

Yellowstone River Basin Advisory Council



Membership & Report of 2013 Public Scoping Activities



An effort of the 2015 Montana Water Supply Initiative (dnrc.mt.gov/mwsi)

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Report of 2013 Public Scoping Activities

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September 2013

Abstract

Based on the inputs of nearly 150 public participants, the Yellowstone Basin Advisory Council (BAC) presents the findings of their scoping efforts in this report. Having engaged roundtable discussions, demographic surveys, Q Sort surveys, and written comments as their primary means of collecting public inputs, the Yellowstone BAC was able to discern clear directives for moving into Phase II of the planning process. Namely, the public was quite clear that specific and reliable information concerning water availability and use was central to any effort towards recommendations about how water is to be managed and shared. Second, the public favors and encourages continued adherence to a water allocation system based on the prior appropriation and beneficial uses doctrines. Finally, the public charges the Yellowstone BAC with the task of addressing these preferences via recommendations that anticipate water scarcity.

Acknowledgements

Primary funding of the scoping activities was provided by Montana's Department of Natural Resources and Conservation. Additional support was provided by Montana State University-Billings, Rocky Mountain College of Billings, and the Saint Louis University Center for Sustainability.

Executive Summary

In 2013, the Department of Natural Resources and Conservation set out to update the Montana State Water Plan by launching the Montana Water Supply Initiative. The initiative is designed to engage citizens in Basin Advisory Councils (BACs) convened to help develop water management strategies and recommendations. The Yellowstone BAC consists of 20 representatives from key water interests within the basin: agriculture, conservation, industry, municipal, recreation and tribal. Efforts were also made to include geographically diverse representation from across the basin. Ex-officio members represent agencies.

From March through May of 2013, meetings were conducted throughout the Yellowstone River Basin to provide the public opportunities to help identify and prioritize water issues that should be addressed through the planning process. Nearly 150 individuals participated in these meetings. Roundtable discussions, demographic surveys, Q Sort surveys, and written comments served as the BAC's primary means of collecting public inputs.

The public raised a variety of concerns and perspectives during the roundtable discussions, and over 34 hours of roundtable discussions were documented via audio-recordings. Also, scribes were assigned to each table to take notes, and participants were encouraged to ensure the accuracy of the notes. Yellowstone BAC members served as discussion facilitators. Analyses of the notes and recordings resulted in a list of 28 key issues. Ranging from availability to tribal rights, the list details the broad range of water issues.

Analysis of the Q Sort data revealed five archetypal views that illustrate how the people of the basin view water issues. Listed alphabetically they are: Pro Development, Pro Ecosystems, Pro Irrigation/Anti-Markets, Pro Irrigation/Pro Markets, and Pro Storage and Conservation. These archetypal views can be thought of as documented publics, each with a legitimate stake in the water planning process. The Q Sort also revealed three concerns that are important across the basin: 1) water management will become more complex; 2) the lack of water information hinders water development; and 3) the key issue for water planning is to prepare for severe droughts and precipitation events. Issues that may result in conflict were also revealed.

In addition, 17 parties submitted written comments, ranging in focus from concerns over instream flows, to concerns over upper basin and lower basin priorities.

Clear directives for moving into Phase II of the planning process were derived from the data. Specifically, the public was quite clear that having detailed and reliable information concerning water availability and uses was central to any effort towards recommendations about how water is to be managed and shared. Second, the public favors and encourages continued adherence to the prior appropriations doctrine. Finally, the public charges the Yellowstone BAC with the task of addressing these preferences via recommendations that explicitly anticipate water scarcity either through drought, additional development or both.

Table of Contents

List of Figures.....	ii
List of Tables.....	iii
List of Appendices.....	iv
Introduction to the Yellowstone BAC Scoping Report.....	1
Background.....	1
Part I: Selection of the Yellowstone BAC.....	3
Yellowstone BAC Voting Members.....	3
Yellowstone BAC Ex-officio Members.....	6
Part II: Preparations for Scoping Meetings.....	7
General Design of Meetings.....	7
DNRC at Yellowstone BAC Regional Meetings.....	7
Yellowstone BAC Coordination.....	8
Regional Meetings.....	8
Public Input—Written Comments.....	9
Part III: Results.....	11
Attendance at Meetings.....	11
Public Input via Roundtable Discussions.....	11
Preliminary Ranking of Issues.....	16
Public Input via Q Sort—Archetypal Views in The Yellowstone River Basin....	19
Archetypes.....	19
Strong Positive Agreements.....	23
Strong Negative Agreements.....	24
Contentious Issues.....	24
Other Findings.....	25
Importance of Q Sort Data.....	25
Public Input via Written Comments.....	25
Part IV: Next Steps in the Yellowstone Water Planning Process.....	27
Introduction.....	27
Moving Into Phase II—Technical Studies and Feedback.....	27
Yellowstone Water Planning—A Unifying Theme.....	29

List of Figures

1: Photo of Yellowstone BAC Members—May 8, 2013.....	2
2: Yellowstone BAC Representation Map.....	5

List of Tables

1: Yellowstone Basin Advisory Council Members, Spring 2013.....	4
2: Yellowstone Basin Advisory Council Ex-officio Members, Spring 2013.....	6
3: Schedule of Yellowstone BAC Regional Meetings 2013.....	8
4: Print Advertising of Yellowstone BAC Regional Meetings.....	9
5: Public Attendance at Yellowstone BAC Meetings, March-May 2013.....	11
6: Ranking Conversions.....	16
7: Yellowstone BAC Preliminary Rankings of Issues Identified by the Public.....	17
8: Yellowstone BAC Ex-officio Preliminary Rankings of Issues Identified by the Public.....	18
9: Pro Development.....	20
10: Pro Ecosystems.....	21
11: Pro Irrigation/Anti Markets.....	22
12: Pro Irrigation/Pro Markets.....	22
13: Pro Storage and Conservation.....	23
14: Identification of Submitted Written Comments.....	26

List of Appendices*

- A: Nomination Solicitation Letter and Attached Information
- B: Key Points of DNRC Presentations at Regional Meetings
- C: Yellowstone BAC Coordination Team
- D: Design of Opportunities for Public Inputs
- E: Research Approval
- F: Soliciting Public Participation—Contacts
- G: Written Public Comments
- H: Yellowstone BAC Attendance, March –May 2013
- I: Kick-Off Meeting Agenda and Roundtable Discussion Notes
- J: Regional Meeting #1 (Glendive) Agenda and Roundtable Notes
- K: Regional Meeting #2 (Big Timber) Agenda and Roundtable Notes
- L: Regional Meeting #3 (Forsyth) Agenda and Roundtable Notes
- M: Regional Meeting #4 (Billings) Agenda and Roundtable Notes
- N: Wrap-up Meeting Agenda
- O: Understanding the Q Sort Results
- P: Yellowstone BAC Photo Gallery

*Appendices are found at:

<http://dnrc.mt.gov/divisions/water/management/regional-river-basin-information/yellowstone-river-basin/ybac-final-scoping-report-appendices>

Introduction to the Yellowstone Basin Advisory Council Scoping Report

The purpose of this report is to explain the formation, methods and scoping efforts of the Yellowstone Basin Advisory Council (BAC) from February through May, 2013. The report describes the public meetings held and the methods used for gathering and analyzing public input. Most importantly, the report documents the water-related concerns voiced by the citizens of the Yellowstone River Basin.

Background

As directed by the Montana Legislature, the Department of Natural Resources and Conservation (DNRC) recently set out to update the Montana State Water Plan by launching the Montana Water Supply Initiative (MWSI). The initiative is designed to engage citizens in each of the state's three major river basins: Clark Fork, Yellowstone, and Missouri. Basin Advisory Councils have been convened to help develop water management strategies and recommendations for each basin, and the overall results of the MWSI will be presented to the 2015 Montana Legislature.

The Yellowstone BAC consists of 20 representatives from key water interests within the basin: agriculture, conservation, industry, municipal, recreation and tribal. Efforts were also made to include geographically diverse representation from across the basin.

The Yellowstone BAC met for its initial meeting on March 18, 2013 in Billings, Montana. While a few members of the general public attended the Yellowstone BAC's initial meeting, the primary function of the meeting was to outline the responsibilities of the BAC. The Yellowstone BAC members were asked to become actively engaged in the public scoping process, and they were each asked to attend at least one of the scheduled regional meetings.

From March through May, meetings were conducted throughout the Yellowstone River Basin to provide the public opportunities to help identify and prioritize water issues that should be addressed through the water planning process:

- Wednesday, March 27, 2013: Regional Meeting at Glendive, Dawson College
- Friday, April 12, 2013: Regional Meeting at Big Timber, Big Timber Public Library
- Wednesday, April 24, 2013: Regional Meeting at Forsyth, Forsyth Public Library
- Tuesday, May 7, 2013: Regional Meeting at Billings, MSU-Billings Downtown Campus

Preliminary findings of the public scoping process were provided at the May 8, 2013 Scoping Wrap-up Meeting in Billings.

Figure 1: Photo of Yellowstone BAC—May 8, 2013



Back Row--Left to Right: Dan Rostad, Dave Mumford, Greg Lackman, Steve Pust, Cal Cumin, Bobbi Blankenship, Paul Gatzemaier, Jerry O’Hair, Nick Golder.

Front Row-Left to Right: Dan Lowe , Roger Muggli, Shanny Spang Gion, Mack Cole, Mike Penfold, John Pulasky, Dave Galt.

Photo by: MSUB Research Team

Part I: Selection of the Yellowstone BAC

In January 2013, a contract was established with Montana State University-Billings to provide assistance with formation and coordination of the Yellowstone BAC activities for water plan scoping and issue identification. This effort was led by Dr. Susan J. Gilbertz and coordinated with personnel from the Water Resources Division of the Montana Department of Natural Resources and Conservation.

Yellowstone BAC Voting Members

Following legislative directive (85-1-203 MCA), membership of the Yellowstone BAC was to include both broad geographic and interest group representation. Membership was determined via a three-step nomination and selection process that occurred in January and February.

The first step involved generating a list of basin-specific groups, organizations and entities with known interests in Yellowstone River Basin water issues. The list included conservation districts, watershed groups, irrigation districts, and the Northern Cheyenne and Crow Tribes.

Other entities were also included if their members were certain to have interests in water planning. These included interest groups such as the Montana Farm Bureau, the Northern Plains Resource Council, the Montana Petroleum Association, and Trout Unlimited, among others. The list totaled approximately 40 entities. Information was sent to each entity explaining the MWSI and inviting the organization to nominate a person to serve on the Yellowstone BAC. Appendix A contains the information package mailed to potential nominating groups and/or to potential self-nominees.

As nominations were received, efforts were made to recognize when particular geographic areas or interest groups had not yet nominated a representative. Further encouragements for nominations, step two, were handled via phone calls and/or by personally visiting with individuals who were thought to be representative of particular water interests. Membership was also open to unsolicited nominations and involved a two-year commitment. Nominees were required to indicate their willingness to serve until December 31, 2014. Nominations were due by March 1, 2013.

The final step involved selecting members from the pool of nominees. Here, geographic representation, interest group representation and knowledge of water issues in the basin served as the primary criteria. Jim Robinson (DNRC) and Gilbertz generated a list of approximately 25 candidates meeting these criteria. The list was further reduced in consultation with DNRC management to reflect the final membership shown in Table 1.

	Last Name	First	County	Primary Affiliation	Local Address	Role
1	Beaudry	John	Stillwater and Sweet Grass	Industry—Stillwater Mining Co.	Billings	Member
2	Cole	Mack	Rosebud	Montana Farm Bureau	Forsyth	Chair
3	Cumin	Cal	Yellowstone	Instream MT Wilderness Assoc. Yellowstone River Parks Assoc.	Shepherd	Member
4	Galt	David	Basin	Industry—MT Petroleum Assoc.	Helena	Member
5	Gatzemeier	Paul	Basin	Industry	Billings	Member
6	Haidle	Lynn	Prairie	Agriculture—Conservation District	Fallon	Member
7	Lackman	Greg	Treasure	Agriculture—Conservation District	Hysham	Member
8	Lowe	Dan	Big Horn	Agriculture—Conservation District	Hardin	Member
9	Moorhouse	John	Yellowstone	Instream YR Conservation District Council	Billings	Vice-chair
10	Muggli	Roger	Custer	Agriculture—T-Y Irrigation Canal	Miles City	Member
11	Mumford	Dave	Yellowstone	Billings Municipal Water Supply	Billings	Member
12	O'Hair	Jerry	Park	Agriculture Conservation District Outfitter	Livingston	Member
13	Osborne	Tom	Basin	Industry—Hydro Consultant	Absorkee	Member
14	Penfold	Mike	Basin	Instream—Our Montana Organization	Billings	Member
15	Petermann	Kay	Wibaux	Agriculture—Conservation District	Glendive	Member
16	Pulasky	John	Yellowstone	Agriculture & Economic Develop	Huntley	Member
17	Pust	Steve	Richland	Agriculture—Conservation District	Savage	Member
18	Rostad	Dan	Sweet Grass	Agriculture—Conservation District Boulder River Watershed Group	Big Timber	Member
19	Sauer	Brad	Basin	Instream Northern Plains Resource Council	Forsyth	Member
20	Spang Gion	Shanny	Tribal	Northern Cheyenne Nation	Lame Deer	Member

The Yellowstone BAC includes people with a broad array of water interests, ranging from irrigation, to petroleum production, to instream flows. Two entities requested alternates who could attend some of the designated meetings. In both cases the request was approved, thus Boris Krizek was named as an alternate for David Mumford (City of Billings Municipal Water Supply) and Nick Golder was named as an alternate for Brad Sauer (Northern Plains Resource Council). Mack Cole and John Moorhouse were elected as Chair

Yellowstone BAC Ex-officio Members

Attention was also given to the need for technical advice throughout the planning process. At the request of the DNRC, eight individuals were named as ex-officio members of the Yellowstone BAC (Table 2). These individuals attend the meetings and provide input, however, per the BAC guidelines (Appendix A) they are not voting members.

	Last Name	First	Agency
1	Brummond	Andy	Montana Department of Fish Wildlife and Parks (Lewistown)
2	Duberstein	Lenny	US Bureau of Reclamation
3	Frankfurter	Jill	US Geological Society
4	Frazer	Ken	Montana Department of Fish Wildlife and Parks (Billings)
5	LaFave	John	Montana Bureau of Mines and Geology
6	Ockey	Mark	Montana Department of Environmental Quality
7	Opitz	Scott	Montana Department of Fish Wildlife and Parks (Livingston)
8	Philbin	Mike	US Bureau of Land Management

Part II: Preparations for Public Scoping Meetings

General Design of Meetings

In general, the scoping meetings were designed to take two hours. At the regional locations, two sessions were scheduled: a morning session (10-noon) and an afternoon session (1-3). The sessions included:

- 20-minute Overview of Planning Process
- 20-minute Overview of Hydrologic Issues
- 20-minute Overview of Water Rights
- 45-minute Roundtable Discussions
- 20-minute Q Sort Survey

The Kick-off Meeting was designed to serve two primary functions: 1) as a convening event where the Yellowstone BAC members could meet for the first time and where they could select a Chair and Vice-chair; and 2) as a “preview” of how the regional scoping meetings would be run.

The elements explained below were all in place at the Kick-off meeting and the Yellowstone BAC members themselves experienced each design element in much the same manner as the public would at the regional meetings. Having gone through these elements themselves, the Yellowstone BAC officially approved each of the meeting elements as formats for the regional meetings.

DNRC at Yellowstone BAC Regional Meetings

A DNRC support team was created for the Yellowstone BAC. This team attended every regional meeting and each member of the team provided a brief overview of water issues in the basin. Jim Robinson explained that water planning, per se, had not occurred in the Yellowstone River Basin since 1976. He also explained the goals and mandates of the MWSI and the Yellowstone BAC. Chuck Dalby provided an overview of Yellowstone River Basin hydrologic information. Kim Overcast (with Kerri Strasheim) provided an overview of water rights. As summarized in Appendix B, each of the DNRC team members had key points to emphasize. After each briefing, time was allowed for questions from the BAC and the public.

Once the DNRC briefings were completed, over one hour of time at each session of the public scoping meetings was dedicated to gathering inputs from the attending public. Three types of opportunities were created in each session for the public: 1) roundtable discussions, 2) demographic surveys, and 3) Q Sort surveys (see Appendix D for details).

Yellowstone BAC Coordination

As contracted with Montana State University – Billings, a coordination and research team was convened to support the Yellowstone BAC in its scoping activities. This team consisted of five research professors, one graduate student and five undergraduate students. The team represented a concerted effort on the part of three institutions to support interdisciplinary/inter-institutional studies that encourage citizen-based natural resource management models. Faculty from Montana State University-Billings, Rocky Mountain College (of Billings), and Saint Louis University Center for Sustainability were involved (see Appendix C).

Gilbertz and Hall have been working in the Yellowstone River Basin since 2006. Ward, Anderson and Rode began their work in the Yellowstone River Basin over the past two years. All have interests in helping local human communities adapt to economic, social and environmental change. The undergraduate students were all Environmental Studies Majors at Montana State University-Billings and were recruited because of their demonstrated interest in Montana’s natural resources issues.

All of the research elements of the Yellowstone BAC scoping activities were reviewed and approved by the Montana State University-Billings Institutional Review Board (see official approval letter in Appendix D).

Regional Meetings

To provide a variety of regional opportunities for public input, four meetings were held in four different communities along the Yellowstone River. The meetings in Glendive, Big Timber and Forsyth included morning and afternoon sessions to expand opportunities for public comment at any single location. Also, as a means of accommodating people unable to attend a daytime meeting, one evening session was conducted in Billings. The public meetings were all held in settings that were politically neutral and readily accessible (see Table 3).

DATE	LOCATION	VENUE
March 18*	Billings	MSU-Billings Downtown Campus
March 27	Glendive	Dawson College
April 12	Big Timber	Big Timber Public Library
April 24	Forsyth	Forsyth Public Library
May 7	Billings	MSU-Billings Downtown Campus
May 8**	Billings	MSU-Billings Downtown Campus
*Primarily an organizational meeting.		
**Primarily for review of public inputs and to begin prioritization of issues.		

Publicity for the meetings involved four primary avenues: 1) radio, 2) newspaper, 3) direct mail, and 4) personal solicitation. Some local outlets such as conservation districts and Farm Bureau newsletters offered free announcements, while others required advertising space to be purchased (see Table 4).

Table 4: Print Advertising of Yellowstone BAC Regional Meetings

Newspaper	Run Dates					
	3/22	3/25	4/16			
Miles City Star	3/22	3/25	4/16			
Glendive Ranger Review	3/21	3/24				
Sidney Herald	3/24	3/27	4/17			
Billings Gazette	3/24	4/5	4/17	4/30	5/2	5/5
Bighorn County News			4/11	4/18		
Livingston Enterprise		4/3	4/10			
Carbon County News			4/18			
Big Timber Pioneer		4/4	4/11			
Forsyth Independent Press			4/11	4/18		
Powder River Examiner		4/11	4/18			
A Cheyenne Voice		4/12	4/19			

Numerous local radio stations were engaged as a primary means of announcing the meetings. The radio “spots” were primarily handled by one Yellowstone BAC member, John Pulasky. Local print media were also engaged as primary modes of announcing the public meetings. A third means of encouraging attendance at the regional meetings included sending meeting notices to all of the groups and organizations that received the original invitations to provide Yellowstone BAC nominations. Finally, the MSUB team placed approximately 200 telephone calls to citizens throughout the basin informing them of nearby meetings and encouraging their participation. These calls were selective in that the individuals contacted had previously been engaged in Yellowstone River Basin research projects and/or forums (see Appendix F).

Public Input—Written Comments

Gilbertz served as the primary contact during the scoping process. All written comments, including those gathered at meetings, via email or by postal delivery, were directed to her office. A complete record of all written comments is found in Appendix G.

Part III: Results

Attendance at Meetings

The public scoping efforts were well received in each location. As shown in Table 5, nearly 150 public attendees participated in the meetings. A detailed accounting of attendance is found in Appendix H.

Meeting Site and Date	Number of Public Attendees
Billings, March 18	8
Glendive, March 27	24
Big Timber, April 12	43
Forsyth, April 24	32
Billings, May 7	30
Billings, May 8	11
TOTAL	148

Public Input via Roundtable Discussions

In total, approximately 34 hours of roundtable discussions were documented (see Appendices I-M). In only one case was an individual displeased with her assigned table, and she was allowed to sit at the table she desired. After having participated, several participants at each meeting were asked if they approved of the roundtable discussion format. With only one exception, the participants reported that it was a positive and satisfactory experience. One person indicated that he wished there had been an opportunity to voice his concerns to the entire group rather than simply having his comments heard by a few.

Each discussion resulted in a list of concerns and an audio-recording. These materials were reviewed in a five-step process. First, the listed concerns were transcribed into sets of notes organized by meeting and discussion table. Second, the audio-recordings were carefully reviewed by a research associate and explanatory details were added to the transcribed notes. Third, the various sets of notes were reorganized into question-by-question documents. Fourth, the content was organized into thematically arranged elements. Finally, the thematically arranged elements were distilled into a set of primary concerns which were edited for continuity, clarity and primacy as concerns.

As a result, the roundtable data revealed 28 primary concerns voiced by the public. These were not discrete concerns as there is certain overlap among them. They are arranged below in alphabetical order, not by order of importance. In many cases, the comments

from the participants ranged from positive to negative, thus the summary list of 28 casts the concerns as issues that the Yellowstone BAC may decide to address.

- 1) **Availability:** Do we know how much water is available? Do we know when available water exceeds all needs? Do we know when water runs short? (Also see Current Allocations, Future Allocations and Hydrologic Models.)
- 2) **Beneficial Uses:** Should we rethink what constitutes a “beneficial use?” If a use only benefits certain individuals or groups is that as “beneficial” as a use that benefits many people and many additional uses? Can we create an entity to promote Best Practices that serve multiple users? Do other states have better models? Do we need to prioritize beneficial uses? Is public health the “number one” beneficial use? (Also see Tribal [Reserved] Rights and Water Reservations.)
- 3) **Current Allocations:** To what extent are we appropriated or over-appropriated? Is there an inventory of rights holders? When and where does demand currently exceed supply? What known factors will exacerbate existing shortages, if any? Can we move forward without full adjudication? (Also see Hydrologic Models, Tribal Rights and Reserved Rights.)
- 4) **Drought Readiness:** Are we ready to address water shortages? Are we ready to deal with low snowpack and significantly less rainfall? Can we avoid a “crisis” mentality? Are we ready for a “100-year” drought? Are we prepared to enact specific drought mitigation practices that will reduce stress to aquatic life? Can we prepare for drought by identifying “water volunteers” who agree, in advance, to reduce or cease use? Are we ready to meet federal and state water requirements (quality and quantity) while also helping irrigators reduce their economic losses? (also see Incentives)
- 5) **Enforcement/Protecting Senior Rights:** What can be done to better enforce our Prior Appropriation system? How can we protect downstream users from upstream abusers (how can we protect senior users from junior users both upstream and downstream)? Can we create a better system for addressing who is senior and who is junior (the “communications” between these users is strained and we need better ways to keep users informed)? Can we create transparency in water rights and priorities? Can we create tools and resources that will help people better understand the limits of their water rights?
- 6) **Exempt Wells/Groundwater Wells:** Are wells impacting surface water availability in this basin? Do we have baseline data for groundwater wells in the basin? Do we know the impacts of exempting groundwater wells at 35 gal/min [10 acre feet/year]? What are the cumulative effects of those wells? Can we develop groundwater appropriation rules that are not being “gamed” in ways that hide uses that would otherwise be handled differently? Can we develop rules that protect surface water from negative impacts resulting from groundwater withdrawals?

- 7) **Federal Reserved Rights:** Can the BAC better address the failure of water supplies to support fish and wildlife (especially as defined by federal rights that protect the fisheries, endangered species and flow regimes)? Can threatened or endangered species force Montana to cut off senior users in the state system? What do all of the federal rights amount to? (Also see Tribal Rights, Instream Flows and Current Allocations.)
- 8) **Fisheries and Wildlife:** If flows impact temperatures, how do we know when we have high enough flows? Are fish and recreationists simply "free-loaders" in the system? Are we required to protect wildlife and fisheries in the basin? Can we evaluate how water supports the ecosystem? Can we determine how much water is truly needed to support wildlife and fisheries? (Also see Gauges/Monitoring, Federal Reserved Rights and Reservations.)
- 9) **Future Allocations/Additional Rights:** How many new users can be supported? Are "closures" of sub-basins eminent? Can we avoid over-allocating?
- 10) **Gauges/Monitoring:** Do we really know how much water is being drawn? Do we know if users are acting responsibly? As demands grow, are we ready to address monitoring? Even where irrigation companies are monitoring, is this enough and do we have access to their information? Do we need a comprehensive system that links all monitors in the basin to one database or system of analysis? Can we afford to do things the way they are done in other states? What would it take?
- 11) **Hydrologic Models to Explore "Full Development":** Can we find a way to think about how much water is really in the system, how much is being drawn off and what it would look like if all of the existing rights were fully developed? Do we know what will happen if all water right holders develop their full shares? (Also see Reservations, Federal Reserved Rights and Tribal Rights.)
- 12) **Hydrologic Models to Explore Variability:** Can we anticipate what it will mean to experience extremely variable episodes of available snowpack or rainfall?
- 13) **Incentives and Support for New Technologies and Conservation Practices:** Should we seek governmental support to encourage water use technologies that maximize efficiencies? Should we reward conservation? If so, how? Can we get people to volunteer to limit or reduce use during drought? (Also see Use it or Lose it Principle and Drought Readiness.)
- 14) **Industrial Uses of Water:** Do we know how much water industry is using? How do we ensure the needs of industrial users? Who sells water to industry? Are people selling water for uses other than those permitted? Does it matter if the basin is still "open"? How do we know sellers do not exceed their shares? Do we need to monitor water depots and municipal sales? Do we know the effects of HB 37 (allowance for temporary

changes in uses)? What is the potential impact of energy development? How much water does fracking (hydraulic oil well fracturing) really use? Should we limit temporary use changes that shift water from irrigation to deep-well fracking? Is the water used in fracking really lost to the system? Are losses in water pressure the result of fracking? If that water is essentially “lost,” are we addressing the detrimental effects of fracking?

- 15) Irrigation Technologies and Growth:** Do we know the circumstances when flood irrigation is preferable to sprinkler irrigation? Do we account for all of the costs and benefits in these choices (i.e., shallow aquifers that store water, electrical costs of sprinklers, more "consumed" water)? How does federal support for irrigation systems and technologies impact irrigators' choices? How much land is under irrigation? Should we irrigate more land when some estimate 100,000 additional acres could be put into production? How can we get irrigation districts to deal with leaks and seepage from the ditches?
- 16) Instream Flows:** What are the instream flow requirements? Do we know what is sufficient to maintain a "healthy" ecosystem? Are streams dewatered by irrigation or is lack of water in the system late in the summer to blame? Do we know if diminished streamflow is a result of irrigation? Can we devise management plans that work to serve all needs? If not, do we know how to best manage the problem to meet the legal needs in terms of reservations and reserved rights? Do we know how to better inform users as a means of reducing economic hardship?
- 17) Invasive Species:** To what extent are invasive species, such as salt cedar and Russian olive, reducing our available supplies? Can we reduce the problem? (Also see Incentives.)
- 18) Montana as Priority:** Have we done all we can to get our share from Wyoming? Have we done all we can to keep water in Montana? To what extent are we beholden to barge traffic on the Missouri or Mississippi? Are we prepared to fully protect our water rights from parties located outside the state?
- 19) Municipal Uses, Urban Development and Population Growth:** To what extent might significant growth in municipal draws impact availability? Do we fully account for the impacts of municipal purchases of water rights? What are the effects of suburban development? Should urban and suburban development be required to mitigate loss of recharge zones? Should urban stormwater be better managed? Should municipalities prioritize uses (i.e., do golf courses need water during droughts)? Can we gather data from municipal and county users? What will be the effects of municipalities shifting to non-return systems of waste water treatment? Can municipal returns go directly to agriculture? Can we adopt reuse programs in areas with urban development? Should the state encourage alternative techniques for dealing with urban needs? (Also see Beneficial Uses and Incentives.)

- 20) Planning for Water Demands:** Can the BAC better match water supplies to demands, especially where shortages currently occur? Can the BAC address the major tributaries as well as the mainstem of the Yellowstone River? Can the BAC move fast enough to be done in two years? Can the BAC focus on near-term responsiveness, perhaps even some "Band-Aids" for some issues? Can the BAC look further down the road than 20 years? Can we revisit the planning process every few years instead of every few decades? How could expanded municipal demand impact the system? How should future planning be financed?
- 21) Recreational Uses:** Do we know how to value recreational uses? If recreational demands increase, how will that impact other user groups? Will river access issues be addressed by this plan? Are recreational uses fully developed?
- 22) Stock Water Ponds and Tanks/Fishing Ponds:** How much water is retained? Are these practices that should be addressed? Might more creeks be dammed to store water? Do such ponds and tanks simply lose water to evaporation?
- 23) Tribal (Reserved) Rights:** To what extent are tribal rights already developed? What is the impact if tribal rights are fully developed? If we are to share the burden in times of drought, can we also share the burden of building storage?
- 24) "Use it or Lose it" Principle:** Is this the best model for encouraging water conservation? Should this be modified? Are ditch companies intentionally wasting water as insurance against "losing it?"
- 25) Water Market Transfers:** Should Montana stop allocating and start a new transfer system? Is water already in a "loose" market system that needs to be watched over more carefully? What are other states doing in terms of water markets?
- 26) Water Quality:** To what extent is quality a concern within issues of availability? Do we monitor quality in a satisfactory manner? Do we need to establish and support TMDL processes in this basin? Can we better address non-point source pollution, especially agricultural run-off? Do we understand "natural pollutants" in the Montana water system?
- 27) Water Reservations:** Is it possible to honor all of the Yellowstone Water Reservations and not impact existing senior users? How close are they to being fully developed? What if they are fully developed? Should irrigators be allowed to develop new land via the conservation districts' Water Reservations? How might we put "sideboards" on the water reserved by conservation districts? How can we maintain instream flow reservations?

28) Water Storage: What are the options for storing more water? How will projects be paid for? Can smaller projects help individuals and the state? Are off-stream reservoirs a viable option? Does Wyoming's storage impact Montana in positive or negative ways, or at all? Are long-term/multiple-year storage capacities viable? There is plenty of water in the spring—how can we capture it? How do we avoid evaporation? How do we establish storage that serves instream flows downstream as well as nearby needs?

These results were derived before the May 7th meeting in Billings. When notes from that evening session were reviewed (see Appendix I), they were consistent with the list of 28 issues; however, when compared to the discussions in locations dominated by agricultural interests (i.e. Glendive, Big Timber and Forsyth), the evening session in Billings illustrated a stronger emphasis on instream and recreational interests. The list of 28 was not adjusted.

Preliminary Ranking of Issues

At the May 8th Wrap-up Meeting (see agenda in Appendix N), the Yellowstone BAC members were provided a list of the issues that had been brought forward by the public. The members were asked to rank the top seven issues in terms of importance (1 = most important). Two concerns came to light: 1) the members wanted to have time to think about their rankings, and 2) the voting BAC members wanted the ex-officio rankings to be treated as a separate exercise. The members were given approximately two weeks to make their rankings and to return them to Gilbertz who would separately calculate overall rankings for the BAC voting members and for the BAC ex-officio members.

By May 23rd sixteen BAC ranking sheets were available for inclusion in the final scores. Not every ranking sheet followed the assigned ranking method (1-7). Some stopped at 5 or 6, and some went as high as 8. Data from sheets that used the ranking method were included so long as the assigned number was between 1 and 7. To calculate an item score, the conversion formulas noted in Table 6 were used.

1=	100
2=	90
3=	80
4=	70
5=	60
6=	50
7=	40

For example, the score of 1220 for “Availability” was derived as follows:

10 people scored this as #1 (thus 10 x 100)	1000
2 people scored this #2 (thus 2 x 90)	180
<u>1 person scored this as #7 (thus 1 x 40)</u>	<u>40</u>
TOTAL	1220

Table 7 documents the calculated rankings for the Yellowstone BAC. Issues for which no ranking was offered by any member of the BAC have been left off the list. In the third column, the list also indicates the number of respondents that ranked each issue as #1 (most important).¹

Calculated Score*	CONCERN	# with this as #1 Rank	# who ranked this as 1-7
1220	Availability	10	13
840	Drought Readiness	1	11
550	Enforcement/Protecting Senior Rights	1	7
550	Water Quality	1	7
350	Instream Flows	0	6
340	Shifting Practices: Irrigation Technologies	0	6
310	Future Allocations/Additional Rights	0	5
310	Incentives and Support for New Technologies and Conservation	0	5
300	Storage Capacities	0	5
280	Reservations (Protected MT Rights)	0	4
250	Current Allocations	1	4
250	Planning	0	4
240	Beneficial Uses	1	3
230	Montana as Priority	1	3
220	Gauges/Monitoring	0	4
210	Municipal Needs, Urban Dev & Pop	0	3
190	Shifting Practices: Water to Industry	0	4
190	Water Market Transfers	1	3
160	Hydrologic Model –Variability	0	2
160	Hydrologic Model—Full Development	0	3
140	Recreational Uses	0	2
100	Exempt Wells/Groundwater Wells	0	2
90	Fisheries and Wildlife	0	1
80	Invasive Species	0	2
80	Stock Ponds and Tanks/Fishing Ponds	0	1
70	Use It or Lose It Principle	0	1
60	Hydraulic Fracturing (Fracking)	0	1
50	Tribal (Reserved) Rights	0	1

Rankings were similarly calculated for the BAC ex-officio members. As shown in Table 8, those rankings demonstrate similarities of interest when compared to the BAC voting

¹ Upon review of the rankings exercise the BAC fine-tuned the list of issues to better reflect and organize the topics of concern; thus, the items in the rankings lists (Tables 7 and 8) are worded in slightly different terms than the 28 issues reported in the previous section.

members, though the scores are comparatively lower because there were fewer ex-officio members to participate. An additional column indicates general agreement with the Yellowstone BAC voting members. Again, issues receiving no ranking were left off the list.

Calculated Score*	CONCERN	# with this as #1 Rank	# who ranked this as 1-7	Indicates General Agreement w/ BAC Top Ranks
300	Availability	3	3	X
260	Future Allocations/Additional Rights	1	3	X
250	Current Allocations	0	3	
220	Enforcement/Protecting Senior Rights	0	3	X
210	Shifting Practices: Irrigation Technologies	0	3	X
190	Instream Flows	0	3	X
180	Exempt Wells/ Groundwater Wells	0	3	
130	Drought Readiness	0	3	X
110	Shifting Practices: Water to Industry	0	2	
100	Gauges/Monitoring	1	1	
90	Hydrologic Model— Variability	0	1	
80	Water Quality	0	1	
70	Municipal Needs, Urban Dev & Pop	0	1	
70	Storage Capacities	0	1	
60	Beneficial Uses	0	1	
50	Planning	0	1	
40	Invasive Species	0	1	

When looking at the top rankings of the two groups there are six common items (see right-hand column of Table 8). The structure of the BAC is such that the ex-officio members are non-voting members; however, the findings here suggest that ex-officio interests are closely aligned with those of the voting members.

Public Input via Q Sort- Archetypal Views in the Yellowstone River Basin

Q Sort was made available at all of the scoping meetings. The Yellowstone BAC Q Sort involved 16 statements about water issues.² For example, one statement was prepared as, “Municipalities should be prohibited from selling water for industrial uses.” Individuals who participated in the Q Sort were asked to indicate the degree to which they agreed (positive valence: +) or disagreed (negative valence: -) with each of the 16 statements. The activity also required each participant to organize the 16 statements on a chart where one statement had to be rated as having strong positive valence (+3) and one statement had to be rated as having strong negative valence (-3). All of the other statements had to be assigned positions on the chart that corresponded with less intense valence values (+2, +1, -2, -1) or with a neutral valence value (0).

Q Sort results from individuals were recorded and then combined into the Yellowstone Basin super-set of Q Sort data. This super-set included every usable Q Sort collected between March 18 and May 8, including data from the public participants, the BAC members, BAC ex-officio members, and all other participating agency personnel (n = 135).

Archetypes: In general, Q Sort data reveals how specific statements and valences get bundled together by participants. Put another way, Q Sort analysis reveals statistically valid combinations of thoughts (specific sets of statements combined with specific valences). Known as *archetypes*, these bundles are essentially points of view that are shared by a sub-set within the overall group.

The case of the Yellowstone Basin super-set, it was found that five archetypes generated the greatest resonance among the participants. In other words, statistically, there were five bundles of statements that provided clear insights into how certain sub-sets of people view water issues in the Yellowstone River Basin. Tables 9-13 provide the details associated with each archetype:

- Pro Development,
- Pro Ecosystems,
- Pro Irrigation /Anti-Markets
- Pro Irrigation/Pro Markets, and
- Pro Storage and Conservation.

The tables include some descriptive comments (left columns), and they include the specific Q Sort statements that were associated with each archetype (right columns). The right column in each table also includes the valences associated with the Q Sort statements, specific to the archetype. These valences indicate a positive (+) or negative (-) reaction to the statement, and they shift in ways that make the specific statements associated with each archetype internally coherent.

² Detailed explanations of Q Sort, Q Sort findings and the Yellowstone BAC Q Sort are found in Appendix O.

The relevance of the archetypes to the planning process is that the Q Sort documents a variety of legitimate perspectives held in the Yellowstone River Basin. Put another way, the Yellowstone BAC serves a variety of *publics*, each with differing points of view. Q Sort findings help us explore and compare these distinct viewpoints.

Description	Defining Statements from Q Sort
<ul style="list-style-type: none"> • neutral about conservation • neutral on whether ecosystems should have water rights • willing to consider damming the mainstem of the Yellowstone • favor water markets, favor water transfers, favor industrial uses • see new reservoirs as viable options for dealing with scarcity 	<p>(-) The best way to deal with water scarcity should <u>not</u> involve the construction of new large reservoirs.</p> <p>(+) The main stem of the Yellowstone River should <u>not</u> be protected from the construction of large dams.</p> <p>(+) Water markets are a viable way of reallocating water to other beneficial uses.</p> <p>(-) More tax money should be spent to speed up the process of adjudicating water rights in the Yellowstone Basin.</p> <p>(-) Municipalities should be prohibited from selling water for industrial uses.</p> <p>(-) Energy companies should <u>not</u> be able to purchase water rights from farmers.</p> <p>(-) Effective water rights administration does <u>not</u> include an effective enforcement.</p>

Table 10: Pro Ecosystems	
Description	Defining Statements from Q Sort
<ul style="list-style-type: none"> • ecosystems should have water rights • conservation and restrictions are more effective than new storage • firmly against construction of new reservoirs 	<p>(-) Instream flows that maintain fish and wildlife habitat should <u>not</u> be maintained as priority over consumptive (other) uses.</p> <p>(+) Ecosystems & species should have water rights.</p> <p>(+) The best way to deal with water scarcity should <u>not</u> involve the construction of new large reservoirs.</p> <p>(-) The best way to deal with water scarcity is to encourage irrigation system improvements.</p> <p>(-) Water conservation and restrictions cannot substitute for new storage projects.</p>

Table 11: Pro Irrigation/Anti Markets	
Defining Statements from Q Sort	Defining Statements from Q Sort
<ul style="list-style-type: none"> regards improving irrigation as better than building small reservoirs against water markets against agricultural or municipal transfers to industry against damming the Yellowstone mainstem strongly against water rights for ecosystems 	<p>(-) Water markets are a viable way of reallocating water to other beneficial uses.</p> <p>(+) The best way to deal with water scarcity is to encourage irrigation system improvements.</p> <p>(+) Municipalities should be prohibited from selling water for industrial uses.</p> <p>(+) Energy companies should not be able to purchase water rights from farmers.</p>

Table 12: Pro Irrigation/Pro Markets	
Description	Defining Statements from Q Sort
<ul style="list-style-type: none"> favors municipal and farm transfers to industry regards improving irrigation as better than building small reservoirs against damming the mainstem of the Yellowstone against water rights for ecosystems 	<p>(+) Water markets are a viable way of reallocating water to other beneficial uses.</p> <p>(-) Municipalities should be prohibited from selling water for industrial uses.</p> <p>(-) Energy companies should <u>not</u> be able to purchase water rights from farmers.</p> <p>(-) Ecosystems & species should have water rights.</p>

Description	Defining Statements from Q Sort
<ul style="list-style-type: none"> • preparing for future droughts as #1 issue for water planning • strongly favors water rights for ecosystems • some consumptive uses more important than instream habitat • conservation and restrictions more effective than construction of new storage but also see construction of new large reservoirs as an effective mechanism • neutral on water markets 	<p>(-) Instream flows that maintain fish and wildlife habitat should not be maintained as priority over consumptive (other) uses.</p> <p>(+) Number one issue for water planning is to prepare for future severe droughts and precipitation events.</p> <p>(-) Water conservation and restrictions cannot substitute for new storage projects.</p> <p>(+) Ecosystems & species should have water rights.</p>

There are other specifics of the Q Sort findings that offer the Yellowstone BAC some clear operating principles and directives. Attention is given to the Q Sort details concerning issues where basin-wide agreements were found (see the *strong positive agreement* findings described below) and where members of the public disagree (see *contentious issues*).

Strong Positive Agreements: The Q Sort findings highlighted two items of strong positive agreement throughout the basin. In other words, a statistically significant number of individuals throughout the basin agree strongly with these statements:

- As we move into the next decades, water management will become more complex due to interstate demands, both upstream and downstream, and
- The lack of water information hinders water development.

Furthermore, when the data from the regional meetings were analyzed as independent groups, there were (sometimes) fewer archetypes to report. This finding suggests that some communities are more homogeneous than the super-set. Of greater importance is the fact that the regional analyses exposed an additional item as having strong positive agreement:

- The number one issue for water planning is to prepare for future severe droughts and precipitation events.

It is fair, then, to conclude that these three statements represent common and agreed-upon values that operate across the archetypes and among the people of the Yellowstone River Basin. Subsequent planning efforts should address these findings as they represent the most agreed-upon concerns of the public.

Strong Negative Agreements: Q Sort findings can also exposed statements with which there is broad agreement concerning what the public dislikes. However, in the case of the Yellowstone Basin super-set of data, none of the 16 statements was revealed as having this type of statistical significance. As a conclusion, then, no strong negative agreements were exposed in the Q Sort super-set.

Contentious Issues: The analysis revealed five statements as presenting contention across the Yellowstone Basin super-set of data. That is, some people strongly agreed with these statements, while others strongly disagreed:

- The best way to deal with water scarcity should not involve the construction of new large reservoirs.
- The best way to deal with water scarcity is to encourage irrigation system improvements.
- Water markets are a viable way of reallocating water.
- Instream flows that maintain fish and wildlife habitat should not be maintained as priority over consumptive (other) uses.
- Ecosystems & species should have water rights.
- More tax money should be spent to speed up the process of adjudicating water rights in the Yellowstone River Basin.

It appears there will be little, if any, common ground in terms of these issues across the basin, and it seems that deliberations of issues from this list might polarize people into conflicting camps. Such interpretations are probably accurate in some instances. However, in other cases it is worth considering that the positions may have been artificially simplified by the Q Sort. For instance, individuals who disagreed with the second item above might not have been so strong in their opinions had the statement indicated that irrigation system improvements are “one way” to deal with scarcity.

As the Yellowstone BAC moves forward, they can use the findings concerning contentious issues as cautionary information. For instance, should the council decide to deliberate on the question of whether or not construction of large water storage facilities on the mainstem of the Yellowstone is a viable option, they should expect their efforts to be fully

scrutinized by the public and they should expect that their ultimate position—whatever it might be—would be challenged by one faction or another.

Other Findings: Five statements were exposed as ones that divided people in a different way. The five listed here are statements with which some people strongly agreed, while other people indicated neutrality:

- Consumptive (e.g., municipal water use, irrigation) and non-consumptive (e.g. ecological or recreational stream flows) uses are not in conflict at this time.
- The best way to deal with water scarcity is to encourage construction of small on-farm reservoirs.
- Effective water rights administration does not include an effective enforcement component.
- Water conservation and restrictions cannot substitute for new storage projects.

Importance of Q Sort Data: In an overall sense, there are numerous commonalities between the roundtable notes, BAC ranking exercise and the Q Sort findings. Such commonalities are important because they suggest the Yellowstone BAC is sensitive to the issues and concerns of its publics. Moreover, because the issues of “drought” and “drought readiness” are expressly found in the key findings of all of the data sets, this topic comes to the fore as a potential defining issue for the planning process (see Section IV of this Report).

Public Input via Written Comments

In total, 17 documents were submitted as written comments (see Appendix G). The comments were collected by the Yellowstone BAC Coordinator (Gilbertz). Table 14 indicates the names and affiliations of the submitting parties. It also identifies the date of the correspondence. The letters raise numerous concerns (see Part IV of this report).

Table 14: Identification of Submitted Written Comments		
Name	Affiliation	Date
Brad Sauer for Nick Golder	Northern Plains Resource Council	3/25
Craig Wagner	YRCDC RAC Member and Public at large	3/26
Bruce Rich	MT Department of Fish Wildlife and Parks	5/2
Jane Henson	(public from Billings)	5/7
Anonymous	(pubic from Billings)	5/7
John Gibson	Public Land/Water Access (non-profit group)	5/7
Dan Rostad and Tom Osborne	Report on a meeting with Farm Bureau, Woolgrowers, and Stockgrowers	5/13
Stuart Stanley	Boulder River Watershed Association	5/21
Matt Cremer and Chuck Schuman	Crazy Mountain Stockgrowers Association	5/22
Rep. Alan Redfield of	Park County	5/24
Rick Gibson and Jeff Cahill	Park County Stockgrowers Association	5/28
Gary Burmeister	Sweet Grass County Farm Bureau Federation	5/28
Brad Sauer	Northern Plains Resource Council	5/30
Pat Byorth	Trout Unlimited	5/30
Walter Archer	Northern Plains Resource Council	5/31
Marty Malone, Jim Durgan, Clint Tinsley, Susan Mosness, William Wallace, Bob Faw, Dennis Shupak, Maureen Davey, and Gerald Dell	Commissioners from: Park County, Sweet Grass County, and Stillwater County	none
(no signature)	Beartooth Stock Association	none

As the Yellowstone BAC moves into Phases II and III of the planning process, other issues may emerge that will be added to, or that may supersede, the items identified in this report.

Part IV:

Next Steps in the Yellowstone Water Planning Process

Introduction

Water in the largely arid Yellowstone River Basin is arguably the most valuable natural resource, and judging by the degree of participation in the scoping process, the public is keenly aware of issues surrounding water resources. Not only does water give life to people, plants, animals, and ecosystems, it sustains the economy, landscape, and culture that together make this diverse basin unique. Although the Yellowstone's highly variable water supply compares favorably with many other arid basins in the western United States, enough water is not always available in the right place, at the right time, and of sufficient quality. And, as the population and economy of the basin grow so will competition for Yellowstone water.

The wide range of water management issues documented by the Yellowstone scoping process affect many different types of water users. Some issues are relevant to the entire basin while others are more local in nature. Management of water resources is complicated by the fact that multiple groups have jurisdiction over various aspects of water management, including the Legislature, state and federal agencies, Indian tribes, local governments, and irrigation districts. The diversity of issues and jurisdictions complicates selecting a course of action that is clear and achievable within the scope and timeframe of the current water planning process. Ideally, such a course of action must transcend jurisdictional boundaries and bring all affected interests into the water planning process.

Moving into Phase II - Technical Studies and Feedback

In the fall of 2013 the Yellowstone BAC will move into Phase II of the water planning process. This second phase is primarily concerned with informing recommendation development during Phase III, and thus Phase II is governed by two primary elements: 1) the priorities identified via the Yellowstone BAC scoping process, and 2) the direction provided by the Legislature in the state water planning statute (MCA 85-1-203). The informational requirements of the state water planning statute are:

1. An inventory of consumptive and non-consumptive uses;
2. An estimate of water needed to satisfy future demand;
3. An analysis of the effects of frequent drought and increased depletions on water availability;
4. An evaluation of opportunities, including storage, to satisfy existing water rights and new water demands;
5. Possible sources of water to meet the needs of the basin; and
6. Any legislation necessary to address the water resource concerns in the Yellowstone basin.

With respect to the scoping information generated by Yellowstone BAC, numerous commonalities exist between the concerns of the public and the requirements of the statute. For instance, the scoping results yielded a consistent message that water users in the basin believe that recommendations arising from the water planning process should not attempt to change the doctrine of prior appropriation as articulated in Montana water law and constitution. Also, issues concerning “Availability,” “Drought Readiness” and “Lack of Water Information” were additional priority concerns of the public, the BAC, and the ex-officio members. Taken as a whole, these priorities are consistent with the statutory mandate.

The informational requirements contained in the water planning statute emphasize understanding the water supply and potential effects associated with drought, accounting for existing and future uses of water, and identifying ways in which expanding and competing uses can be met. Satisfying these requirements necessarily becomes the focus of the Phase II process of information development and transfer.

With respect to drought, most water users in the Yellowstone appreciate the negative effects of drought. Rather than focusing on *understanding* the negative effects of drought, with which the BAC and its constituents have first-hand personal experience, the BAC chooses to emphasize the development of tools and delivery of information that reduces the risk posed by water scarcity. Regardless of why a scarcity might occur—prolonged drought, expanded development, or a water supply affected by climate variability—water users in the Yellowstone River Basin have asked the BAC to address what can be done to prepare for and to minimize the effects of scarcity. Also, because water shortages can be a localized phenomenon that varies significantly across the Yellowstone River Basin, tools and information that improve water users’ ability to locally manage a reduced water supply and/or expanded demand are paramount.

Where the water planning statute is silent and the scoping results are pronounced, is on the subject of the prior appropriation doctrine and its application to water management. There is basin-wide support of Montana’s legal system of allocating water according to the tenets of prior appropriation. Perhaps paradoxically, there is also significant concern that junior users in the upper Yellowstone River Basin could be adversely affected by senior users in the lower Yellowstone River Basin. Similarly, senior users in lower basin tributaries such as the Tongue and the Powder are concerned with upstream junior usage within both Montana and Wyoming. How well-founded these concerns are, and the adequacy of existing enforcement mechanisms, must be addressed via provision of information in Phase II and through discussions amongst the BAC.

Other requirements of the statute include evaluation of opportunities to fully develop existing water rights and meet future demand. Here again, this mandate is consistent with the BAC’s desire to more completely understand water availability. Where and when water is available for appropriation (or not) is a question that came up repeatedly during scoping. Whether for new development or to more fully satisfy existing water rights, identification of

unallocated water suitable for either consumptive or non-consumptive uses is a localized, watershed-specific question with answers that lie not only in hydrologic science, but also in the social and economic sciences.

Yellowstone Water Planning - A Unifying Theme

A unifying theme is important because it allows the water planning process to proceed with guidance as to what is appropriate and relevant. Thus, as a response to public input, the Yellowstone BAC adopts the statement below as its “vision” under which succeeding phases of the Yellowstone water planning process should occur.

The Yellowstone River basin planning process is guided by the following concepts:

1) delivery of information that is sufficient to understand the water resources and the current and prospective demands placed on those resources, and enable sound water use decision-making by water users and prospective users;

2) strengthening the existing water allocation system to optimize present use and establish need for future water availability under the existing doctrines of prior appropriation and beneficial use; and

3) enabling water users to achieve fairness under the law and these same doctrines in water allocation among senior and junior water right owners during times of scarcity (drought).

This theme of understanding the resource, strengthening the water allocation system, and operating this system to achieve specific goals should guide how this planning process addresses the mandates of the state water planning statute (MCA 85-1-203) and the issues raised during the scoping phase of the planning process.

Phase II (Information Transfer) then, should necessarily focus on the current status of Montana’s water information system, and what it will take to make that system address a wider array of questions pertaining to Yellowstone water. By understanding what is known and, perhaps more importantly, what is not known about the Yellowstone basin’s water resources, substantive and actionable recommendations can emerge from Phase III (Recommendation Development).