MEMORANDUM

TO: Members, Clark Fork Basin Water Management Task Force (Task Force)
FROM: Gerald Mueller
SUBJECT: Summary of the December 6, 2010 Task Force Meeting
DATE: December 13, 2010

Participants

The following people attended the Task Force meeting:

Task Force Members:

Caryn Miske	Flathead Basin Commission
Nate Hall	Avista Corporation
Ted Williams	Flathead Lakers
Ross Miller	Mountain Water Company
Gail Patton	Sanders County
Fred Lurie	Blackfoot Challenge
Jim Dinsmore	Upper Clark Fork River
Marc Spratt	Flathead Conservation District/Flathead Chamber of Commerce
Harvey Hackett	Bitterroot Irrigation District
Brianna Randall	Clark Fork Coalition

Agency

Ann Schwend	Water Planner, Department of Natural Resources and Conservation (DNRC) Water Management Bureau
Jesse Aber	Water Planner and Drought Committee Staff, DNRC Water Management Bureau
Ray Nickless	National Weather Service, Missoula
Gina Loss	National Weather Service, Great Falls
Roy Kaiser	Natural Resources Conservation Service (NRCS) (via internet)
Jim Nave	Deputy Regional Manager, DNRC Water Resources Missoula
Ethan Mace	Surface Water Hydrologist, DNRC Water Resources Missoula
Mark Reller	Bonneville Power Administration

Public

Molly Smith	University of Montana Department of Geography Student
John Sinrud	Northwest Montana Association of Realtors

Staff

Gerald Mueller	Consensus Associates

Meeting Agenda

- Introduction
- Review of the October 18, 2010 Meeting Summary
- Updates
  - Clark Fork Task Force Renewable Resources Grant and Loan Program Application
  - Cost Reallocation Study Comments
  - Other Organizations
- State Drought Definition and Triggers
- NOAA/NWS Drought Activities
- NRCS Drought Activities

- Flathead Basin Water Availability
- Workable Storage/Mitigation System Idea
- Public Comment
- Next Meeting

October 18, 2010 Meeting Summary

Gerald Mueller noted that Molly Smith's affiliation should have been listed as the UM Department of Geography, rather than Geology. Task Force members made no other changes to the October 18, 2010 meeting summary.

Question - On page 6 of the summary, there is a reference to a ten foot draft of Hungry Horse. What is the purpose of this draft?
Answer by Mark Reller - Hungry Horse is drafted ten feet each year to provide water to help flush salmon smolts down the Columbia River to the ocean.

Question - What is the period during which the flushing flow is provided?
Answer by Mark Reller - Late July through the end of September.

Updates

Clark Fork Task Force Renewable Resources Grant and Loan Program Application - Ann Schwend reported on the grant application to support funding for the Task Force submitted by the Water Resources Division. The grant applications are reviewed internally by a DNRC contractor and the DNRC Conservation and Resource Development Division (CARDD). CARDD then makes funding recommendations to the DNRC Director, who in turn forwards recommendations to the Governor's Office. DNRC recommended that the Task Force receive $32,000 for the FY2012-13 biennium with a ranking of 51 out of 110 applications. The Task Force grant was the last one within the assumed $5 million grant total.

The Task Force also has $5,202.30 in the DNRC base budget based on its actual expenditure during FY2010.

Gerald Mueller stated that as reported in his November 30, 2010 memorandum to the Task Force members, the total of $16,000 grant and $5,202.30 DNRC base funding would be about $21,202 per year, a 42% reduction over current funding levels.

Question - $21,202 would be less than the amount expended in FY2010, which was about $24,900. What is the best approach for increasing funding?
Answer - The RRGLP grant requests will be heard by the legislature's Long Range Planning Committee. The Task Force could make a request that as a statutory agency involved with basin water management that more funding is needed. You would have to show what the Task Force is producing for its funding and what the additional funding would support.

Question - Are the reviewers' comments available?
Answer - I will look into getting them.

Question by Gerald Mueller - Increasing the grant award amount by the legislature would require active support from Task Force members and the entities they represent. Conferences have cost about $6,000, assuming we have continued support from the UM Department of

Geography which provides access to UM facilities at a reduced cost. Should we seek a combined grant and DNRC base funding level of about $30,000 per year?

Task Force Action - Those members present at today's meeting agreed that we should seek to increase the grant award so that the combined funding for the Task Force would be about $30,000.

Other Organizations - The press recently reported the possible presence of zebra or quagga mussels, aquatic invasive mussel species, in Flathead Lake. Laboratory sampling for the mussel larvae have been inconclusive. Labs in the east reported finding the mussel larvae, but western labs did not. DNA testing will not be definitive. Finding the adult zebra or quagga mussels would be. Given the unclear laboratory findings, Flathead Lake will have to be treated as a suspect site for the exotic mussels, which means we will need a containment program for the lake to try to prevent spread of the mussels throughout the drainage. Unfortunately, Flathead Lake has many boat launching sites, and a mandatory boat check station at all of them may not be feasible. The Aquatic Invasive Species committee will meet on Wednesday to discuss this situation. The Flathead Basin Commission will seek to have a USGS diving team that specializes in detecting the mussels search Flathead Lake in December or January. However, because of its size, searching for the mussels will be like looking for a needle in a haystack. The mussels may not be seen unless a large colonization already exists.

Senator Jackson has agreed to sponsor a bill that would amend the aquatic invasive species statutes. This bill would remove the Montana Department of Fish, Wildlife and Parks (FWP) as a co-manager of aquatic invasive species. At present, the Montana Department of Agriculture and FWP are co-managers. The bill would also mandate boat check stations at the state's borders and create a boat sticker fee to fund the program. The existing appropriation of $330,000 is not enough. The sticker fee would be modeled on that in Idaho. In-state boats would be charged $10 and out-of-state boats $22-33. The bill would also create an aquatic invasive species trust fund. Task Force support of this legislation would be welcome.

Comment - As a Sanders County Commissioner, I have sat in many meetings about aquatic invasive species. There is a worry that as it dies, Eurasian Water Milfoil will change the habitat for young fish. However, the impacts of Eurasian Water Milfoil would be minor compared to a zebra or quagga mussel infestation.

Question - Would mussels spread naturally or would they have to be carried on a host such as boats?
Answer - Mussels may spread naturally in the water or by being carried. If zebra or quagga mussels colonize Flathead Lake, they will probably spread throughout the Columbia River basin.

Comment - I don't think that the press surrounding the possible mussel detection was handled well. We will now have to prove a negative to demonstrate that the mussels are not present in the lake.
Response - DFWP decided to release the available information so that news of the possible detection did not leak out. The purported larvae were smaller than normal. The Flathead Experiment Station will also be examining the plankton samples.

State Drought Definition and Triggers

Jesse Aber, a Water Planner in the DNRC Water Management Bureau who acts as staff to the Montana Drought Advisory Council, discussed drought assessment, including the Montana Drought Plan, definitions of drought, drought triggers, examples of drought responses, and drought vulnerabilities using a PowerPoint presentation entitled, "Drought Assessment, Clark Fork Task Force, December 6, 2010." A copy of this presentation is available on the Task Force web page at the following address.

http://dnrc.mt.gov/wrd/water_mgmt/clarkforkbasin_taskforce/default.asp

Gina Loss, with the National Weather Service in Great Falls, discussed maps of precipitation for October and the crop year to date, compiled from western and eastern Montana data. These maps are discussed in monthly conference calls among the Drought Advisory Committee assessment team.

As of last month, only one Montana county, Mineral, is rated as slightly dry, whereas nine counties in central and eastern Montana are rated as no drought-moist.

Question - On your slide 12, you show precipitation thresholds or triggers. Are they in percentage of average?
Answer - Yes.

Question - Over what period are the averages calculated?
Answer - For most sites, the normal period of record is 30 years.

Question - What is ENSO?
Answer - ENSO is an acronym for the El Niño/La Niña-Southern Oscillation. It refers to variations in the temperature of the surface of the tropical eastern Pacific Ocean and air surface pressure in the tropical western Pacific. El Niño is the warm oceanic phase and accompanies high air surface pressure in the western Pacific. La Niña is the cold phase that accompanies low air surface pressure in the western Pacific.

Question - Do we have more eratics, i.e. anomalous weather such as cloud bursts, during El Niño and La Niña periods?
Answer - We can't separate man-caused from natural weather variation. Climate models predict that climate change will result in shorter duration and higher intensity weather events.

Question - Do the intense precipitation locations on your monthly precipitation maps move around?
Answer - Yes. For example, in 2004, areas of the Rocky Mountain Front experienced 11 inches of rain from one storm. Much of this precipitation ran off and two month later, the area was back in a drought condition.

NOAA/NWS Drought Activities

Ray Nickless with the National Weather Service in Missoula discussed four topics using a PowerPoint presentation entitled "El Niño, La Niña and Drought." A copy of this presentation is available on the Task Force web page at the address cited above. The four topics were: El Niño and La Niña, El Niño-La Niña and snowpack, the drought monitor, and NWS conference calls and public meetings. El Niño means "little boy" and was first observed in regard to fish migration off the coast of Peru around Christmas time. El Niño is characterized by an increase in

sea surface temperature of 0.5°C or higher. El Niño results in low pressure across the southern US and an increase in precipitation in this area and a decrease in snow pack in the Pacific Northwest. La Niña means "little girl" and results in more moisture and snow pack across the northern US and drier conditions in the south.

Comment - The 1973-74 La Niña was a big flood year in my area.

Question - Is the El Niño-La Niña Southern Oscillation correlated with temperature?
Answer - There is some correlation. Western Montana is somewhat warmer in the winter during an El Niño. Valley areas may, however, be subject to inversions that keep surface temperatures lower.

Comment - Drought is a function of temperature and wind as well as precipitation levels. Drought may be exacerbated by warm spring temperatures and wind.

Question - Are El Niño or La Niña conditions more frequent?
Answer - El Niño is more frequent in western Montana than La Niña, on about a 10 to 8 ratio. Some years are neutral, i.e. neither El Niño or La Niña

Question - Do ocean surface temperatures on either side of the trade winds cause or result from the El Niño or La Niña oscillations?
Answer - We don't know the cause. Tree ring and other studies indicate that the climate has always been variable.

NRCS Drought Activities

Roy Kaiser discussed upper Clark Fork snowpack trends, upper Clark Fork monthly precipitation, and stream flow forecasts and other topics using a PowerPoint presentation entitled, "Natural Resources Conservation Service Snow Survey and Water Supply Forecasting." This presentation is also available on the Task Force web page.

Question - How many fully automated SNOTEL are there in Montana?
Answer - 90.

Comment - NRSC has historically placed a premium on Montana SNOTEL sites because we are a headwaters state.

Question - If the Task Force convenes a conference this spring to discuss how the year is setting up for water supply, what would be the best date to do so?
Answer - Mid-April would be the best time based on data and stream flow forecast availability. November through April is a key period for snowpack development, although as was evident this year, May and June snowfall plus summer rainfall can be critical to stream flow.

Comment - Different water users may having different decision points for precipitation and stream flow forecasts. As a part of an April 2011 conference, we should ask different user groups, e.g. agriculture, timber, hydropower, etc., when water supply forecasts best fit their needs.
Response by Gerald Mueller - We can make this question part of the conference this spring.

Question - Does the NRCS make water supply forecasts for specific basins?
Answer - Yes, we make basin specific forecasts, depending on the basin size. For example, we make a specific forecast for the Blackfoot area. We also make forecasts for specific reservoirs.

Flathead Basin Water Availability

Ethan Mace discussed water availability in the Clark Fork basin, not just the Flathead basin, using a PowerPoint presentation entitled, "Clark Fork River Basin Water Availability, A Review of Hydropower and Legal Water Availability, DNRC, Water Resources, Ethan Mace and Chuck Dalby, Surface Water Hydrologists." This presentation is available on the Task Force web page. This review repeated water availability studies conducted during the 1980s using a larger period of record. In general, the larger period of record indicates that the Noxon Rapids, Kerr and Milltown hydropower water rights are filled during fewer days per year than indicated in the past analyses. This review does not mean, however, that DNRC has changed its policies about the availability of new permits in areas of the basin not now closed, the Flathead and lower Clark Fork.

Question - What is the status of the 15,590 cfs PPL Montana water right at Kerr Dam?
Answer - The 15,590 cfs is the amount of PPL Montana's amended water right claim for Kerr Dam.

Question - Your presentation does not list the water right at Thompson Falls dam. What are the water rights at this dam?
Answer by Gerald Mueller - According to the *Clark Fork Basin Watershed Management Plan,* the Thompson Falls hydropower water rights are:
76N-W-094414-00 1,250 cfs March 31, 1905;
76N-W-211938-00 2,000 cfs January 29, 1906;
76N-W-211939-00 5,000 cfs December 3, 1906;
76N-W-211940-00 2,870 cfs June 29, 1909; and
76N-P-081517-00 12,300 cfs May 13, 1992.

Question - If the Tribes take ownership of Kerr Dam, can they change the priority date of the water right to 1855?
Answer - I am not the person to whom to direct this question.

Comment - Your presentation included more than the 50% exceedance levels only for the Milltown water right. Supplying the curves for other levels for Noxon Rapids, Thompson Falls and Kerr dams would be helpful.

Question - Since the mean daily discharge of the Clark Fork River at the Noxon Rapids dam is less for all months than the hydropower water right, is no water available out of the river above the dam?
Answer - Not necessarily. New permit objections and water right calls would set the stage for additional water management. In the absence of objections to new permits and of enforcement actions by existing water right holders, these portions of the basin will likely remain open.

Comment - One of the reasons that the hydropower utilities have not asserted their rights in the past was due to volume considerations. PPL's amended water right claim at Kerr includes a new volume. Objections now would be cleaner.

Question - Are flow rates and volume connected?

Answer - Yes. Volumes can be calculated from flow rates.

Comment - My understanding of DNRC's existing policy is that in the lower Clark Fork, applicants for new water right permits are required to mitigate depletions on an annual basis because of the hydropower storage rights.
Response - This is correct on the lower Clark Fork. In the Flathead there is not a mitigation requirement in the absence of permit objections.

Comment - When the Confederated Salish and Kootenai Tribes' reserved water right is quantified, permitting above the reservation is likely to be affected because the Tribes' right will be senior.

Question - What about above Milltown Dam?
Answer - The basin above Milltown is closed.

Question - Is timing a mitigation issue above Milltown?
Answer - Yes.

Comment - Your Milltown Dam figure lists the water right at 2,000 cfs. When the change permit is filed, the applicant will have to show how much water is needed for the new beneficial use, which is likely to be the fishery.

Workable Storage/Mitigation System Idea

Gerald Mueller summarized the ground water storage idea proposed by Mark Reller at the November Task Force meeting. Water would be stored water in the ground during peak runnoff, thereby reducing the amount of flood control space necessary in the reservoir. Ground storage might occur by temporarily converting sprinkler irrigation to flood irrigation and or other means that deliberately recharge aquifers. Ground water could then be pumped to mitigate impacts of new water developments on the existing lower basin hydropower water rights. Mr. Mueller asked for discussion of this idea.

Question - What is a rough estimate of the amount of water that might be stored in the Flathead aquifer?
Answer by Marc Spratt - My staff have estimated 25,000 acre feet might be stored.

Question - The Task Force has sought 100,000 acre feet of water stored in Hungry Horse for new consumption. What average flow would this amount translate to?
Answer - 138 cfs.

Question - What would be an order of magnitude estimate of the amount of land that would be required for spreading water from Hungry Horse?
Answer by Mark Reller - If we used 10 acre feet of storage to shave off the peak flow during flood control operations, this amount would equate to about 112 cfs for 45 days. Assuming 2 acre-feet per acre, we would need about 5,000 acres or 7.8 square miles to spread the water.

Comment - In the Bitterroot, 25,000 acres of land that was flood irrigated are now irrigated by sprinklers.

Comment - In the past, hydropower utilities have objected to water spreading as adversely affecting their water rights.

Comment - There are three possible mechanisms for ground water storage of Hungry Horse water, water spreading, wetlands, and injection wells.

Comment - To inject water into the aquifer, the injected water must meet drinking water standards.

Comment - One possible issue with charging aquifers with Hungry Horse water is basement flooding.

Comment - Irrigating in the fall to recharge aquifers is common practice.

Comment - There is a large amount of land under conservation easements.

Comment - As we heard from Mark Reller at the November Task Force meeting, the existing treaty with Canada allowing the US to use Canadian reservoirs for flood control expires in 2024. At that time the flood control requirement at Hungry Horse will likely increase. The ability to shave peak flows using ground water storage to lessen the flood control at Hungry Horse may, therefore, be valuable and the federal government may be willing to fund ground water storage projects.

Question by Gerald Mueller - As I noted in my budget memorandum discussed earlier in this meeting, we may have $30,000 of our existing RRGLP grant for this fiscal year that we could spend analyzing the ground water storage idea. What specific steps might we take?
Answer by Mark Reller - The Task Force might conduct a survey of in the basin to determine if landowners would be willing to increase water spreading. Also a graduate student might conduct a reconnaissance level study of soil types and ground water maps to look at the feasibility of additional ground water storage.

Comment - The Task Force also might consider acquiring an existing water right to start a mitigation water bank.

Next Steps - Mr. Reller agreed to write a brief description of a ground water storage project that may have value for flood control.

Public Comment

There was no additional public comment.

Next Meeting

The next meeting is scheduled for 9:30 a.m. on Wednesday, January 5, 2010 at the Mountain Water Company Office in Missoula. The agenda will include a review of water legislation in the 2011 session and additional discussion of the ground water storage idea.