## **IBCC Colorado River Basin**

- 1. July 25, 2016 CBRT Minutes Water banks as an ATM; coordinating land use planning with water availability; West slope Roundtable Water Risk study; 8 Critical Action Plan goals in Colorado's Water Plan; Dust on snow grant request.
- 1. July 25, 2016 **CBRT Minutes –.**
- 2. Next Meeting: Sept. 26, 2016, Glenwood Springs Comm Ctr, 12:00 4:00.
- 3. Upcoming Meetings
  - a. **Aug 16, 1:30 3:30 PM at Glenwood Springs Public Library.** Review the literature compiled to create integrated water management plans. The next step is to get a consultant to develop a geospatial database and tie the information to stream locations.
  - b. Next Steps meeting Aug 22, 2016, 12:00-2:00 Colorado River District
  - c. Colorado River District annual seminar Grand Junction Sep. 16, 2016
  - d. **Sep 21-22, 2016 CWCB board meeting, Edwards,** beginning at 9:00 AM each day. There is opportunity for public input.
- 4. Reporter: These minutes were prepared by Ken Ransford, Esq., CPA, 970-927-1200, kenransford@comcast.net.
- 5. **CBRT Members Present:** Kim Albertson, Art Bowles, Paul Bruchez, Don Chapin, Mark Fuller, Russell George, Karl Hanlon, Mark Hermundstad, Bruce Hutchins, Merritt Linke, April Long, Louis Meyer, Chuck Ogilby, Jim Pokrandt, Ken Ransford, Dave Reinertson Karn Stiegelmeier, Lurline Underbrink Curran, Mike Wageck, Lane Wyatt, Bob Zanella
- 6. **Guests:** Steve Aquafresca, Steve Anders USGS, Ken Baker, John Carron Hydros, Anne Castle, Steve Child, Vann Fleck, Angie Fowler SGM, Brent Gardner-Smith, Erika Gibson Balcomb Green law firm, Hannah Holm-CMU, Dave Kanzer, Eric Kuhn, Brendon Langerhoizen SGM, Greg Lanning Grand Junction, Victor Lee BuRec, Bailey Leppek SGM, Lisa MacDonald Pitkin County Healthy Rivers Board, Martha Mackillop, Dave Merritt Colorado River District, Martha Moore Colorado River District, Ed Moyer Grand County, Brent Newman CWCB, Jenny Rebnack Nat'l Park Service, Laurie Rink Middle Colorado Watershed Council, Richard Vangytenbeek Trout Unlimited, Linda Vida,
- 7. **River Forecast.** Flows at the Dotsero gage were 1,660 cfs, compared to a median level of 1,850 cfs. River flow at the Cameo gage was 2,960 below the median of 3,450 cfs on this date.

- 8. **Anne Castle, Implementing alternative transfer mechanisms (ATMs).** Now with the Univ. of Colorado Getches-Wilkinson Center, Castle was formerly with the Dep't of Interior. She was involved with the BuRec 2012 Colorado River Availability Study was drafted.
  - a. The ATM goal in Colorado's Water Plan is produce 50,000 af to avoid buy and dry. From 1997 to 2012, Colorado lost 850,000 irrigated acres, about 1,250 square miles. We will lose 500,000 700,000 acres in the future by 2050 under business as usual
  - b. ATM any mechanism to share agriculture water without loss of water by the farmer, such as lease-fallowing, short term leases, interruptible supply agreements, substitute water supply plans, or a water bank.
  - c. The water bank is today's topic. We now have 3,000 to 6,000 af annually of water sharing in a water bank in the Arkansas basin. Colorado's Water Plan goal is 50,000 af by 2030. A water bank is meant to reduce the cost of ATM transactions. The initial water bank legislation was limited to the Arkansas basin, passed in 2001, and expanded statewide in 2003. There have never been any water bank transactions.
    - i. The water bank is **limited to stored water in a reservoir**; it does not permit real-time transactions from farmer to farmer or farmer to city.
    - ii. The earlier-quoted price was \$500-700 per acre foot, so high that no withdrawals were made. **To be effective, a water bank needs** an operator acting as **a market maker**.
  - d. We need a relatively easy low cost mechanism to do this. Water in the water bank will be protected from abandonment, and should not increase HCU calculation. A **streamlined review process is needed** that is scaled to the size and duration of the water transaction.
  - e. It **should be operated by a trusted entity**, such as the CWCB or the Colorado River District.
  - f. At the Colorado Ag Water Alliance meeting in Brush Colorado on July 13, 2016, one of the concerns mentioned was the cost. Timing was another concern. It's cheaper to buy the water in the fall for instance.
  - g. The state engineer or a technical committee should **design a consumptive use model** that can determine the value of the consumptive use put in the water bank so people have assurance their separate water rights will not be injured; this was done in the Arkansas basin for lease-fallowing occurring in the Catlin Canal. We

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need to get away from the current practice of measuring water rights to a fraction of an acre foot.

- h. Idaho has a successful water supply bank permitting transfers to agriculture, cities, and environmental flows, involving 835 water rights, 250,000 acre feet, and 75,000 irrigated acres. It operates in the Snake River plain, where the topography and hydrology are uniform so there are not wide regional variations between fields. They use satellite technology to measure HCU. They have been doing it long enough that farmers trust it. They also have regional pools where water can be stored in reservoirs. They don't have to go through a consumptive use analysis with every transaction. Farmers view their water as similar to a crop commodity, one of a portfolio of assets a farmer has, and they plan their water use just as they plan crops.
- i. Merritt Linke If a hay field was dried up when the water was sold, could a water bank permit the land to be re-irrigated? Castle said it depends on the buy and dry deal contract; the water bank would not prohibit it.
- j. Ken Baker in the **Upper Ark they developed a water bank that serves as a universal augmentation plan**; water is available for augmentation, and the cities can participate. The takers for the water within the water cooperated, but there is **a lot of resistance for water taken outside the basin**. The water bank is for short-term transactions that are small and won't alarm users, as a trans-basin diversion would.
- k. Lurline Curran ranchers **tried to put a water bank together** in the upper Colorado river **in Grand County, but had trouble getting past the army corps of engineers** (ACE) engineers, so they gave up. Anne said **you need a trusted public entity**.
- 1. **We need legislation for a water bank**. A 2016 bill was very complex. Castle thinks we can get rid of the limit for stored water in the existing statute, and use guidelines such as the Upper Arkansas uses.
- 9. **Anne Castle, Integrated land and water planning**. Colorado's Water Plan has a goal that **by 2025, 75% of Colorado residents live in communities that have water conscious land use policies** to reduce water use in the land planning process.
  - a. Current law: HB 08-1141, sponsored by Kathleen Curry, requires any developer of 50 units or more to show an adequate water supply for new development by obtaining an opinion of water availability from the state engineer or another water engineer or professional. It governs cities, towns, and counties and can be made at any point in the land approval process.

- b. Counties are governed by an older statute, that says water adequacy determinations are required for preliminary or final plat approval for subdivisions of 2 units or more. The state engineer must provide an opinion that the proposed water supply is adequate.
- c. Different rules apply to cities and counties, and Castle suggests we need uniform rule.

Counties	Cities and counties – HB 08-1141
2 or more lots	50 or more lots
State engineer opinion required	State engineer opinion is not required
Specific times for making	Complete flexibility in making the
determination	determination.

- d. There is no requirement for water conservation, but Colorado law has changed in recent years so that only WaterSense indoor fixtures can be sold, rain barrels are permitted, and xeriscaping cannot be barred in HOA covenants.
- e. SB15-8 Water conservation plans for providers of at least 2,000 af must include best management practices for water demand management that could be implemented through land use planning.
- f. Colorado's Water Plan recommends better coordination between land approval agencies and water providers. Local control is desired, but is hard to balance this with wise water planning on a regional or statewide basis.
- g. We need guidance for how counties accumulate water availability information as they go through the land approval process. The Colorado Municipal League, DOLA, Colorado Counties Inc., and CWCB could get together to provide this guidance.
- h. Karn Stieglemeier The bigger nut to crack is having water-conscious requirements to limit outdoor irrigation with new homes. Castle said The Colorado Water and Growth Dialogue managed by the Keystone Center and funded by the CWCB is trying to determine how much water is saved by different water saving techniques. Castle was wary about a one-size fits all strategy for the state. Having a menu of water saving techniques that city councils or counties could choose from is a better approach. We also need to deal with exempt wells; they are starting to make a difference. There are 200,000 exempt wells in the state, and 90,000 in the South Platte according to Eric Kuhn. Exempt wells are granted for lots 35 acres or larger where water can irrigate 1 acre, and for smaller lots that are not served by a municipal water system.

- i. Jim Pokrandt Fingers are pointing to the legislature, but one size does not fit all. In land use, we need to fix the inconsistencies in water adequacy, and also not require counties to make a decision at a fixed point in time. I would be good to accumulate water adequacy information during the approval process, but this does not need legislation.
- 10. Eric Kuhn and John Carron, PhD, Hydros: Joint West Slope Roundtable Risk Study (WSRR). This grew out of a joint roundtable meeting in December 2014 when the 7 points in the **Conceptual Framework** were discussed. **Point 4 protects existing West slope uses and some increment of new uses from compact administration**. A compact problem takes 10 years to develop, but when it happens, it is chaos. If you get there, you are in a crisis with **likely interstate litigation**, and a federal court will likely be running the river. This happened in the lower basin in the 1950s and 1960s and was resolved by the US Supreme Court *Arizona v. California*.
  - a. The 1956 Colorado River Storage Project (CRSP) provided funding to build Lake Powell, Flaming Gorge, Navajo, and the Aspinall Unit; these are designed to allow upper basin states to meet compact obligations. Total storage is 30 million acre feet, 25 maf in Lake Powell and 5 maf in the other reservoirs. Lake Powell is a bank account and we won't have a compact problem when there is water in these reservoirs.
  - b. Tools we have: Continue managing the CRSP reservoirs and snowmaking; we do not have good guidelines for how to operate the upstream reservoirs. Reservoir releases are typically made to generate hydropower. They are not coordinated, and there are no guidelines such as the Interim Guidelines that govern Lake Powell releases through 2026. Demand management amounts to cutting back consumptive use (not diversions) in order to maintain a level at Lake Powell.
  - c. There are 50 people in the technical committee discussing the WSRR.
- 11. John Carron described the Colorado River Support System, a database of water rights that can model which are cut back as available water drops. He helped design the CRSS tool as part of his doctorate work.
  - a. What is the risk of a compact call? Look to Lake Powell for the answer. In **January 2016, 11.5 maf in Lake Powell. Storage at 3,535' is 6 maf;** this is the level participants agree we **don't want to drop below** since hydropower drops off below this, and ceases entirely at 3,490.' Hydropower revenue funds a lot of activities in the Upper Basin including the endangered fish recovery programs. It would also compromise Upper Basin's ability to meet compact obligations, since the Upper Basin is required to release 7,480,000 to 9,000,000 acre-feet each year to Lake Mead.

- b. If three recent low periods (1988-93, 2001-06, 2012-14) occurred with today's Lake Powell level, a compact call is likely certain. In each of those droughts, Lake Powell was much higher at the start of the drought.
- c. In 2013, the Lake Powell release was 7.48 maf, the first time less than 8.23 maf was released. The states were not ready to explain how they would handle a compact call. Nevada did an analysis that showed both Lake Mead and Powell could drop below minimum pool levels.
- d. Drought contingency planning. The Upper Basin is required to deliver 75 maf every 10 years (plus 7.5 maf to deliver the Mexican treaty obligation, but this is disputed by some water planners). In 2011, the Upper Basin delivered 4 maf extra to Lake Mead in accordance with the interim guidelines, and this serves as a cushion to prevent a compact call. This comes off the books in 2021; there won't be a lot of wiggle room down the road unless we have another big year.
- e. If we can't generate power at Lake Powell, we won't be able to meet our Compact obligations. **Releasing water from the CRSP reservoirs could generate 2 maf**.
- f. **The next option is** demand management, **reducing use in the Upper Basin**. All modeling indicates the 7 basin states benefit most when both Lower and Upper Basins take action together. The Lower Basin has determined how to reduce water use by 1.2 maf per year as Mead falls.
- g. Risk study phase 1 objectives: After CRSP release of 2 maf, how much additional water might the Upper Basin have to come up with?
  - i. Colorado is using 56-58%, about 5% more than its 51.75% share.
- h. Model assumptions and preliminary results. The CRSS model suggests the risk of a Compact Call occurring is 10-40% depending on the precipitation assumptions used. We know there's some risk, and ideally we want to reduce the risk to 0%, but that is very expensive.
  - i. With no contingency planning—doing nothing—the risk is about 20% of a compact call.
  - ii. If we add CRSP releases the risk drops. We can reduce the risk further by dropping Upper Basin use by 200-400,000 af. To reduce the risk all the way to zero, it could take reducing demand by up to 2 maf.
  - iii. Coming up with 500,000 af in one year is a tall order; coming up with it over 10 years is not such a tall order, especially if we can leave it in a water bank.

- iv. What if the earlier droughts are repeated?
- v. What if demands are 20% higher?
- i. Conclusions:
  - i. Stored water in CRSP reservoirs is very helpful.
  - ii. How much is it worth investing in a pro-active water bank? Spreading it over many years is a way to reduce the risk.
- j. What is next:
  - i. What if we do nothing? We could decide the cost is too high to plan for it now, and take the risk there will not be a Compact call.
  - ii. We don't want to act too early so it's costing us economic activity unnecessarily.
- k. Kuhn said the amount of development matters. The Conceptual Framework goal that a new trans-mountain diversion cannot increase the risk of a compact call is a very high standard.
  - i. The Lower Basin will cut back demand to keep Mead from falling further.
  - ii. This study shows it is high risk to develop additional water.
  - iii. How development occurs matters—if Grand Valley replaces corn fields with subdivisions, this will decrease the consumptive use and lower the risk.
- 1. Louis firm up the model on the demand side. In the BIP there are a lot of conditional water rights. Growth has a tendency to be exponential. Growth demand should be studied. This not only informs the 7 points, but also West slope cities that have post-1922 water rights. What does a Compact Call look like, and what does demand reduction mean for Colorado agriculture.
- m. Kuhn said it is politically infeasible to cut back more than 100-200,000 consumptive use.
- n. **The next step is to** look at individual water rights and to **interface the Colorado Decisions Support System** (CDSS, the database of Colorado water rights administered by the state engineer) with the Colorado River Support System (CRSS, the database that BuRec uses to administer Colorado River flows).

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- 10-year penalty box. Colorado is over-using its 51.75% Upper Basin share by 0. 200,000 acre feet per year, about 5% of 4 million acre feet consumed by the Upper Basin. The 1948 Upper Colorado River Compact provides that if states use more than their allotted percentage share, they alone must reduce use for 10 years to cover a compact call. Ken Ransford asked if the other Upper Basin states are looking to Colorado to alone meet a compact call, and Eric said these discussions have not been held yet. Colorado River District board member Dave Merritt said the Upper Basin's share is 6 maf based on the 2007 Hydrologic **Determination**. Kuhn said the Upper Basin states will say this is an administrative determination that does not affect the compact, and that 4 maf is the correct number in droughts like the one we are now experiencing. Evidence of this is the fact that Lake Powell is less than half full. Kuhn said the courts will decide this. The question of whether you are above or below 51.75% depends on this issue. Merritt said that New Mexico is using 50% more than its 11.25% share over based on its current consumptive use.
  - i. Navajo Reservoir was built in part to deliver 508,000 acre feet to the Navajo Nation, and also 110,630 acre feet to the Rio Grande Basin in the San Juan-Chama Project. In 1988 the Secretary of Interior studied whether enough water was available to fulfill a proposed Jicarilla Navajo Reservoir water supply contract, and in 2007 enough sufficient water was available to supply 20,800 acre feet per year to the Navajo-Gallup Water Supply Project. These are known as the 1988 and 2007 Hydrologic Determinations. The 1988 Hydrologic Determination stated 5.43 million acre-feet was available to Upper Basin states, and the 2007 Hydrologic Determination increased this to 5.71 million acre feet despite the drought that began in 2000. The reason water supply increased is because assumed Lake Powell evaporation decreased from 520,000 to 200,000 acre-feet per year between the 2 studies. 

    1. \*\*Increase of the state of the state
- p. Karn Stieglemeier asked how **CRSP reservoirs**—Flaming Gorge with 4 maf, Aspinall and Navajo—will be used to augment Lake Powell. Kuhn said they have been operated for power, endangered fish and recreation. If Lake Powell is approaching minimum power, this **water will be released over 12-24 months**. Endangered Fish generally like more water in the river.
- 12. Grand Valley Water User's Association grant request for \$15,000 from CBRT Water Supply Reserve Account (WSRA), and \$200,000 from Statewide WSRA.

<sup>&</sup>lt;sup>1</sup> "Summary of the 2007 Hydrologic Determination Relating to the Navajo Settlement," Nov. 5, 2007, New Mexico Office of the State Engineer,

http://www.ose.state.nm.us/Legal/settlements/NNWRS/Initial%20Disclosures/Settlement%20Documents/Summary%20of%20the%202007%20Hydrologic%20Determination%20re%20Navajo%20Settlement%20110507.pdf.

- a. Mark Harris summarized the earlier study CBRT funded to study rehabilitating the roller dam: Orchard Mesa, Palisade, and Mesa County Irrigation Districts joined with the GVWUA. **Top 5 projects identified**:
  - i. **Line the top 500' of canal** in upper canyon just downstream of the roller dam
  - ii. **Upgrade the roller dam electrical and control system** components. Once you replace one component, you have to replace all of them, on both sides of the canal. Since this is on the national registry of historic places, it constrains what can be done to the appearance of the structure.
  - iii. **Rehabilitate the canal head-works** at the roller dam where water is directed into the canal.
  - iv. **Rehabilitate the spalling concrete** in the canal down from the roller dam. When rebar starts showing, it has to be repaired. Remove some existing concrete and repair it. Spalling is the term to describe weathering concrete, typically caused by freeze-thaw cycles when water impregnates the surface and then freezes.
  - v. **Replace the radial gates at station 22** spillway downstream.
- b. The next steps are to get to the 30% design level, and to design drawings for each priority, deal with permitting and regulatory requirements, develop specific funding plans, and take action.
  - i. They received a \$300,000 WaterSmart grant in May and a \$300,000 WSRA grant from the CWCB in June.
- c. A motion to approve made by Karn Stieglemeier, Ken Ransford seconded, it **passed unanimously**.
- Russ George attended the roundtable. He will attend more frequently in the future since retiring as president of Colorado Northwest Community College with campuses in Rangely and Craig. George is on the CWCB board, and he reported that the CWCB unanimously approved the Multi-Trina and East Mesa grant requests.
  - a. WSRA guidelines and rules are being changed, based on prior WSRA grant experience; Russ recommended that we look at the rule change, despite the downturn in severance tax revenue. The way the CWCB manages its revolving funds, there won't be a complete loss of WSRA funds for a while. We can fund meaningful grants and loans in process. The CWCB website will have the new rules. The next meeting is in Edwards/Beaver Creek in the third week in September.

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- 14. Brent Newman reported that the CWCB is looking at the **critical actions** that have been described in **Section 10 of Colorado's Water Plan**. Critical actions will support the following measurable objectives in the plan:
  - a. The 2050 municipal and industrial water gap will decline from 560,000 acre feet to 0.
  - b. Municipal and industrial water **conservation will save 400,000 acre feet by 2050**.
  - c. By 2025, **75% of the population** lives in communities that **incorporate water** saving actions into land-use planning.
  - d. By 2030, **50,000** acre feet will be produced by alternative transfer mechanisms that temporarily transfer water from agriculture to municipal use.
  - e. By 2050, there will be **400,000 acre feet of new storage**.
  - f. By 2030, **80%** of streams identified at risk will have stream management plans and 80% pf critical watersheds will have watershed protection plans.
  - g. By 2020, the state will be **raising \$100 million annually** to pay for the above, perhaps jumpstarted with a \$50 million payment from severance taxes.
  - h. Significantly **improve public awareness** and engagement regarding water issues statewide by 2020
- 15. Legacy Project discussion by Louis Meyer and Ken Ransford. Meyer described the 6 major themes in the CBRT Basin Implementation Plan, listed below, and said a legacy project would ideally promote several of these themes. The legacy project is one that the roundtable will actively promote, instead of waiting to approve projects brought to the roundtable by prospective grantees. The Next Steps committee discussed potential legacy projects at the June 26 meeting, and asked the roundtable for input on potential projects. This will be taken up again at the August 22 Next Steps meeting.
  - a. **Protect and restore healthy streams**, rivers, lakes and riparian areas.
  - b. Sustain agriculture.
  - c. Secure safe drinking water.
  - d. Develop local water conscious land use strategies.
  - e. Assure **dependable basin administration**, particularly a compact call.

- f. Encourage a high level of basin wide conservation, including both agricultural and municipal conservation.
- 16. **Jeff Derry asked for \$2,500 from the roundtable to continue funding the Center for Snow and Avalanche Studies** in Silverton Colorado. The Center's local study area is the Senator Beck Basin above and just west of Red Mountain Pass in the Uncompanding River basin. Dust on snow is an important variable affecting runoff. They have been compiling information since 2002. **Dust deposition has increased more than 200% in Colorado since the 1990s with no signs of abating**.
  - a. The Swamp Angel Study Plot is at 11,050' and the Senator Beck Study Plot is at 12,325.' They have weather stations at each site. There are **11 study sites that they try to visit at least 4 times per year**, typically near mountain passes with highway access. Dust events are not always apparent, and there's no substitute for on-the-ground investigations.
    - i. The 11 study sites are at Senator Beck Basin, Wolf Creek Pass, Spring Creek Pass, Park Cone, Grand Mesa, McClure Pass, Rabbit Ears Pass, Willow Creek Pass, Berthoud Summit, Grizzly Peak, and Hoosier Pass.
  - b. The grant request is for \$150,000, \$140,000 from CWCB, and \$2,500 from each of the Colorado, Southwest, Gunnison, and Rio Grande Basins. The Southwest and Rio Grande Basins have already approved this. Ken Ransford made a motion to bypass our normal grant guidelines and to vote on the grant request immediately, Karn Stieglemeier seconded, it passed unanimously. Karn then motioned to approve the grant request, Ken seconded, and it passed unanimously. Louis Meyer encouraged the CODOS study to seek funding from the South Platte and Arkansas roundtables.
  - c. Steve Child asked if they track where the dust came from. Derry said they send dust samples to the USGS laboratory so they definitely know the source. The southern Colorado Plateau is the main source of dust in the US. Storms coming from the 4 corners region dump dust on Colorado mountains, sometimes with snow, sometimes just as wind events. Dust typically comes in the spring. Dust accumulates at the surface, and progressively speed up the snowpack melt. It advances the snowmelt timing, making less water available later in the season. This process is independent of climate change. There has been a 5% reduction in runoff yield because snow sublimates (i.e., it evaporates into the atmosphere), and an increase in the runoff.
  - d. Dust on snow makes for **erratic hydrographs, and resulting river surges** are evident. Hydrographers cannot account for dust on snow, so it is a major source of error in snowmelt forecasts. The Colorado Dust on Snow (CODOS) program aims to improve the timing and rate of snowmelt forecasts. The grant is for part-

- time help to increase report frequency. It takes a week to get a report out, and a lot can happen in the week. Jeff upgrades data about once a month.
- e. The 1934 Taylor Grazing Act caused a reduction in dust on snow. More recently, oil and gas, off-road vehicles, lower water table have been contributing to this.
- f. Russ George supports it because it is important for climate change. It's very important for Denver Water, which has been contributing \$2,500 to \$6,000 per year. The Colorado River District has provided \$8,000 to \$20,000 per year, and the CWCB has provided \$50,000 each of the past 2 years.
- 17. Richard Vangytenbeek of Colorado Trout Unlimited asked the CBRT to **support 3** Critical Action Plan goals.
  - a. Pursue funding to **help agricultural producers upgrade irrigation systems** to make them fish-friendly.
  - b. **Compensate landowners for undiverted water,** and ensure that their water right is protected. CTU wants to make this simple and eliminate the risk of abandonment.
    - i. "Use it or lose it" is motivating farmers to divert the maximum amount possible from streams. CTU recommends the state engineer issue a broad rule reassuring landowners that if they do not divert their full decree, the undiverted portion is still part of their water right.
    - ii. A lot of producers think they should get value for any water running past their headgate. Richard Vangytenbeek thinks we should figure out a compensatory mechanism; it could be funding for efficiency improvements.
  - c. **Produce stream management plans**, or integrated water plans, that address what is needed to support healthy streams while keeping agriculture healthy. The SMP allows the community to speak with one voice.
  - d. The roundtable unanimously agreed to support CTU's three critical action goals.