the federal Clean Water Act Section 303(d) list for violating state water quality standards due to non-point source runoff pollution, in particular for ongoing violations of the fecal coliform and temperature standards. In order to address the water quality problem, the Washington Department of Ecology (WDOE) is developing Total Maximum Daily Load (TMDL) allocations for temperature and fecal coliform in the Lower Skagit Basin, including the Fisher/Carpenter Creek Watershed. In addition to its water quality problems, the watershed suffers extreme ranges of runoff flow, from very low flow in summer to occasional flooding in the wet season. The extreme range of flows impact both farming and aquatic habitat conditions in the watershed.

Responding to the desire to correct the water quality and flow problems, Skagit Conservation District (SCD) obtained a Centennial Clean Water Fund grant to complete a characterization of the watershed conditions and to prepare an engineering feasibility study of a slate of proposed projects for improving water quality, providing more consistent stream flows, and supporting fish and wildlife habitat. This document represents the feasibility study portion of the grant.

Specific Objectives

The following specific objectives were developed for correcting the problems that were identified in the *Fisher/Carpenter Creek Watershed Characterization Report* (SCD, 2006):

- Consistently comply with the Washington Water Quality Standards for temperature, dissolved oxygen and fecal coliform
- Augment summer low flow by increasing upland storage and releasing impounded water during summer
- Reduce sediment deposition and flooding at the mouths of Sandy and Johnson Creeks
- Eliminate localized flooding and fish passage barriers at high priority road culverts
- Reduce the back-water effect of Hill Ditch during high flow conditions
- Enhance the quality and extent of riparian forest vegetation
- Increase channel complexity in modified stream reaches
- Enhance the ecological functions and values of key riparian wetlands

Identification of Alternatives for Achieving the Objectives

Several potential types of projects that could help achieve the drainage, water quality, and habitat objectives were identified. These include:

- No Action
- Riparian Reforestation and Fencing
- Modification of Dam Spillways
- Creek Channel Restoration and Floodplain Reconnection
- Replacement of Culverts
- Dike Setback
- Enhancement of Riparian Wetlands
- Permanent Conservation Easements

Four policy-related alternatives were also identified:

- Drainage Tax Credits for On-site BMPs
- Small Grants for BMP Implementation
- Improved Coordination of Land Development Permitting
- Adoption and Implementation of In-stream Flow Regulations

Evaluation and Ranking of the Alternatives

Each of the alternatives was evaluated according to three basic criteria: 1) effectiveness in achieving the specific objectives, 2) potential detrimental impacts, and 3) cost. The alternatives were then ranked relative to each other in accordance with their relative “benefit” versus their cost. As future funding becomes available, SCD recommends that an advisory committee of landowners and other stakeholders in the watershed complete a second ranking of the projects based on the criteria of “public acceptance” and “likelihood of implementation.” The results of the cost-benefit rankings are shown in the following table.

Summary of Rankings of Alternatives

Project Alternative	Cost per Benefit Ranking	Public Acceptance Ranking
Permanent Conservation Easements	1	(To be completed)
Modification of Dam Spillways	2	
Riparian Reforestation and Fencing	3	
Creek Restoration and Floodplain Reconnection	4	
Enhancement of Riparian Wetlands	5	
Culvert Replacements	6	
Typical Dike Setback Project	7	
Policy Alternatives		
Drainage Tax Credits for Implementing BMPs	Unranked	
Small Grants for Implementing BMPs	Unranked	
Improved Coordination of Land Development Permitting	Unranked	
Adoption and Implementation of In-Stream Flow Regulations	Unranked	

A full copy of the report can be requested from the Skagit Conservation District (360) 428-4313.