

City of Sedro-Woolley

2005

Comprehensive Sewer System Plan

City of Sedro-Woolley
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**CITY OF SEDRO-WOOLLEY
COMPREHENSIVE SEWER SYSTEM PLAN
ENGINEER'S CERTIFICATION**

The technical material and data contained in this report were prepared by Penhallegon Associates Consulting Engineers, Inc. under the supervision of the below listed individuals. Those responsible staff members who are registered professional engineers are licensed in the State of Washington.



EXPIRES 7/20/06

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CITY OF SEDRO-WOOLLEY
COMPREHENSIVE SEWER SYSTEM PLAN
EXECUTIVE SUMMARY

This Comprehensive Sewer System Plan is the compilation of results and findings of recent planning and engineering analyses completed for the City of Sedro-Woolley. The purpose of the analyses was to assess the ability of the existing sanitary sewer and treatment systems to accommodate the wastewater flows from the existing and projected population of the City. The Plan updates and supercedes the City's previous Comprehensive Sewer System Plan and has been prepared in accordance with all applicable statutes and guidelines. It has been prepared by Penhallegon Associates Consulting Engineers, Inc. with the financial aspects of the Plan being completed by Katy Isaksen and Associates.

The City of Sedro-Woolley's sewer service area is approximately 5.7 square miles and is consistent with the existing Urban Growth Area (UGA) Boundary. The service area extends from just north of the Northern State Multi-Service Center on the north to the Skagit River to the south, and from just east of Helmick Road on the east to Collins Road on the west. The City currently provides sanitary sewer collection and wastewater treatment services to approximately 3,030 direct service connections, most of which are within the existing City limits.

The primary purpose of this planning process was to develop a document which establishes a program for future improvements to and expansion of the City of Sedro-Woolley's sanitary sewer system. Insofar as possible, this was achieved using previous plans, studies and other documentation accomplished by the City and other City consultants. The planning process included incorporation of available computerized GIS mapping from Skagit County and the City's GIS mapping database.

Analysis of the collection and treatment systems required development of population projections for the service area and are put forth in Section 2 of the Plan. Although significant increases are not expected over the six year life of the Plan, there is significant development potential recognized and proposed within the service area for the twenty year planning horizon. Although there are currently (year 2002) approximately 8,805 residents of the City, sanitary sewer service is provided to an estimated population 7,265. The number of residents receiving sanitary sewer service is expected to increase to nearly 15,755 residents by build-out (year 2025).

Determination of the ability of existing facilities to meet the needs of the current and future populations of the City is a primary objective of the planning process and has been accomplished for both the collection and treatment systems. Analysis of the collection system was accomplished using a combination of practical knowledge and engineering, information provided by City staff, and through the use of a computer model constructed as part of this

project. The model was constructed using state-of-the-art Hydrographics software, and includes all of the City's pump stations, trunk lines over 6-inches in diameter and other collection facilities which were either determined to be critical in the overall system or were suspected of having capacity issues.

The results of the collection system analysis are presented in Section 6 of the Plan. Under existing flow conditions, several areas were identified where pipe upgrades are required to correct specific deficiencies such as line sags, flow constrictions, capacity limitations and flow issues associated with pipe grades. Similar analyses were performed for future flow conditions, and as expected, additional areas of potential capacity problems were identified.

Infiltration and inflow was identified as a primary concern in the existing and future operation of the system. Many of the identified capacity issues can be mitigated through reduction of I & I into the system. An aggressive I & I program, which includes flow monitoring, pipeline video inspection and smoke testing, as necessary, is recommended. Initial work in the program should target areas that have historically experienced high flows during wet weather conditions.

Other recommended collection system improvements include routine rehabilitation of pump stations, an annual pipeline renewal and replacement program, a grease program, and telemetry improvements. In addition, this Comprehensive Plan contemplates extension of sewers into currently undeveloped and/or unsewered areas. It is expected, however, that the extension of sewer service will be accomplished as required by development within the service area or as requested by existing properties which are currently served by on-site disposal systems.

The City's Wastewater Treatment Plant is responsible for treating all flows generated by the City's sanitary sewer customers. The treatment plant discharges to the Skagit River via a 24-inch outfall. The treatment plant was originally constructed in 1956 and has undergone upgrades in 1973, 1994 and 1998. The most recent upgrade included improvements to the headworks, added digester capacity, UV disinfection, added sludge dewatering capacity, and added an anoxic tank for secondary treatment. The treatment plant consistently operates within the limits of its existing NPDES permit, which was updated after the 1998 treatment plant upgrades. The treatment plant is operating well and current recommendations are limited to operations issues. The City is also planning for water reuse as a means of reducing effluent discharge and promoting water conservation.

The Capital Improvements Plan identified in Section 9 identifies approximately \$16,000,000 in collection system improvements and approximately \$350,000 in treatment plant improvements through the six year life of this Plan (year 2010). An additional \$2,125,000 in improvements is expected after 2010. Recommended funding options for the projects include bond financing, Public Works Trust Fund financing, rates, connection charges, developer financing, and existing budgeted funds.