

Minutes of NPBRT Meeting: 12-17-13
USFS Conf. Room (3-5 PM) 100 Main Street, Walden, CO

Members/Liaisons Present

*Mike Allnutt
Deb Alpe
Mike Alpe
*Jimmer Baller
Jason Brey
*Kent Crowder
*Blaine Evans
*Scott Fischer
*Tom Hackleman
*John Rich
*Barbara Vasquez
*Carl Trick II
*Rick Wyatt
*Ty Wattenberg

Members/Liaisons Absent

Paula Belcher
*James Carothers
Pete Conovitz
Debbi Heeney
*Mike Honholz
*Randy Miller
Ann Timberman
Hunter Townsend

Others Present

Greg Johnson (Wilson Water Group)
Philip Andersen
Dick Andersen
Erin Light
Matt Schuler
Jodi Bickel, Headwater Ventures

I. Agenda Review

The agenda was accepted as published.

II. Approval of Roundtable Minutes: Nov.12, 2013 Meeting

Two small corrections were offered for the minutes of the November 12 meeting. They were approved as amended. Final minutes were distributed electronically after the meeting.

III. North Platte Basin Implementation Plan- Work Session-Review of the North Platte Decision Support System and How It's Used to Calculate Crop Consumptive Use and Agricultural Shortages – Greg Johnson, Wilson Water Group

Greg reported that the new CWCB assignee to the NPBRT is now Craig Godbout. He could not attend today because of illness. So Greg passed out copies of the IBCC one-pager discussed in the IBCC update below along with the IBCC New Supply Work Plan.

Greg's presentation on the North Platte Decision Support System (NPDSS) and data derived from it will be included with these minutes. The NPDSS is a modeling tool. Greg gave an outline of his presentation which included:

- Tools and initial analysis
- Agricultural use affects on stream flow (Modeled)
- Graphs of the crop use and shortages by month for 8 sub-basins of the North Platte (Modeled)
- Irrigation shortage categories (Modeled)

-Initial Modeled Storage Analysis

Discussion of the Model: Most of the modeling presented was derived from the State Consumptive Use (CU) Model. Historic climate data was based on the Walden Climate Station

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with corrections for elevation. None of the modeling inputs have been enhanced yet with the data coming from the new (last 3-4 years) climate stations set up in North Park by Nolan Doesken's project. The irrigated acreage is based on data from the years 2001, 1987, 1976 and 1956 (more recent coverages were not available at the time of the report). The potential ET was calculated with the Blaney-Criddle Model. Blaine asked if the ET was different for the different grasses, which have changed substantially in the past 20 years in this basin. Greg said it was input as 'pasture grass' and wasn't sure about the assumption on the particular mixture of varieties. Jimmer asked if the crop coefficient was assumed to be 0.83. Greg didn't know but will find out and let us know. He commented that he's rather new to using the model, and that having Kara or Erin from Wilson Water Group come up to a future meeting would help answer many of our more detailed questions. Greg showed the season beginning/ending dates for determination of potential crop consumptive use by perennial crops is triggered when the average monthly temp reaches/drops below 42 degrees F. Kent asked if that temperature could be used to define the date at which one could put water to beneficial use for growing high mountain grass? Greg said the date at which the irrigation season begins for each year depends on decrees and was Erin Light's call. The model uses inputs for calculated efficiency of delivery of water to the field, crop consumptive use, and soil storage from a given diversion to a particular acreage. For flood irrigation, the maximum application efficiency for water use was set in the model at 60%, but the actual values used in the North Platte basin model range from 38% to 41%. The model uses a basin-wide soil reservoir of ~35k AF for the North Platte basin.

The heart of Greg's presentation was captured in the basin and sub-basin graphs of irrigation crop use of water from the diversion versus from the soil reservoir. For each of the eight sub-basins (Lower North Platte, North Platte Mainstem, Canadian, Michigan, Illinois, Grizzly, Little Grizzly and North Fork), four graphs were displayed. Three of the graphs for each sub-basin displayed the crop water requirement (dotted line) versus the water used for irrigation from diversions (solid dark green bar) and water used by the crops from the soil reservoir (stacked bar-light green) by month. The top left is the average modeled output 1975-2008. The bottom left represents a wet year (1995) and the bottom right represents a dry year (2002). The fourth graph in the upper right displays two lines representing the wet versus dry year irrigation-limited crop use of water. Although the absolute values as well as the extent of the shortages differ by sub-basin, the message was consistent: the model shows that the crop need is greater than the water delivered by diversion and/or soil reservoir. Tom Hackleman asked what preset is used in the model for soil moisture (storage) at the start of the season? This must vary considerably from year to year. Greg said there's a 'switch' in the model for winter precipitation. It's turned off, with a preset at 50%. After the meeting, Greg provided a copy of the Oct. 2012 report published by CWCB entitled Historical Crop Consumptive Use Analysis-North Platte River Basin (attached with these minutes as NorthPlatteRiverCrop_CU_Oct2012.pdf). Answers to Tom's question are found in that report on page 10 and are reproduced below:

- Soil moisture consideration – The soil moisture switch was set to "1" indicating the analysis should include soil moisture accounting.
- Initial soil moisture information – The initial soil moisture was set to 50 percent of the capacity for each structure.
- Winter carry-over precipitation percent – The winter carry-over precipitation defines the amount of

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non-irrigation season precipitation that is available for storage in the soil moisture reservoir. Winter carry-over precipitation was not used for this scenario; set to zero.

From the graphs Greg produced from the modeling output, one is left with the question: "What causes the shortages and what water is actually available in the sub-basins?". Carl commented that the irrigation practices in the Basin divert more water than the grass needs in the early season, so he didn't understand the 'shortages'. In explanation, Greg gave approximate values for the entire basin based on the model which set us up for the next discussion on water availability:

- > ~200k AF crop needs (Irrigation Water Required)
- > ~400k AF headgate diversions
- > ~100k AF crop consumption of diverted water
- > ~ 25k AF crop consumption from soil storage
- > ~ 275k AF diverted water that is not consumed by crops

Greg showed a graph that suggested the full crop irrigation requirement (CIR) averaged from 1975-2006 is 34% higher than the diversions and suggested that many shortages may be due to irrigation practices.

Potential shortage categories might include some driven by irrigation practices such as:

- Dry up prior to haying
- Headgate/ditch capacity limitations
- irrigation 'habit' mimics dry-year pattern
- events competing for time to irrigate (Rodeo, County Fair)

Basin level analysis is too coarse a tool to determine reasons for shortages, and he suggested next steps might be sub-basin analysis. Such an analysis may also provide insight into best possible sub-basins for additional storage. Greg showed a table of the 14 reservoirs included in the model, which represents a total storage of 30,603AF with 18,106AF of that storage representing irrigation use. The modeled total storage by year shows considerable variation, with the high years coming after a dry year when reservoirs were drawn down, but did not show any overages (above the legal limit of 17,000AF/year for irrigation). Greg noted again that this is model output and that Erin Light would be speaking to the actual storage later in this meeting.

Barbara commented that this presentation had been very useful, but it's focus was entirely on irrigation and crop consumptive use. She asked for complementary graphs to be produced from the modeling to show the stream flows in each sub-basin along side the total diversions, crop use, soil storage and return flows so we get the complete picture of water use in the systems. Such information will be important as we consider BIP projects for non-consumptive values as well as additional diversions for irrigation and/or storage projects. Greg said he'd produce those graphs soon.

Ty had several questions/comments. First, he suggested that Greg simplify his description for the ET model to the 'modified Blaney-Criddle'. Second, he suggested that the graphs Greg showed us prove the late season benefit of irrigation. He asked how the soil storage was modeled...how was it treated once the level fell below the root zone (~3.5ft) and what was the

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lag time for return flow to the streams? Is it the same as they are using in the new Ag transfer models? Greg didn't know details about the agricultural transfer models but stated that due to data limitations, only one pattern was used for the North Platte which assumed 85% of the soil reservoir was returned to the stream within 1 month.

Kent asked Greg how we might best use this modeling data to inform decisions. Can we determine where there might be excess available for additional storage? Greg suggested that modeling in sub-basins where there are small shortages (based on the model) might be the best place to start, along with an analysis of water availability.

John Rich complained that modeling bothered him. The uncertainty in a model left him wondering whether it was a good basis for decision-making. Greg gave examples where the model has been proven to be very close to actual, and Kent commented that the NPDSS may be one of the best ground-truthed models in the state. Ty said it's not perfect, but it's close and give us direction.

BIP Coordination Meeting Report- Greg Johnson & Rick Wyatt

The first coordination meeting ran for 6 hours with attendance at ~45 people. Greg commented that the 4 statewide coordination meetings were not in the initial scope of the Wilson Water Group contract with the North Platte to develop the BIP.

The goal of these meetings is to coordinate the BIP framework across the state in order to make the basin roundtable input to the Colorado Water Plan as efficient and useful as possible. The BIP Guidance document was augmented with a timetable. It's expected that each basin will present their draft plan to the CWCB at their July meeting and the actual BIP due date is now July 31, 2014. The focus of this first coordination meeting was the Goals and Measurable Objectives. It was recognized that each basin is different, but the guidance included examples of how the BIP might be constructed. The measureable part is the most difficult. Greg said that the State had a contract with CDM and The Nature Conservancy as a subcontractor, to work on the non-consumptive side of the BIP structure. They were attempting to overlay each basin's NC attributes with the NC projects and arrive at some kind of 'sufficiency index' to measure how well the projects meet the attribute needs. This is a first attempt at defining a non-consumptive gap. We already have statewide assessments of the M&I gaps and, as we did today, Basins are working on the agricultural gaps.

At the meeting the CWCB also released a new definition of M&I IPP's (no new definitions released for agricultural or non-consumptive IPP's):

M&I IPP Definition:

1. The project or method has a project or method proponent.
2. When the proponent is a retail water provider, the project or method is being used to meet the water supply needs of its customers by 2050.
3. When the project proponent is a wholesale water provider, at least one retail water provider must express interest in writing and plan on using the project or method to meet the water supply needs of its customers by 2050.

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4. The project or method must have at least preliminary planning, design, conditional or absolute water rights, rights of way, and/or negotiations captured in writing with local governments which the water project could effect.
5. The water supply needs must be identified and included in the Basin Implementation Plans and/or SWSI documents.

IV. *Public Education, Participation and Outreach-Updating EAP, Outreach efforts related to the Colorado Water Plan and Progress on the North Platte Implementation Plans* – Deb Alpe, Education Liaison

Deb reported she had not been able to attend the PEPO meeting but had participated in the calls. The PEPO directive was to keep stakeholders apprised of the BIP progress. Some basins have been writing articles to inform the public about the process and intended product. Deb wanted to know what the NPBRT thought of how we should proceed regarding outreach. She said she'd received a lot of info including documents she passed out to the attendees from CWCB including: a) SWSI- Basin Implementation Planning 4 page document b) Colorado's Water Plan, No.1 Nov.2013 and c) Colorado's Water Plan-Frequently Asked Question 5-page document. The informal consensus of the RT was that Deb should use the statewide materials for now to communicate to our stakeholders, until we were a bit further along in our BIP development. Deb mentioned that the update of our Education Plan would be needed and she will reconvene the Education Committee to work through that. Once approved by the RT, there will be \$2000 funding available from the state for implementation. She also handed out a one-page summary of current legislation: Colorado Water Efficiency-A Legislative Proposal for Wise Water Use that proposed to provide uniform water conservation standards throughout the state that is being spearheaded by Denver Water.

V. *Over-storage of water for irrigation purposes in 2013 in NP Basin* –

Erin Light, Division 6

Erin's presentation is included with these meeting minutes. She summarized the data available for the North Platte Basin storage for irrigation purposes over time. The average since 1980 is approximately 9000AF and the average since 2000 is approximately 9700AF against a maximum allowed in the Supreme Court Decree of 17,000AF per year. There are two years since 2000 when we have exceeded that annual limit. In 2003, we exceeded the limit in the spring, but could correct it before the storage season was over. In 2013, we exceeded the limit by 438AF, but because the limit was exceeded in the fall, the season was over before it could be corrected. However, the stage storage curves for most reservoirs were established by the CWCB in the 40's and 50's. (A stage storage curve allows the estimate of the reservoir capacity based on the level of water relative to the spillway height.) A few reservoirs in the state have more recent stage storage curves, but most are quite old. One variable is the siltation that occurs over time in a reservoir, which would reduce the total capacity. If water is released from an irrigation reservoir for irrigation purposes, evaporation loss from the reservoir is counted toward irrigation. On the other hand, if water is not released from an irrigation reservoir, the loss in volume is attributed to evaporation is not counted toward an irrigation use. Kent asked what the action would be to deal with the 438AF over storage in the 2013 season. Erin explained there was a North Platte Decree Committee discussion earlier today in which she participated as the Colorado representative. Her approach to the issue had been worked out previously with

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Dick Wolfe. Several options were discussed, which included:

- 1) release of 438AF to the downstream states from those reservoir(s) that stored water between August 1 and September 30, 2013. ,
- 2) NE suggestion: Reduce storage maximum for 2014 by 438 AF. But this option was discarded because it won't really address the issue since CO won't get close to the maximum storage limit next season given the current reservoir levels.
- 3) Consider the overage de minimis given the age of the rating tables. Colorado will work to update the stage storage curves.
- 4) Leave it up to Colorado
- 5) Paper accounting. Show on paper a bypass of 438AF downstream from one or more reservoirs. Seymour is the biggest contributor to the over-storage. Meadow Creek and Walden reservoirs were turned off early, so could count as water not stored by pass.

A motion was made and passed by the NPDC to combine options 4) and 5) above. Pat Tyrrell, State Eng. for Wyoming, did not want to open the issue of updating stage storage curves as it would raise questions about their storage. Colorado is to decide how to account for the bypass and report it to the NPDC in the spring. In addition Colorado is to report on solutions to prevent over-storage in the future. Carl asked whether Erin would accept local input from NPBRT and/or JCWCD into positions taken in future NPDC discussions.

Erin made a proposal to the NPBRT that they might solicit a project to survey the irrigation reservoirs and develop more accurate stage storage curves. Carl asked if there was currently any data on siltation in North Park. Erin: Not that she knows of. Blaine asked how the stage storage curves would be determined. Barbara offered that a simple fish finder might be used to map the depth profile of a reservoir and Erin concurred. Carl asked what the advantage and/or disadvantage might be to know the current storage more accurately. This was discussed a bit, including questions about whether there would be any action by the State Engineer to consider under-storage (due to siltation) as a candidate for the abandonment list, or whether under-storage might be drawn into negotiations for the second 13-year depletion plan under the 3-State Agreement. Barbara mentioned that this could not be considered an intentional act, the slow siltation of a reservoir, and Erin expanded on that, saying that abandonment connoted an intentional act. But she did say she couldn't be sure what the rules of engagement might be in 10 or 20 years for consideration of abandonment by the State Engineers Office. Erin mentioned she had put out a protocol for determining storage amounts in the North Platte Basin to her group, and she would forward it to Barbara of inclusion with these minutes. She also has something similar pertaining to irrigation season, but it has not yet been finalized.

Erin made a second suggestion, that the Basin consider some kind of augmentation plan as part of the BIP. Erin gets a few calls each year, like the one recently from the Pellet Mill in Walden, for permission to drill a well for which there is no augmentation available in the Basin. She suggested two reservoirs that might be in a position to offer augmentation: Meadow Creek and Walden Reservoirs. Currently all the water in the Walden Reservoir is adjudicated for irrigation, including the shares owned by the Town of Walden. Carl said the Walden Reservoir Company has had several parties approach them for augmentation water over the years, but as owners they were reluctant to go to Water Court to get a change of use, for fear that opening up such a

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case would expose them to trouble. Erin suggested they apply for a 2014 (very junior) water right specifically for augmentation. As an example, she described a right to store 100AF under free river conditions. Erin also pointed out that getting such a capability in place and selling augmentation water to entities like the Pellet Mill would be preferable to having them buy agricultural land and dry it up to provide the needed augmentation. Carl asked if a Substitute Water Supply Plan would work. Erin explained that would only be temporary, running for one year renewable annually for up to 4-5 years. With a junior augmentation right, Barbara asked what would happen in a dry year to the entity that purchased the augmentation water. Erin explained that the water would have been stored the previous year and that it carries over if it hasn't been released. If there was a long enough drought to deplete that storage, then the well for which the augmentation was purchased would have to be shut down by the Commissioners. Carl made a final comment: He appreciated the effort Erin put into this and he takes the 17k limit quite seriously but asked where discussions at the NPDC involved the basin, he'd appreciate the opportunity to offer NPBRT and/or JCWCD input before such a meeting if Erin thought it would be useful.

VI. CWCB/IBCC Update –

CWCB: Ty Wattenberg Ty reported that the major topic of the Nov. CWCB meetings was the flood repair in the South Platte basin. 1200 farms were impacted, 15k acres of corn destroyed, 63k acres of alfalfa hay were destroyed. Temporary gage stations are in place, costing \$500k to repair. \$44M have been approved so far for infrastructure reconstruction. The State has made a lot of loans. The Chatfield mitigation by CPW is almost completed. Related to the S Platte flooding, Carl asked Erin about Dick Wolfe's guidance regarding channel changes. Erin believed that if the new channel is within 500 feet of the original channel, no applications would be required for change of point of diversion.

IBCC: John Rich/Mike Allnutt

John started the report, commenting on how informative he found the presentation by John MacCloud about the Colorado Basin. The speaker estimated we were only 1 big drought year from leaving Lake Powell (currently 43% full) so low that the water level will be below the gates. If this were to happen, there would likely be some federal intervention. One of the potential problems would be with power generation. Carl added that WAP builds their plan based on defined power deliveries to the grid from each generator. If the hydro-generation goes off line, WAP would need to buy it from somewhere else. John said the meeting was the 'worst' or most frustrating he had attended, as most of the time was spent on fine tuning the risk management and new supply statements. Mike wasn't able to physically attend, but spent about 8 hours on the phone participating from a distance. Greg passed out copies of the IBCC New Supply Work Plan: Dec 2013 through Aug.2014, revised 12/5/13 as well as the one-pager IBCC: Dec 2013 Meeting Discussion Topics for Roundtable Feedback. Barbara asked whether John wanted feedback on the one-pager which includes a Risk Management Statement of Principle as well as 3 new-supply statements (Moving Forward, Sequencing of Strategies, Relationship between Agricultural Transfers and New Supply), which had been requested from each roundtable by IBCC. John said...you've got it, read it and if you have any feedback give me or Mike a call.

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VII. Old Business

NRCS Proposal to Eliminate Snow Course Data

Budget reallocations by NRCS will allow continuation of this work until Aug 2014. The topic will be revisited in a future meeting.

VIII. New Business

None

IX. Dates for the next meeting

Dates were set for the next two meetings: January 21 & February 25 (both Tuesdays, 3-5p.m.). In addition, the date has been set by IBCC for a Statewide Water Summit on March 6 in Denver.

IX. Meeting Adjourned