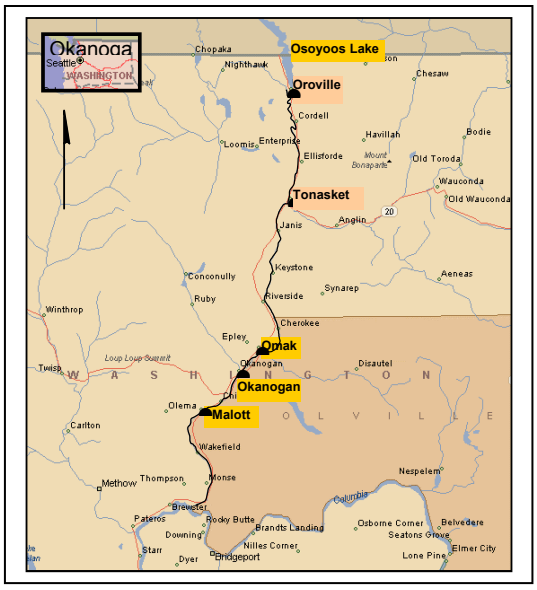
Okanogan River Watershed Management Plan



In 1996, Okanogan County entered into a contract with the Washington State Department of Ecology to help prepare a watershed management plan for the Okanogan River Watershed. The contract charged the County to address all point source pollution loads as well as non-point loads from non-agricultural activities. The study included a watershed description, data management and GIS, a water quality analysis, identification of existing pollutant sources and loads, solutions for early implementation, identification of suitable watershed-scale models, and calculation of the Okanogan River assimilative capacity.

WEST Consultants reviewed appropriate models for application to the Okanogan River watershed, including (1) BASINS, an EPA multipurpose environmental analysis system, (2) SWAT, a continuous-time water quality model developed by the NRCS, and (3) the USGS model, MMS. BASINS was recommended because (1) its continuing development and EPA support will add value, (2) the system provides a flexible, GIS-based environment, using ARC/VIEW, that allows a variety of assessments to be made including, data review, screening-level assessments, TMDL studies, and basin-wide planning, (3) the system includes all the major hydrological and water quality processes important for County studies.

To demonstrate the model's capabilities, and to provide some insights into conventional chemical processes in the watershed, the QUAL2E component of BASINS was applied to the Okanogan River from Lake Osoyoos upstream to the City of Malott downstream, using about 260 cells, including the lower five miles of the Similkameen River tributary. Loads from Lake Osoyoos, the Similkameen, and three WWTPs were used to simulate water quality conditions, and the model was calibrated to water quality monitoring stations along the river. The results of the model study were presented to the County to demonstrate that (1) the river was actually in relatively good condition, (2) some of the TMDL constituents, such as temperature, were beyond our ability to control, and (3) that measured fecal coliform concentrations could not be explained from point sources alone.

Constituent	Data type	Calibration Location		
		Tonasket	Okanogan	Malott
Temperature	OBS	65	64.4	64.9
(°F)	CAL	64.28	64.20	64.19
Nitrate + nitrite	OBS	0.013	0.023	0.025
(mg/L)	CAL	0.01	0.02	0.03
Ammonia	OBS	0.01	0.01	0.01
(mg/L)	CAL	0.01	0.01	0.01
Total phosphorus	OBS	0.017	0.022	0.019
(mg/L)	CAL	0.02	0.02	0.03
Dissolved Oxygen	OBS	9.8	9.8	10.1
(mg/L)	CAL	8.26	8.27	8.27
Fecal Coliforms	OBS	60	10	13
(#/100mL)	CAL	4.42	1.75	1.32

Project Owner:
Hammond, Collier & Wade-Livingstone Associates, Inc.
P.O. Box 1758
Chelan, WA 98816-1758
Contact: Don Phelps
(509) 682-2462

Completion Date:
October 1996