

Minutes of NPBRT Meeting: 3-22-16
USFS Conf. Room (3-5 PM) 100 Main Street, Walden, CO

Members/Liaisons Present

*Mike Allnutt
Deb Alpe
*Jim Baller
Joe Brand
*Kent Crowder
Mike Dixon
*Blaine Evans
*Randy Miller
*Carl Trick II
*Barbara Vasquez
*Douglas Waldron
*Ty Wattenberg
Jeremiah Zamora

Members/Liaisons Absent

Pete Conovitz
Debbi Heeney
*Mike Honholz
Paula Belcher
*John Rich
*Rick Wyatt

Others Present

Joe Busto
Jeni Cederle
Craig Godbout
Dan Henrichs
Allen Jenkins
Caid Waldron

I. Agenda Review

Agenda was accepted as proposed.

II. Approval of Roundtable Minutes: 2-23-15

The minutes of the Feb. 23, 2016 meeting were accepted as published after two corrections.

III. *Presentation on Wyoming Weather Modification Program* – Jeni Cederle, Wyoming Water Development Office, Project Manager & Joe Busto, Colorado Water Conservation Board, Weather Modification Coordinator

Jeni introduced herself and explained she had a background in air quality and meteorology prior to taking on the role as Weather Modification Coordinator for the WY Water Development Office. The Wyoming Weather Modification Pilot Program (WWMPP) was funded between 2005-2014 by the WY legislature (\$14M) with additional funding from the University of Wyoming, CAP, the Colorado Water Board of California and the Southern Nevada Water Authority. It was designed to determine whether there is any beneficial impact of ground-based cloud seeding and included experiments in the Wind River Range, the Sierra Madres (SM) and the MedicineBow (MB) mountains. The goal of the pilot program was to augment snow pack and stream flow. In the presentation, Jeni focused attention on the SM and MB and chose examples in which the cloud seeding resulted in enhanced precipitation south of the border in North Park and/or northern Larimer County. Only 1 range was seeded per 'seed-able' storm. The range to be seeded was randomized with controls such that the operators and researchers were kept separate. Jeni walked the attendees through several maps showing location of generators associated with various seeding trials. The work included both physical experiments and modeling. The draft final report for this program is currently being reviewed. The preliminary results showed an increase of 5-15% precipitation per seed-able storm. Given that only 30-40% of the storms were considered 'seed-able', that resulted in an increase of 2-5% snowpack and 1-3% increase in stream flow. The team calculated an estimated cost of \$35-\$107/AF for this increased stream flow. Following the 2014 season, the generators were removed from the SM and MB. The Wyoming 2015 Omnibus Water Bill transitions the weather modification effort in the state from research to operation. Next steps include final design and permitting for placement of seed generators for the Sierra Madres and Med-Bows, which is being

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conducted by NCAR (National Center for Atmospheric Research) in collaboration with Heritage Environmental Consultants and Weather Modification Inc. At the Technical Advisory Team (TAT) Meeting held late January (attended by T Wattenberg) NCAR presented their modeling results in more detail than Jeni was able to do today, including results that show potential impacts of Wyoming seeding in Colorado. NCAR is doing the modeling, using the Weather Research and Forecasting (WRF) Model, described on NCAR's website as a next-generation mesoscale numerical weather prediction system designed to serve both operational forecasting and atmospheric research needs. Roy Rasmussen, who was with the Bureau in the '90's, saw the need for weather models. He worked with China, then brought a Chinese expert to the US to help refine the model that is being used in this program. In response to a question, Jeni said China is spending approximately \$100M/year on cloud seeding.

For those who might be interested, there will be another TAT meeting in Sheridan (Aug.17) and final results of the operational design will be presented sometime late 2016. One of the complications for the MB siting is the need for a Special Use Permit from the US Forest Service. The FS manual specifies that the Chief of the FS is responsible for decisions involving WM that potential impacts wilderness areas. Because there is potential impact to Wilderness Areas by MB seeding, the NEPA analysis required will be an EIS. It's estimated it will take approximately 3 years to get through these requirements. Joe mentioned that there is no precedent or institutional experience in the FS for such a request. The cost of the EIS for NEPA compliance would not be born by the FS, but by the entity bring the proposal forward (cost recovery). Jeni ended with a slide posing the question whether WY should lease or buy equipment as they move into WM operation. A commercial lease costs approximately \$10-12k/generator/year without operational support. The target is to have 10 generators. To purchase, it would be \$35-55k/unit (without operational support). The question of buying versus leasing the equipment is still open. Carl asked whether there had been any discussion in Wyoming of reaching S across the border to discuss potential participation by Colorado. Joe commented that we might consider a multiparty program within CO (North Platte Basin, Yampa White plus S Platte) for cloud seeding in CO and could include cooperation with Wyoming. As an example, he had sent Barbara an agreement crafted for the Colorado River Basin, but said the legal work was outside his expertise!

Joe gave a brief presentation to expand on the material he presented in February here at the RT. His materials will be distributed with these notes. He explained there were changes in 2012 to require good evaluation for siting and permitting in Colorado. He showed a photo of a new leased DRI generator operated by Western Weather Consultants, that was placed above Saw Pit NW of Telluride in Dec 2015. Using a data set covering 8 years (2000-2008) he showed 'bulleyes' for seeding with the highest potential near Steamboat along the Park Range (W of the North Platte Basin). The State has grant money, but requires some local investment. Joe said his budget includes a grant program to help defray the cost of a design study, which could use either NCAR or DRI. As an example, he explained that a small program in Grand Junction with 14 generators costs approximately \$35k/year/generator but the overhead for operation is absorbed locally.

IV. *North Platte Basin Roundtable Education Report - Update on Chisti Bode's Initial Visit and Progress on video* - Deb Alpe, Education Liaison

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Deb Alpe reported on the status of Christi Bode's work to develop a North Platte Basin video. She has provided an updated outline, which was included in the minutes of our Feb. 23 meeting. During her visit in February she not only participated in our NPBRT meeting, she also got quite a lot of footage (enabled by RT members) including sunset shots of a large herd of pronghorns north of town (D. Alpe), the Refuge (M. Dixon), feeding cattle (M. Allnutt), snowmobiling (Randy Miller) and ice fishing on Delaney Lake (D. Alpe). She plans her second visit the week before Rodeo and a third mid to late August. During that visit, she'd like to record some of the voiceovers. So the RT needs to specify the narrators this summer. Ty mentioned that there had been some discussion of Eric Wagner as one of the narrators. Deb is working with Viola on the funding. If Christi can submit her invoice for the June trip in time, it can be paid out of the 2016 budget. Christi's budget was passed out at the meeting and is being distributed with these minutes. She would like to get back up in late fall, but may not have sufficient funds to do so. There were comments from RT members that they'd like to make sure she can make that last trip and, if necessary, there may be other sources of funds, such as the JCWCD. There were also some comments that perhaps she might be asked to create two videos, one at 6-7min (original goal) and a longer video. Kent mentioned that might be of interest to the North Park Visitor's Bureau (name?).

V. CWCB/IBCC - Ty Wattenberg, John Rich and Mike Allnutt

CWCB: T Wattenberg said that at a meeting last week, Claus Walter gave the CSU meteorology forecast including for the North Platte Basin (wet spring, moderately dry summer with moderately increased temperatures). Regarding funding decisions on the NPB projects, the McFarlane dam project was approved, the Live Like You Love It project was withdrawn, and the Water Ruse project was funded. The current NPB balance is approximately \$830k.

IBCC: Because J Rich and M Allnutt were unable to attend the latest IBCC meeting, Kent asked Craig Godbout to summarize for us. Four west slope basins are doing a Multi-Basin study (modeling). A technical committee has been formed. Front range basins including the Arkansas and the S Platte are sending reps to that committee. The WSRA Criteria and Guidelines Committee will be reconvened with 4 from IBCC and 4 from CWCB with distributed geographical representation. Future meetings of the IBCC will be quarterly (May, Aug, Nov). The CWCB may hold an Ag Viability summit, perhaps with the IBCC meeting and the Colorado Ag Water Alliance in Nov. The WSRA budget is projected to decline 40% in 2017 just as the applications for funding are expected to rise to support projects for the BIPs and the Colorado Water Plan. The legislature is discussing adding a tap fee (\$0.25/1000gal) to generate additional funds.

VI. Old Business/New Business

Old: B. Evans commented that the need for augmentation was again surfacing, with Sandridge asking for 100AF for drilling and fracking oil wells in case the river is on-call.
New: M. Dixon handed out a press release by the Bureau of Reclamation on climate change, which is being distributed with these minutes.

VII. Date for the next meeting

The next meeting was set for Tuesday, April 19 to be held from 3-5 p.m. in the USFS Conference Room at 100 Main Street, Walden.