

HOOD RIVER WATER PLANNING GROUP

November 3rd, 2012 Status Update

This document provides an update of the Hood River Water Planning Group's (HRWPG) efforts from September 17th to November 3rd, 2012 associated with the Bureau of Reclamation's (BOR) Hood River Basin Study and the Oregon Department of Water Resources (OWRD) Hood River Basin Surface Water Storage Feasibility Study. The BOR study is conducted by the BOR through in-kind services and the OWRD study was contracted to Herrera and Normandeau with coordination of the two studies by Hood River County (HRC). The studies have similar objectives and the key tasks from these studies overlap so Table 1 clarifies each task and the parties involved with completing each task. In the following sections, each task is briefly defined and the to-date progress associated with each task is described. The complete schedule for the BOR study is provided in Attachment C.

Table 1. Key tasks associated with the BOR and OWRD Studies and the responsible parties associated with each task.

Key Task	Responsible Party
Groundwater Modeling	BOR with assistance by HRC
Climate Change Analysis	BOR and Herrera
Water Storage Assessment	BOR, Herrera with assistance by HRC
In-stream Flow Assessment	Normandeau
Water Needs Assessment	Herrera, Watershed Professionals Network
Water Conservation Assessment	Herrera
Water Resources Modeling	BOR

GROUNDWATER MODELING

Understanding the occurrence and quantity of groundwater is vital to understanding the role that groundwater plays in the interactions between surface water and groundwater contributions to streams and aquatic ecosystems, in addition to groundwater availability for wells. The project scope of work and deliverables for the groundwater component of BOR study are further described in Attachment A. The progress completed in September and October by the BOR and HRC is described below.

1. 9/17/12 – Conversation with Reclamation (Jennifer Johnson and Jon Rocha) and USGS (Terrence Conlon and Erick Burns) about USGS participation in GW study.
2. 9/28/12 – Another conversation with USGS and Reclamation re: type of model, funding opportunities, and support tasks. Also discussion about possible workshop in Hood River.
3. 10/10/12 – Confirmation that seepage run would not be conducted due to funding availability and timing (too late due to rainy season impacting results). Confirmed that workshop, technical review, and SW/GW partitioning analytical assistance priorities.
4. 10/15/12 – Reclamation (Jennifer Johnson and Jon Rocha) received Department of Geology and Mineral Industries (DOGAMI) draft geologic map which includes lithology data of all the well logs in the Basin.
5. Groundwater Workshop to be arranged with USGS, OWRD, Reclamation, Niklas, Mattie and Hood River County representatives the week of November 26.

6. Mattie sent out email confirming dates of GW Workshop (November 27 and 28th)

CLIMATE CHANGE ANALYSIS

A primary purpose of the BOR Study is to understand the potential impacts of climate change on water supply (surface water, groundwater, and snow melt) and to determine how those changes in supply might affect a basin's existing water and power operations and infrastructure performance. In addition, options are to be developed to improve those existing operations and infrastructure such that an adequate water supply is available in the future. Optimization recommendations should also be considered. The scope of work and the deliverables associated with this task are further described in Attachment A. The progress completed in September and October by the BOR and Herrera is described below.

1. 9/26/12 –Ed Salminen (Watershed Network) shared streamflow data with Reclamation (provided a list of gaged sites and period-of-records).
2. 10/22/12 – Bob Lounsbury (Reclamation) participated in a one-week training in Washington State to learn the DHSVM model to learn how to combine DHSVM with the glacier component, and initiated calibration. He also completed an example run using the DHSVM model prior to departure (reran DHSVM 3.0 and results lined up well with Ed's simulation results).
3. 10/26/12 – Discussion between Bob and Ed re: use of snow water equivalent (SWE) comparisons using existing snow course and SNOTEL sites (link provided).
4. 10/29/12 – Bob indicated that when glacier component was added to the DHSVM v3.0 (was initially used with v2.0), the results were off. Bibi is working on updating the scripts to work with v3.0. The model will be rerun to see if that addresses the issue.

WATER STORAGE ASSESSMENT

The storage study scope includes a site visit by Reclamation staff (Geology, Design, others) to evaluate several sites that have been identified in several internal HRC meetings. There are several small storage facilities in the Hood River basin, but additional ones are being considered by the county. The scope of work and the deliverables associated with this task are further described in Attachment A. The progress completed in September and October by the BOR, Herrera, and HRC is described below.

1. Several sites are being considered. All of these locations are within the East Fork Subbasin upstream of the Middle Fork confluence (descriptions and maps of each location are described in more detail in Attachment B).
 - a. County Parcel located near Parkdale off of Highway 35
 - b. Horsethief Meadows (this site is likely eliminated)
 - c. Rick Ragan (Director for HR Soil and Water Conservation District) said it shouldn't be considered due to geology and proximity to OR-35.
 - d. Rimrock Creek, a tributary of the East Fork Hood River
 - e. Neal Creek
 - f. Tony Creek, a tributary of the Middle Fork Hood River, recommended by Rick Ragan
 - g. Jer Camarata (DM for FID) has engineered storage design for which would expand the the Green Point Reservoir (Upper).
 - h. Craig Dehart (DM for MFID)

- i. Expanding Laurence Lake
 - ii. County parcel NW of Dog River
 - iii. County parcel on the west side of the district.
2. Field trip during week of November 5 to visit each site will be completed.
 - a. Based on current sites listed above, Mattie will develop an itinerary and acquire permission for accessing sites on private property.
 - b. Craig and Jer will attend showing the sites they recommended.
 - c. Scheduled for November 7th and 8th, an itinerary of the field trip is listed in Attachment B
3. Mattie has a map (shapefiles with general areas) and is figuring out Water Rights with each location and will get an estimate of amount of water available and needed for diversion. She will send that information out this week (this information is in Attachment B).
4. Mattie contacted Gary Asbridge, USFS, about issues with building storage sites on FS land. He said a lot of permitting would be required and an EIS would have to be conducted (this could also be the case for sites on other lands as well).

IN-STREAM FLOW ASSESSMENT

The objective of the in-stream flow assessment is to determine requisite flows for maintaining and enhancing endangered species and other aquatic species, proper sediment transport, and stream maintenance functions. The scope of work and the deliverables associated with this task are further described in Attachment A. The progress completed in September and October by Normandeau is described below.

1. 9/18/2012 – Normandeau held their IFIM Scoping meeting to gain concurrence among stakeholders on study scope and design elements.
2. 9/??/???? – Completed low flow measurements on all six creeks.
3. 10/22/2012-10/27/2012 – Completed middle flow measurements on all six creeks.
4. Plan on completing high flow measurements in December.

WATER NEEDS ASSESSMENT

The objective of the water needs assessment is to complete a comprehensive water budget for the Hood River Basin. The scope of work and the deliverables associated with this task are further described in Attachment A. The progress completed in September and October by Herrera and Watershed Professional Network is described below.

1. Watershed Professionals Network (WPN) is collecting data on potable, hydropower, industrial, and irrigation water use and rights, expected to be complete by Mid-November.
2. After Niklas receives WPN's data, Herrera will complete the rest of the assessment by beginning of January.

WATER CONSERVATION ASSESSMENT

The objective of Water Conservation Assessment is a complete comprehensive plan to maximize water conservation in the Hood River Basin, using information from the Water Needs Assessment. The scope of work and the deliverables associated with this task are further described in Attachment A. The progress completed in September and October by Herrera is described below.

1. The conservation assessment will follow completion of the needs assessment. No work has started yet.

ATTACHMENT A. SCOPE OF WORK AND DELIVERABLES OF KEY TASKS

This section describes the scope of work and respective deliverables of each task outlined in Table 1.

GROUNDWATER MODELING

SCOPE OF WORK

A time-dependant groundwater model will be developed to evaluate alternatives related to the four study objectives. The model will be based on available data and will cover the geographic extent necessary to evaluate the alternatives. Alternatives will be determined by a working group that includes members of the Hood River County working group and Reclamation. The alternatives may include:

- What is the current state of groundwater in the Hood River Basin?
- How will new development impact groundwater conditions in the basin, including discharge to streams?
- How will hydrologic changes due to climate change impact groundwater conditions in the basin?
- What are optimal locations of recharge to maximize return and timing of return to streams?
- Can the Hood River Basin aquifer be used for aquifer storage and recovery?

The final work products will be a three-dimensional groundwater model of the aquifer in the Hood River Basin and a summary report documenting the development of the model and the alternative results. The alternative results may include contour maps of the water levels in the aquifer at various points in time, hydrographs that describe time-dependant water elevations in wells, and hydrographs that describe groundwater returns to river reaches.

DELIVERABLES:

1. Technical Report documenting the methodology, approach, and results (graphs, plots) of the groundwater assessment and alternatives evaluated.
2. Any data collected or generated during the development of the modeling efforts and related metadata.

CLIMATE CHANGE ANALYSIS

SCOPE OF WORK

Climate change analysis generally includes selection of climate change projections (emission scenarios, future time periods, and analysis technique) and generation of hydrologic data using the meteorologic data generated for those projections. For the analysis of current and future changes in water supply, the Distributed Hydrology Soils Vegetation Model (DHSVM) model that was prepared for the Middle Fork Irrigation District in Mount Hood Parkdale, Oregon (Watershed Professional Network 2012) will be used. This model was selected because it covers the full geographic scale of the Hood River Basin and was constructed for use in by the Middle Fork Irrigation District (MFID) in Hood River. It also includes a glacial component to incorporate Mount Hood glacial impacts on Hood River, which will be a key consideration in this basin. This model uses 90-meter resolution digital elevation model data and is driven

by meteorological data (e.g., air temperature, precipitation). Inputs to each grid cell in the form of precipitation or inflow are processed for each time step and then transferred to cells down-gradient. Changes in future supply will be evaluated and reported.

Current meteorologic data have been processed using Reclamation AgriMet sites among others as part of the IFIM Study for the MFID. The selection of future projections for use in comparison to the baseline data will be determined in collaboration with Hood River County and other stakeholders that will include which future period(s) are of interest, which emission scenario(s), and whether a time-evolving or step-change technique is preferred (or both).

DELIVERABLES

1. Technical Report document methodology, approaches, and results (plots, graphs) of modeling results.
2. Any hydroclimate data generated for use in construction of the DHSVM and glacial models with metadata and any descriptive information required to understand the data
3. Downscaled and bias-corrected flows at a yet-to-be-determined number of locations (will be based on Needs Assessment among other tasks) using either CMIP5 or CMIP3 global climate models.

WATER STORAGE ASSESSMENT

SCOPE OF WORK

Reclamation Design staff has been tasked with conducting site visits of potential sites identified by Hood River County and other local stakeholders. Storage data to date indicate that three months of flow at 100 cfs (18,000 ac-ft) is 100% of diversion, however that volume of storage won't need to meet that. It's been discussed in meetings that a capacity range of approximately 5000 to 10,000 acre-feet is likely needed, and this volume will be refined through this process. The conceptual effectiveness of the potential site(s) selected for further consideration will be evaluated using a reservoir model.

DELIVERABLES

1. A Technical Report will be written providing any documentation of sites under consideration, issues that may need to be addressed at each site, and documentation of public involvement (e.g., communications with residents) that has taken place.
2. Deliverable may include a reconnaissance level cost estimate based on existing topographic information.

IN-STREAM FLOW ASSESSMENT

SCOPE OF WORK

The scope of work associated with this assessment will include six In-stream Incremental Flow Methodology (IFIM) studies completed on the East Fork Hood River, Neal Creek, Green Point Creek, West Fork Hood River, Evans Creek, and Odell Creek. Where a minimum of four transects will be selected to along each creek and will ultimately identify flows to support a specific portion of the lifecycle of specific endangered species.

DELIVERABLES

WATER NEEDS ASSESSMENT

SCOPE OF WORK

Completing a water budget for the Hood River requires an inventory of all of the potable, irrigation, industrial and hydro-electric systems. The tasks associated with completing this inventory are listed below.

- Review all compiled data relative to task below to determine what is currently available and what must be researched.
- Identification (name and GPS coordinates) for all current sources/diversion for potable water systems, irrigation water systems, industrial water systems, and hydro-electric water systems and their associated infrastructure
- Identification of amount, type, period of use, and priority date of water rights associated with each identified potable, irrigation, industrial, and hydro-electric production water sources identified above
- Identification of the water demand on a monthly basis (actual usage) for each water use of 2001-2011 (inclusive).
- Identification of potential future demand for potable water based on full build out with current land use zoning.
- Identification of factors that could affect future demand for each water use.
- Incorporate flow data into final report.

DELIVERABLES

1. A final report documenting assessment approach, assessment objectives, assessment category, and contains following key items:
2. Summary: project planning/scoping and stakeholder consultation/participation, methods, and sources of information
3. Basin Map: locations of diversion/sources, potable water district boundaries, irrigation district boundaries, hydroelectric facilities, industrial water user locations, and locations of key infrastructure.
4. Summary of potable water, irrigation, industrial and hydroelectric water rights and monthly actual use from 2001-2011
5. Summary of key potable water districts, irrigation, hydroelectric, and industrial water users.
6. Summary of total water rights of all categories combined.
7. Graphically depict the Hood River's monthly high flow, low flow, and mean flow for the past 50 years.
8. Graphically depict the Hood River's total annual flow.
9. Written monthly progress reports.

WATER CONSERVATION ASSESSMENT

SCOPE OF WORK

The scope of work is a comprehensive potential water conservation assessment using existing, compiled information and data as well as research and interviews. The areas to improve water conservation and efficiency include : potable, irrigation, industrial and hydroelectric water use. Conservation through operational efficiencies/changes, infrastructure improvements/changes, and point of use technologies/methods are also considered.

- Review all compiled data relative to tasks below to determine what is currently available and what must be researched.
- Identify and characterize diversion/capture method, conveyance system, and distribution system for each potable water supplier.
- Identify and quantify potential operation, infrastructure, and point of use conservation opportunities for each water supplier.
- Identify and characterize diversion/capture method, conveyance system, and distribution system for each irrigation district.
- Identify & quantify potential operation, infrastructure, and point of use conservation opportunities for each irrigation district.
- Identify opportunities/methods to effectively manage glacial sediment for each irrigation district.
- Identify and quantify potential on-farm conservation. Quantify number of acres already converted to conservation technologies/methods. Identify potential costs and barriers to implementation for on-farm efficiencies.
- Identify and characterize diversion/capture method, conveyance system, and distribution system for each industrial user.
- Identify & quantify potential operation, infrastructure, and point of use conservation opportunities for each industrial user.
- Identify and characterize diversion/capture method, conveyance system, and generation system for each hydroelectric water user.
- Identify & quantify potential operation, infrastructure, and point of use conservation opportunities for each hydroelectric water user.
- Identify external factors that could inhibit conservation implementation for each sector: political, financial, geologic, biological, climate change, land use...

DELIVERABLES

1. A final report documenting assessment approach, assessment objectives, assessment category, and contains following key items:
2. Summary: project planning/scoping and stakeholder consultation/participation, methods, and sources of information
3. Basin Map: locations of diversion/sources, potable water district boundaries, irrigation district boundaries, hydroelectric facilities, industrial water user locations, and locations of key infrastructure.
4. Summary of potable, irrigation, industrial and hydroelectric conservation potential.

5. Summary of number of acres of agricultural land currently using water conservation technology and number of acres to be converted. Total potential conservation, cost to implement, and barriers to implement.
6. Summary of total water conservation potential for all categories combined: total cost, and summary of potential barriers.
7. Written monthly progress reports.

ATTACHMENT B. WATER STORAGE ASSESSMENT

This section provides a detailed review and map of each storage site the BOR and HRC have currently been investigating. Constraints presented by each site are described and they include water rights, topography, land ownership, and footprint. This attachment also includes an itinerary for the field trip to investigate the storage sites.

STORAGE SITE DESCRIPTION

Will be completed by Wednesday....

STORAGE SITE MAP

Will be completed by Wednesday...

STORAGE SITE FIELD TRIP ITINERARY

Table 2 provides an itinerary for the fieldtrip to investigate storage sites. The schedule is tentative and is subject to change if certain sites are completely eliminated after reviewing the storage site descriptions listed above

Table 2. Fieldtrip itinerary for investigating storage sites in the EFID, MFID, and FID.

Day	Time	Field Trip Item
Wednesday	9:00-9:30 am	Meet Roger and Steve at County Office
	10:00-12:30 pm	Tour storage sites within EFID <ol style="list-style-type: none"> 1. Site recommended by John off Neal Creek Road 2. Site in Neal Creek Drainage
	12:30-1:00 pm	Lunch in Parkdale
	1:00 -3:00 pm	Continued tour of storage sites within EFID <ol style="list-style-type: none"> 1. County parcel recommended Les Perkins off Smullin Road 2. Rimrock Creek 3. Sites upstream of the Dog River Confluence
	3:00 -5:00 pm	Review EFID sites with Roger and Steve and Mattie will obtain any other information about sites.
Thursday	8:00-8:15 am	Meet Roger and Steve at County Office
	8:30-11:00 am	Tour storage sites within MFID <ol style="list-style-type: none"> 1. Tony Creek 2. Laurence Lake 3. Site on western extent of MFID 4. Site NW of Dog River
	11:00-12:00 pm	Lunch
	12:00 -3:00 pm	Tour storage sites within FID <ol style="list-style-type: none"> 1. Green Point Upper Reservoir 2. Any other sites Jer recommends
	3:00-5:00 pm	Review all sites and develop action plan for next few weeks.

ATTACHMENT C. BOR BASIN STUDY SCHEDULE

Figure 1 displays the master schedule for the BOR Basin Study including work completed by Herrera, Normandeau, and BOR.

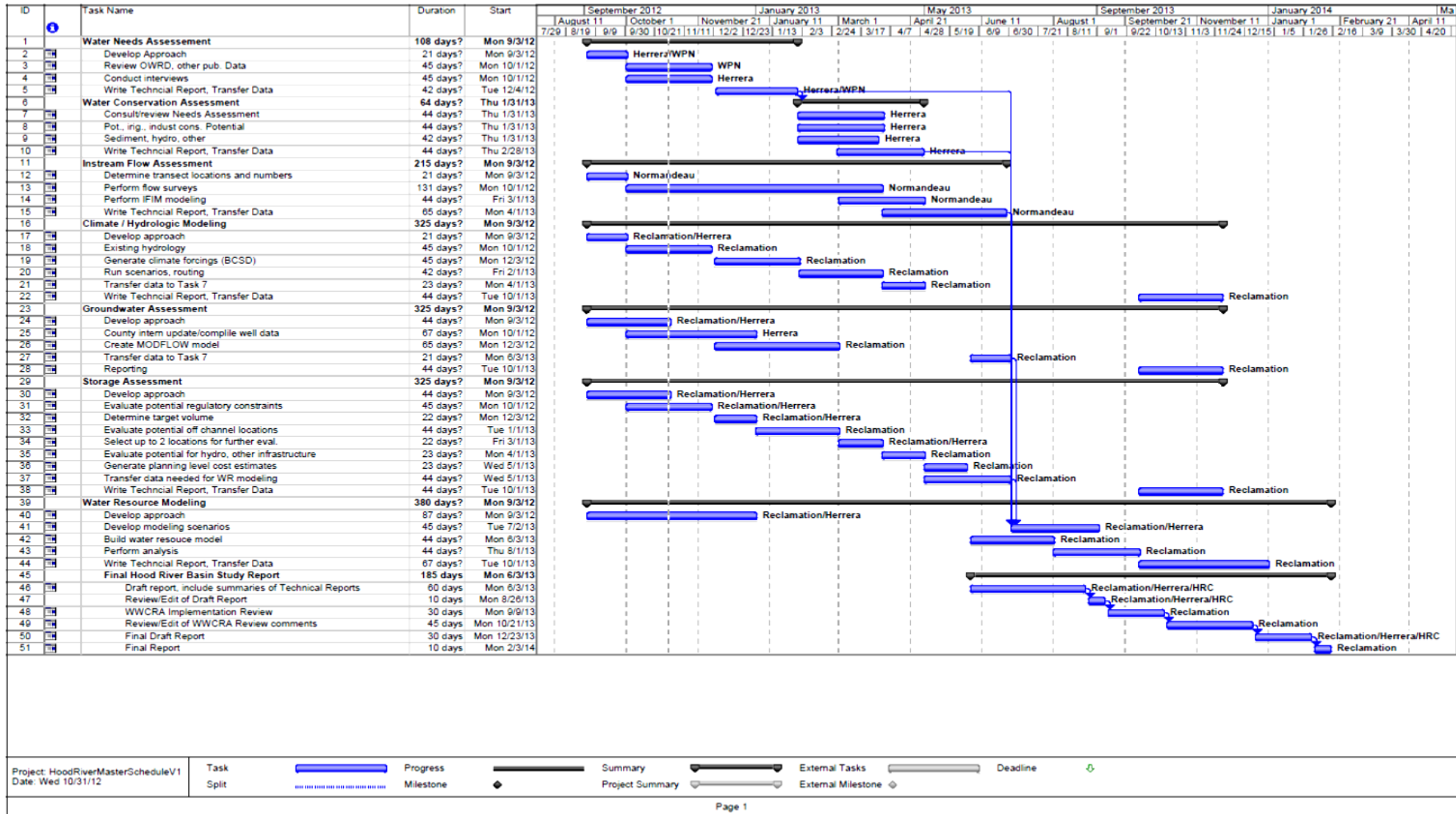


Figure 1. The Master Schedule of work from Herrera, Normandeau, and BOR through the final report development in 2014.