Final Completion Summary

The Grande Ronde Basin (GRB) covers over 5,000 square miles and includes several thousand miles of perennial flowing streams, many being the home to ESA listed Snake River spring/summer Chinook salmon, Snake River summer steelhead and bull trout. A network of stream gauges are in place throughout the Grande Ronde and Imnaha River subbasins to inform and provide data for irrigation water management, fisheries management and research, long term flow and trend analysis, TMDL and SB1010 water quality management plan effectiveness, subbasin plan implementation, climate change analysis, restoration project development and provide essential information informing recreationists and public safety in the Grande Ronde Basin. This project is in place to operate 12 existing stream gauges in combination with US Geological Survey (USGS) (3 gauges, East Fork Wallowa River, Minam River and Grande Ronde River at Troy), Idaho Power (1 gauge, Imnaha River at Imnaha) and Oregon Water Resources Department (OWRD) who, independent of this project, operate five additional gauges (Lostine River at Caudle Lane, Wallowa River above Wallowa Lake, Wallowa River at Enterprise, Wallowa Lake, Catherine Cr. near Union) to characterize flow in both the Grande Ronde and Imnaha subbasins. Stream flow characteristics including headwater contribution, land management influence, and basin outlet data are all selectively collected in this network of 21 flow gauges. Grant 219-5043-16511 covered water years 2019 and 2020, which spans from October 1, 2018 through September 30, 2020. Production partners include Grande Ronde Model Watershed (GRMW) and Oregon Water Resources Department (OWRD) with funding partners being BPA, OWEB and OWRD.

Background

In 2006 GRMW assumed all coordination and management responsibility for 12 stream gauges in Union and Wallowa Counties. GRMW has contracted with OWRD to complete fieldwork, record production, publishing, realtime data transmission, and equipment replacement. This proposal provided two additional years of partial funding to operate these gauges in the 2019/20 water year. Funding for gauge station operation and maintenance is becoming increasingly difficult but long term consistent data is very important, so the funds provided by this grant are increasingly important. Cooperators in this program of operation include OWRD Watermaster's District 6 office, the USFS La Grande Ranger District, and the Confederated Tribe of the Umatilla Indian Reservation (CTUIR).

Wallowa County Gauges

An effort was initiated in Wallowa County in 1995 to determine water use and movement in the central and lower portions of Wallowa Valley. All irrigation diversions in Bear Creek, the Lostine River, and most in the Wallowa River between the Cross Country Canal (near Lostine) and Water Canyon (downstream of Wallowa Valley), were gauged with the support of the irrigators

(32 ditch companies). The gauge stations funded by this grant in Wallowa County are:
Gauge #13330000: Lostine River near Lostine, installed in 1912
Gauge #13330500: Bear Creek near Wallowa, installed in 1915
Gauge #13330300: Lostine R. at Baker Road near Lostine, installed in 1995
Gauge #13329765: Wallowa R. near Enterprise, installed in 2008
Gauge #13331450: Wallowa R. below Water Canyon near Wallowa, installed in 1995

Union County Gauges
The seven stream gauging stations listed below were partially funded by this grant and have been in operation for nearly 25 water years. Five of the seven gauge stations sit on National Forest Land.
Gauge #13317850: Grande Ronde River below Clear Creek, installed in 1992
Gauge #13318060: Meadow Creek above Bear Creek near Starkey, installed in 1977
Gauge #13318210: Meadow Creek below Dark Canyon Creek near Starkey, installed in 1992
Gauge #13318920: Five Point Creek at Hilgard, installed in 1992
Gauge #13319900: North Fork Catherine Creek near Medical Springs, installed in 1992
Gauge #13320300: Catherine Cr. at Union, installed in 1996
Gauge #13318960: Grande Ronde River near Perry, installed in 1996

Additional gauge stations are operated and paid for by other sources such as OWRD, USGS, Idaho Power, USACE, BLM and CTUIR. Of the 21 gauges total in the Grande Ronde basin so there are 9 additional gauges that do not receive funds from this grant. Those sites are:
Wallowa County
Gauge #13292000: Imnaha River at Imnaha, funded by Idaho Power
Gauge #13330050: Lostine River at Caudle Lane, funded by OWRD
Gauge #13325500: Wallowa River above Wallowa Lake, funded by OWRD
Gauge #13329100: Wallowa River at Enterprise, funded by OWRD
Gauge #13326000: Wallowa Lake near Joseph, funded by OWRD
Gauge #13325000: East Fork Wallowa River, funded by USGS
Gauge #13331500: Minam River, funded by USGS
Gauge #13333000: Grande Ronde River at Troy, funded by USACE, BLM and CTUIR

Union County
Gauge #13320000: Catherine Creek near Union, funded by OWRD

Work Done
This project continued the operation, maintenance, record production and review of twelve flow

gauges in the GRB. The intent of this project is to produce the highest quality data possible. This has been achieved through a production partnership between the GRMW and OWRD where OWRD completes all work and GRMW is the project sponsor. OWRD follows USGS standard protocol in fieldwork, record production, record review and publishing. The result of following the USGS protocol is data of the highest quality.

The five gauges operating in Wallowa County have been strategically placed to document several flow characteristics including:
1. Bracket the effects of irrigation withdrawal on the Lostine River, Bear Creek, and the Wallowa River (above Cross-Country Canal to lower end of Wallowa Valley below all irrigation withdrawal). These gauges document water in and out of irrigation-influenced reaches.
2. Gauges 13330000 (Lostine R. near Lostine) and 13330500 (Bear Cr. near Wallowa) are long-term installations established in the early 1900's. Their continued operation strengthens a data set by which cumulative effects can be accessed.
3. Gauge 13331450 (Wallowa R. below Water Canyon) documents water leaving the Wallowa Valley.

The five USFS gauges in Union County on National Forest land have been strategically places for the following reasons.
1. The data will characterize the hydrographs for long term monitoring of the potential effects of management activities on stream flow and the effectiveness of restoration activities directed at meeting desired conditions.
2. Stream flow data will be used to correlate monitoring parameters such as air temperature, solar radiation, relative humidity and yearly variation in instream habitat parameters.
3. These data, in conjunction with historical records of stream flow for the Grande Ronde River near Perry (gauge #13318960), provide for long-term, comprehensive characterization of stream flow for the Upper Grande Ronde River Drainage.

The two OWRD gauges in Union County have been placed to document the following flow characteristics.
1. When compared to the Upper Catherine Creek gauge Catherine Creek at Union brackets irrigation withdrawal above the town of Union.
2. The Grande Ronde R. near Perry site documents the amount of water leaving the Upper Grande Ronde above the town of La Grande. This site is critical to four of the five USFS sites and its continued operation strengthens a long-term data set by which cumulative effects can be accessed.

In addition to the above stations five additional gauges exist that strengthen the overall flow-monitoring network.
1. Station #13292000 (Imnaha R. at Imnaha) documents flow at the lower end of the Imnaha subbasin, is a long term installation, and is important to fisheries and watershed management in the basin. Idaho Power funded and operated.
2. Station #13331500 (Minam R. nr. Minam) characterizes flow in the Minam River, a stream in the Eagle Cap Wilderness, the serves as a reference data set. USGS funded and operated.
3. Station #13324300 (Lookingglass Cr. near Looking Glass). This installation assists in the management of Lookingglass fish hatchery and also characterizes flow in a mid-elevation stream in the GRB. USGS funded and operated.
4. Station #13333000 (Grande Ronde R. at Troy). This station near the bottom end of the GRB, below most major tributary influence, is a good indicator of flow leaving the basin. USGS funded and operated.
5. Station #13320000 (Catherine Cr. near Union). This station is necessary for bracketing the irrigation influenced reach on Catherine Creek above the town of Union and has been in operation since 1912. OWRD funded and operated.
6. Station #13329100 Wallowa River at Enterprise. Documents water leaving the acres irrigated in Prairie Creek served by the Wallowa Lake Reservoir.
7 Station #13325500 Wallowa River above Wallowa Lake near Joseph, OR. Documents water coming into the Wallowa Lake Reservoir.

Changes from Proposed

No changes were made to the original proposal

Public Awareness or Education

No outreach activities were performed during the implementation of this monitoring activity. However, data is available to the public as detailed below.

All current and historical data is retrievable from either USGS (http://waterdata.usgs.gov/or/nwis/current/?type=flow), OWRD (https://apps.wrd.state.or.us/apps/sw/hydro_near_real_time/Default.aspx, or Idaho Power (https://idastream.idahopower.com/Data/DataSet/Summary/Location/13292000/DataSet/Flow/DayMean/Interval/Latest), via an internet based data clearinghouse. The continued compilation of flow data augments water quality monitoring efforts undertaken by DEQ, SWCD's, ODA, GRMW, US Forest Service and others. All data, including daily, monthly, and annual statistics generated from this project and previously collected flow data are available upon request from the data collection agency if not available on the internet.

Examples of entities commonly requesting flow data and examples of use in the GRB include:
1. Nez Perce Tribe - Fisheries and project development
2. Confederated Tribe Umatilla Indian Reservation - Fisheries and project development
3. Natural Resources Conservation Service - Project development
4. Soil and Water Conservation Districts - Project development
5. GRMW - Project development
6. Municipalities - Safety and storm water management
7. Irrigation districts/companies - Irrigation water management
8. Consultants - Project development & research
9. Academia - Research
10. ODFW - Fisheries and project development
11. ODEQ - TMDL development and permitting
12. ODSL - Permitting
13. USFWS and NMFS - Consultation
14. Union County - Place Based Water Planning Project

Entities requesting data are typically sent to the web-based data clearinghouse, as this is the easiest way to obtain the data of interest. Project staff presents data at irrigation district and agency meetings, conferences, or project development discussions.

Lessons Learned

Over the past few years we have learned that consistent funding for these gauge stations has been an issue so this grant is very important to continue data collection at these 12 sites without a lapse. Without the OWEB open solicitation monitoring application window in 2020 due to COVID-19 impacting lottery revenue we had to request extra funding from BPA to fill the funding gap that OWEB funds have covered in the past. OWRD also recently notified us that they will need additional funds in the future above what the current OWEB and BPA agreements have provided to meet their needs since the budget request has been the same per year for many years at $55,010 for half of the operation and maintenance of the 12 gauges. The proposed current budget from OWRD has the cost of the operation of the 12 gauges at $159,372, and historically OWEB has payed for half of the balance which would amount to $79,692, a yearly increase of $24,682 at this time and OWRD will continue to contribute substantial in-kind contributions.

Funding Sources				
Source	Identifier	Cash	Inkind Type	Inkind
Bonneville Power Administration (BPA)	1992-026-01	$110,020.00		$0.00
Grande Ronde Model WS Foundation	1992-026-01	$0.00	Labor	$7,200.00
Oregon Water Resources Dept	GRMW 2019-2020	$0.00	Labor	$95,760.00
OWEB	219-5043-16511	$101,002.00		$0.00

Totals					
OWEB Amount	Non OWEB Cash	Inkind Total	Non OWEB Amount	OWEB Match	Total Project Cost
$101,002.00	$110,020.00	$102,960.00	$212,980.00	211.0%	$313,982.00

Uploaded Files		
Image Type	File Name	Description
Exhibit B	Ex B 219-5043.pdf	
Map	GaugingStationMap_20210615.pdf	Project Area Map
Final Monitoring Analysis Report	Exhibit C - Technical Report for Water Years 2019 and 2020.pdf	Exhibit C.2.g - Technical Report for Water Years 2019 and 2020
Final Metrics	Metrics-O-Monitoring - Gauge Station Water Year 2019-2020.pdf	Final Metrics Form
Data Submission Confirmation	Gauging Stations List GRB.pdf	Station Description List and Data Retrieval Link
Other	Stream_Gauging_Protocol.pdf	Stream Gauging Protocol Description