

Draft March 24, 2003

**PROJECT PLAN FOR ENHANCED STREAMFLOW
MONITORING IN THE MIDDLE SNAKE RIVER BASIN
(WRIA 35)**

**WASHINGTON DEPARTMENT OF ECOLOGY STREAM HYDROLOGY
UNIT**

ASOTIN COUNTY PUBLIC UTILITY DISTRICT (PUD)

INTRODUCTION

Funding has been secured through the Washington State Legislature's Water Quality Account-Enhanced Streamflow Monitoring Program for the 2001-2003 biennium to purchase and install continuous, real time, telemetered streamflow gages and staff gages at critical reaches and tributaries in Water Resource Inventory Area 35, the Middle Snake River watershed. This project plan details the exact locations of the stream gage installations within the *Middle Snake River* and provides a brief description of the potential uses of the information. The Department of Ecology (DOE) Stream Hydrology Unit (SHU) and the Asotin County PUD will jointly install, operate, and maintain 8 telemetered continuous near real-time stage recorders and 6 staff gages within the Middle Snake River watershed (WRIA 35).

OBJECTIVE

The objective of this project is to provide a reliable, accurate determination of surface water discharge levels in support of multiple local and regional water and watershed management initiatives. This information will characterize the hydrologic conditions of monitored watersheds and can then be used to effectively manage water for multiple uses through Watershed Planning, Salmon Recovery, Subbasin Planning, the Clean Water Act, and the Endangered Species Act (ESA). This project supports goals associated with the Northwest Power Planning Council's Fish and Wildlife Program and Governor Gary Locke's Salmon Recovery Plan.

DATA COLLECTION

Data will be collected using SHU approved standard operating procedures and equipment. Stage height levels and water temperature will be logged from the telemetered gauges every 15 minutes and will be transmitted via the Geostationary Orbiting Earth Satellite (GOES) to the Data Collection Platform (DCP) at DOE's headquarters every 3 hours. Staff gage heights will be collected from the staff gage sites weekly if accessible. Data will be available to the public in near real-time format via the DOE's web pages. The telemetry stations will update to Ecology's web page every three hours and the stand alone staff gage stations will be posted monthly.

POTENTIAL USES OF STREAMFLOW INFORMATION

- ▶ Calibrate Instream Flow Incremental Methodology (IFIM) models which can be used to establish minimum instream flows.
- ▶ Provide public with continuous discharge records (hydrographs) that can be used for recreation, irrigation, fisheries escapement and recruitment success, and overall improved water management.

SITE DESCRIPTION

The Middle Snake River basin is located in southeastern corner of Washington State. The eastern boundary is the Snake River along the Idaho border, the western boundary, the divide between the Snake River drainage and tributaries of the Walla Walla River. To the south the WRIA is bounded by the Washington/Oregon State Line. WRIA 35 encompasses parts of Whitman and Columbia counties, and all of Garfield and Asotin counties.

The major Snake River tributaries within WRIA 35 originate in the Blue Mountains and join the Snake River from the south. They include, from west to east, the Tucannon River (RM 62.2), Meadow Creek (RM 82.7), Deadman Creek (RM 82.7), Alpowa Creek (RM 130.6), Asotin Creek (RM 145.3), Tenmile Creek (RM 150.3), and the Grande Ronde River (RM 168.7). Fewer, and generally smaller tributaries, join the Snake from the drier north. They include Alkali Flat Creek (RM 67.2), Penawawa Creek (RM 91.7), Almota Creek (RM 103.8), and Steptoe Creek (RM 128.2).

The Tucannon River is the largest of the tributaries originating in Washington. The larger Grand Ronde River flows out of Oregon with only the final few miles in Washington before joining the Snake River. The Tucannon basin encompasses about 502 square miles, flowing about 50 miles from headwaters to the Snake River. Major tributaries of the Tucannon River include Kellogg Creek (Tucannon RM 4.5) and Pataha Creek (Tucannon RM 11.2)

The climate of WRIA 35 varies greatly depending on elevation. Elevations range from over 6,000 feet in the Blue Mountains to less than 500 feet where the Snake River exits the WRIA. Rainfall ranges from more than 40 inches in the higher elevations to 10 to 15 inches in the lower elevations. Snowfall is common in winter, accumulating above 1500 feet in elevation, but seldom lasting longer than a few days at lower elevations.

Instream Flows

Minimum instream flows have not been established within WRIA 35. However, a low flow for the Tucannon River of 50 cfs (at the mouth) was recommended in 1972 by the Department of Fisheries. In 1993 a recommended IFIM flow was established for the Tucannon River at Starbuck. Surface water rights issued after 1972 but before 1993 are subject to the 50 cfs low flow recommendation. Surface water rights issued since 1993 are subject to the higher IFIM recommendations (65 to 100 cfs depending on season).

USGS Stream Gaging

Presently, the USGS maintains three gaging stations on tributaries of the Snake River within WRIA 35. They are:

USGS ID	Name
1. 13334450	ASOTIN CR BL CONFLUENCE NR ASOTIN, WA
2. 13335050	ASOTIN CR AT ASOTIN, WA
3. 13344500	TUCANNON RIVER NR STARBUCK, WA

Historically, the USGS operated several other gages within WRIA 35. They are:

Grande Ronde River at Zindel, Wa. (13334000)	1904-12
Asotin Creek near Asotin, Wa. (13334500)	1904-07;1910-12;1928-60
Asotin Creek above Asotin, Wa. (S) (13335000)	1904-06
Meadow Creek near Central Ferry, Wa (13343800)	1963-74
Tucannon River near Pomeroy, Wa. (13344000)	1913-15;1924-30

PROJECT STATION LOCATIONS:

New Gaging

In addition to maintaining the current USGS gaging in this basin, we propose fourteen new gaging locations. Where appropriate, and to make best use of historical data, new stations will be installed at or near inactive USGS gaging sites.

The proposed locations of the additional continuous recorders and staff gages are:

Continuous Recording Telemetry Gages	Latitude	Longitude
1) Pataha Creek near Tucannon confluence	46 30 43 N	117 58 23 W
2) Tucannon River near Marengo	46 26 25 N	117 45 01 W
3) Deadman Creek Below confluence	46 36 18 N	117 36 29 W
4) Deadman Creek near the mouth	47 37 06 N	117 45 39 W
5) Almota Creek near the mouth	46 42 12 N	117 28 02 W
6) Alpowa Creek near the mouth	46 24 44 N	117 12 48 W
7) Joseph Creek near the mouth	46 01 46 N	117 00 57 W
8) George Creek near the mouth	46 19 09 N	117 06 39 W
Miscellaneous Staff Gages		
1) Pataha Creek at Fairgrounds Road bridge	46 28 30 N	117 33 18 W
2) Meadow Creek near the mouth	46 36 10 N	117 46 55 W
3) Penawawa Creek near the mouth	46 42 46 N	117 41 06 W
4) Tenmile Creek near the mouth	46 17 48 N	116 59 27 W
5) Couse Creek near the mouth	46 12 17 N	116 58 00 W
6) Charley Creek near the mouth	46 17 19 N	117 16 52 W

(See watershed map for depiction of all site locations)

TO BE PROVIDED BY ASOTIN COUNTY PUD

PROPOSED STATION DESCRIPTIONS

Continuous Recording Telemetry Gages:

1.) Pataha Creek near the confluence with the Tucannon River

Pataha Creek is a right bank tributary to the Tucannon River near river mile 9. The creek drains from east to west through fertile agricultural lands, wheat is the primary crop. The proposed gage would be located on the leftbank, downstream side of the State Highway 261 crossing approximately 20 feet from the guardrail.

2.) Tucannon River near Marengo

The Tucannon River flows north and west from the Blue Mountains, through the lower elevation agricultural lands, and drains to the southern bank of the Snake River near the community of Starbuck. The proposed gage would be located on the leftbank, downstream side of the Marengo road bridge approximately 15 feet from the road shoulder. This location is approximately 21 river miles upstream from the mouth of the Tucannon River.

3.) Deadman Creek Below the confluence of the North and South forks

Deadman Creek is a leftbank tributary to the Snake River near Central Ferry State Park.. The creek is exclusively located in agricultural lands consisting almost entirely of “dry land” wheat farming. The proposed gage would be located on the rightbank, upstream side of the Deadman road bridge approximately 1.6 miles downstream of the confluence of the north and south forks.

4.) Deadman Creek near the mouth

The proposed gage near the mouth of Deadman Creek would be located on the leftbank, downstream side of the Willow Gulch road bridge near the end of the guard rail protecting the county road.

5.) Almota Creek near the mouth

Almota Creek is a tributary to the north bank of the Snake River approximately 3 miles downstream from Lower Granite dam. The proposed gage would be located on the leftbank, upstream side of the Highway 194 crossing. An unusual feature of this location is the side by side placement of two large culverts under the highway, one draining Almota Creek and the other containing Little Almota Creek. These two streams join just below the highway crossing and then flow together for approximately 75 meters before entering the Snake River.

6.) Alpowa Creek near the mouth

Alpowa Creek is a tributary to the south shore of the Snake River approximately 7 river miles downstream from Clarkston near the community of Silcott. While the furthestmost headwater tributaries of Alpowa Creek have their origin in the foothills of the Blue Mountains, this stream

also primarily drains agricultural lands. The proposed gage would be located on land owned by the Washington Department of Transportation at the interpretive site for the Old Chief Timothy Bridge.

7.) Joseph Creek near the mouth

Joseph Creek, located in the extreme southeastern most corner of Washington, is the largest tributary to the Grande Ronde river, itself a tributary to the Snake River. The proposed gage on Joseph Creek would be located just past the gate on the access road leading to the Washington Department of Fish and Wildlife headquarters buildings in Green Gulch at the Chief Joseph Wildlife Area. This site is approximately 1.8 miles upstream from the mouth of Joseph Creek.

8.) George Creek near the mouth

George Creek is a rightbank tributary to Asotin Creek. The proposed gage would be located on the leftbank of George Creek approximately 0.3 miles upstream from the Cloverland road junction with George Creek road.

Staff Gage Only Sites

1.) Pataha Creek at Fairgrounds bridge

This staff gage only site would be located at the bridge over Pataha creek, a tributary to the Tucannon River, on Brown Gulch road immediately off Highway 12. The site has an adequate cross-section just upstream from the bridge.

2.) Meadow Creek near the old USGS gaging station

Meadow Creek is a tributary to the Snake River near Central Ferry State Park. We could site this staff gage only station on the lowermost road crossing of Meadow Creek just upstream from the point where Meadow Creek forms a large wetland before joining the Snake River.

3.) Penawawa Creek near the mouth

Penawawa Creek is a north bank tributary to the Snake River downstream from Almota Creek. The objective for Penawawa creek is to install at staff gage only station near the mouth. Access issues near the mouth may pose some difficulty in establishing this station.

4.) Tenmile Creek near the mouth

Tenmile Creek is a leftbank tributary to the Snake River between the community of Clarkston, Washington and the Grande Ronde River. A staff gage only station is proposed for this site. Any installations must be outside of the proposed future construction area when the bridge/cattle guard is replaced. Initial reconnaissance of the site indicated that an staff gage installation upstream of the existing crossing and outside of the proposed construction zone is feasible.

5.) Couse Creek near the mouth

Couse Creek is another leftbank tributary to the Snake River between Clarkston and the Grande Ronde. This staff gage only site would be located directly under the Snake River road bridge. A suitable location for the staff gage as well as an adequate cross section for measuring flow was reconnoitered here by Ecology staff.

6.) Charley Creek near the mouth

Charley Creek is a leftbank tributary to Asotin Creek approximately 12 miles upstream from the mouth of Asotin Creek. A possible location for the staff gage only site on Charley Creek was found on the downstream side of the Asotin Creek road crossing. The cross section at the downstream point of the crossing is suitable for measuring flows.