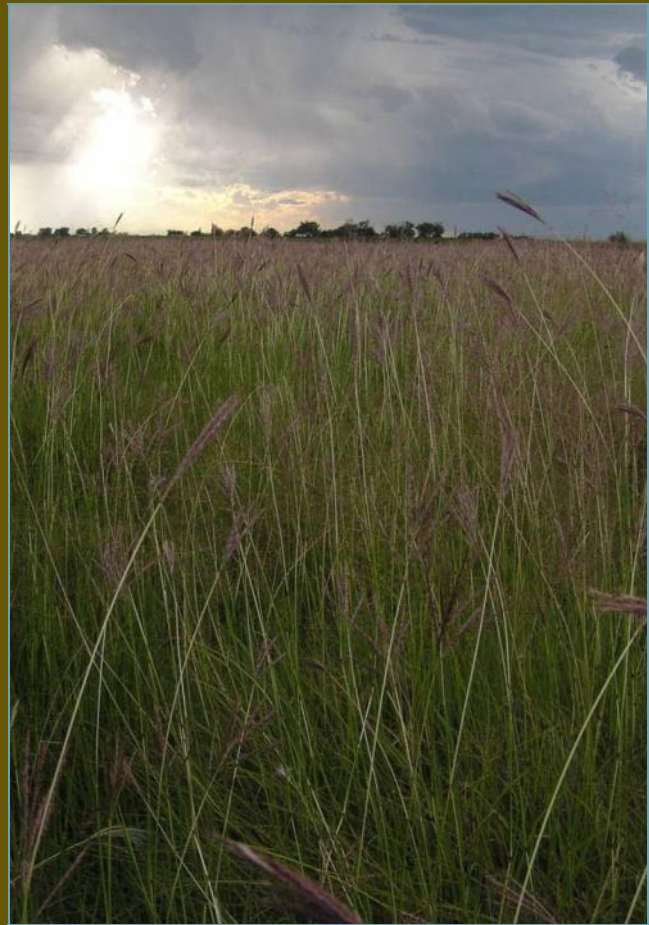


Considerations for Agriculture to Urban Water Transfers

IF YOU'RE GOING TO DO
IT, HOW TO DO IT RIGHT.



Rocky Ford Ditch Aurora Revegetation Project near Rocky Ford, Colorado
Photo courtesy of Tom Simpson

September 10, 2008

Presented to the Arkansas Basin Roundtable
by the Arkansas Basin Roundtable **Water Transfer Guidelines Committee**

Made possible by Water Reserve Account Funding granted to the Arkansas Basin Roundtable through the
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Compiled and Edited by MaryLou Smith, Aqua Engineering, Inc.
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Considerations for Agriculture to Urban Water Transfers

IF YOU'RE GOING TO DO IT,
HOW TO DO IT RIGHT.

Background

“Colorado will see a significantly greater reduction in agricultural lands as municipal and industrial water providers seek additional permanent transfers of agricultural water rights to provide for increased urban demand.”

That sentence from the 2004 Statewide Water Supply Initiative (SWSI) is why a group of Arkansas Basin rural and urban folks have been regularly rolling up their sleeves and putting their heads together the past two years. Despite their differences, they are mutually concerned about the effects agricultural to urban water transfers might have on third party interests including rural communities and the environment. They have put more than 1400 hours of work into trying to answer the question: “If water is going to be transferred from agriculture, how can it be done right—with full awareness of the issues to be resolved?”

The Arkansas Basin Roundtable is one of nine created by the Colorado legislature to address

the projected gap by the year 2030 between a watershed’s water supply and its demand. In the fall of 2006, Lawrence Sena, Mayor of Las Animas, took the microphone at a meeting of the Arkansas Basin Roundtable and said, “Some of us have put together a set of guidelines we would like for the roundtable to adopt—guidelines for cities to follow if they are going to transfer water from agriculture.” Urban water managers on the roundtable didn’t see things quite the same way, particularly the call for urban communities to control their growth. Thus began the work of the Water Transfer Guidelines Committee. State leaders have cited it as an exemplary process: stakeholders on opposite sides of the table working out their differences to cooperatively tackle a significant issue with high stakes for the Arkansas Basin, the state of Colorado, and indeed the entire western United States.

Now, the Committee presents this report to the

“I am...impressed with your process. What you have accomplished working together provides an example for other stakeholder groups trying to tackle the complex water problems we face in this state.”

- Jennifer Gimbel, Executive Director
Colorado Water Conservation Board

Arkansas Basin Roundtable—not just guidelines they would like the Roundtable to adopt, but a body of work which they believe will shed considerable light on this complex issue. The Committee’s work builds on the initial SWSI study as well as the findings of the SWSI 2 technical roundtable which dealt with alternatives to permanent transfer of

agricultural water. It is intended to be seen as part of a statewide water solution and as a “next step.”

Harris Sherman, Director of Colorado’s Department of Natural Resources, is leading the State in a process to visualize how citizens want Colorado to look 50 years from now. The Water Transfer Guidelines Committee offers this report

as a part of that vision—one piece of the solution. We believe the Colorado we want must honor both its rural and its urban heritage and continually plan for the future. Just as important, we believe the Colorado of the future must be built on a spirit of collaboration and creative problem solving—dialogue instead of debate or confrontation. We discovered that it is easier said than done—but we did it—as noted by Jennifer Gimbel, director of the Colorado Water Conservation Board (CWCB): *“Though I am impressed with the template you have developed, I am even more impressed with your process. What you have accomplished working together provides an example for other stakeholder groups trying to tackle the complex water problems we face in this state.”*



High Line Canal near Rocky Ford, Colorado
Photo courtesy of Tom Simpson

This report is made up of several distinct parts:

- ❖ **User’s Guide** to Template for Evaluating Water Transfers
- ❖ **Template** for Evaluating Water Transfers
- ❖ **Key Points from Advisors**
- ❖ **Where Do We Go from Here?**

In an electronic Appendix to the report, the Committee has included:

- Bibliography of literature about water transfers and related topics
- Published paper about the Committee’s process

List of Committee Members, Advisors, Facilitator

The following is a list of individuals who participated in this work.

Committee Members

- ❖ **Lawrence Sena.** Mayor of Las Animas, member of Arkansas Basin Roundtable representing Bent County Municipalities
- ❖ **Jim Broderick.** Southeastern Colorado Water Conservancy District, member of Arkansas Basin Roundtable representing the conservancy district.
- ❖ **Reeves Brown.** Beulah rancher, at-large member of Arkansas Basin Roundtable
- ❖ **Virgil Cochran.** Prowers County Environmental Compliance Officer, member of Arkansas Basin Roundtable representing Prowers County
- ❖ **Dan Henrichs.** Superintendent, Rocky Ford Highline Canal, at-large member of Arkansas Basin Roundtable
- ❖ **Rick Kidd.** Consulting engineer, rancher, member of the Arkansas Basin Roundtable representing Pueblo Conservancy District
- ❖ **Mark Pifher.** City of Aurora Water Utilities, non-voting at-large member of Arkansas Basin Roundtable
- ❖ **Terry Scanga.** Upper Arkansas Valley Water Conservancy District, member of Arkansas Basin Roundtable representing the conservancy district.
- ❖ **Dennis Smith.** Audio visual producer, member of Arkansas Basin Roundtable representing Lake County
- ❖ **Wayne Vanderschuere.** Colorado Springs Utilities, member of Arkansas Basin Roundtable representing El Paso County Municipalities
- ❖ **Tom Simpson.** City of Aurora Water Utilities
- ❖ **Ken Weber.** Cultural anthropologist.
- ❖ **John Wiener.** University of Colorado research associate

Advisors

- ❖ **David Carlson.** Resource Analysis, Inc.
- ❖ **Cristy Culp.** Colorado Department of Local Affairs.
- ❖ **Alex Davis.** Colorado Department of Natural Resources
- ❖ **Pat Edelman.** United States Geological Survey.
- ❖ **Don Elliman.** Colorado Office of Economic Development
- ❖ **Paul Flack.** Colorado State Parks
- ❖ **Tim Gates.** Department of Civil Engineering, Colorado State University
- ❖ **Jennifer Gimbel.** Colorado Water Conservation Board
- ❖ **Doug Kemper.** Colorado Water Congress
- ❖ **Beaudry Kock.** Massachusetts Institute of Technology (MIT)
- ❖ **James Pritchett.** Department of Agricultural Economics, Colorado State University
- ❖ **Jim Ramsey.** Colorado Division of Wildlife
- ❖ **Dave Stewart.** Stewart Environmental, Inc.
- ❖ **Del Nimmo.** Department of Biology, Colorado State University—Pueblo
- ❖ **Harris Sherman.** Colorado Department of Natural Resources
- ❖ **Mark Smith.** Department of Economics, The Colorado College
- ❖ **John Stulp.** Colorado Department of Agriculture
- ❖ **Steve Witte.** Colorado State Engineer's Office
- ❖ **Rob White.** Arkansas Basin Headwaters Recreation Area

Facilitator

- ❖ **MaryLou Smith.** Aqua Engineering, Inc.

Template for Evaluating Water Transfers: A User's Guide

What the Committee Intended

This guide explains the Committee's intent in developing the template, how the template is organized, how it should be used, and the basic premises which led the Committee to include the various parts of the template.

The Arkansas Basin Roundtable Water Transfers Committee

does not take a position on whether water should be transferred from agriculture for urban use. We believe that those facing water supply needs should investigate all alternatives. However, we believe that if water is going to be transferred from agriculture for urban use, certain factors should be taken into account before such transfers take place. Therefore we have assembled this template of considerations.

Each consideration may or may not be relevant for a given transfer. The intent is to ensure that issues which may be important in a given case will be recognized early in the examination of water transfers. Because of the complex nature of such transactions, the Committee attempted to capture in a consolidated and useful form the many issues which may need to be considered. We left the case specific details to be more fully explored by those involved in individual transactions.

The template is intended to be used not only by buyers and sellers trying to put together a water transfer deal, but by communities and other third parties who would be affected by such a deal. It is intended to proactively bring important issues into the open for frank discussion. It was not developed for the purpose of creating roadblocks to transfers.

The Committee recognizes that different considerations will need to be taken into account depending upon the type of transfer involved, whether a purchase and sale transaction, a short or long-term lease transaction, or some other type of transaction. Because many of the considerations are common to more than one

type of transfer, the Committee has produced one template rather than a separate template for each type of transfer.

This guide to the template is as important as the template itself, and should be read first.

In developing the template we not only met with a broad range of experts, but gathered information from SWSI, past agricultural to urban transfers and, to a more limited extent, basin roundtable needs assessments. However, further data should be collected, particularly from local communities and other third parties affected by these transfers. Ongoing public policy direction emerging from a variety of sources such as the IBCC (Interbasin Compact Committee) the CWCB (Colorado Water Conservation Board), the state legislature, and others may also impact future analyses of the issues and implementation of a response strategy.

How the Template is Organized

The template is organized to show as clearly as possible the wide range of considerations, questions, and potential mitigations for negative impacts.

- ❖ **Each page** of the template is headed by a definitive consideration found to be important, for instance: “Size of the transfer relative to the affected area” or “Water quality impacts.”
- ❖ **The first column** under the consideration heading poses the key questions associated with each such consideration, for instance: “Will there be sufficient remaining water for other economic undertakings? or “Are there any potential negative water quality impacts associated with the transfer?”
- ❖ **The second column** underneath the consideration heading might be referred to as the “mitigation” column. This column includes potential measures that could be taken to address a negative impact. Examples are “Modify the amount, location, or timing of the transfer,” or “Invest in water treatment technology.”
- ❖ **Implied between the two columns** is a “yes” or “no” answer to the questions. In some cases a “yes” answer would indicate the need for the mitigation examples. In some cases a “no” answer would indicate the need for the mitigation examples.

The columns include some overlap and duplication, because we found that an effort to achieve precise definitions and a set of terms which would reduce duplication would actually make the document longer and harder to follow.

Template Not Intended to Cover Everything

There are also undoubtedly certain considerations, questions and mitigation options which have been overlooked, or at least unidentified. Empty boxes indicate that we expect users to add to this template. Every effort should be made to include potentially interested parties at the earliest possible date in order to identify, in

as comprehensive a fashion as possible, the nature of information to be assessed and shared; the positive and negative impacts, real or perceived, of the transfer proposed; mitigation options; and coordination opportunities. The template can and should be supplemented as it is employed in the future. Those using it are encouraged to contact the Committee with suggestions for improvements based on actual use.

The Committee recognizes that, if not properly applied, the many considerations, questions and mitigations covered in the template could unduly complicate the transfer process, unnecessarily raising transfer costs and adding an unacceptable measure of uncertainty. The template was intended to be a comprehensive examination of all potential considerations, but not a comprehensive examination of all potential mitigations. A number of the considerations may not apply in a given actual situation, especially those involving smaller transactions or where the water is not being moved great distances. The involved parties will need to collaboratively decide what aspects of the template fit their particular case and whether additional considerations should be addressed. At the end of this guide, we have included some examples of how the template might be used differently in different circumstances.



City of Colorado Springs, Colorado

What about Positive Impacts?

The Committee also wrestled with the question of how to incorporate the potential positive impacts of a given transfer. For example, the transfer may result in improved water quality in a given river reach or promote beneficial economic development. After an extended discussion, though the Committee felt that these impacts should be taken into account as part of an equitable balancing process, we concluded that we had neither the time nor the expertise to address such impacts at the level of inquiry they deserve. Hence, that task has been left to those using the template specific to a given transfer proposal.



Pueblo Reservoir, Pueblo, Colorado
Photo by Dick Stenzel

Basic Premises

As the Committee reviewed the various drafts of the template, it became apparent that there were certain overarching considerations of general applicability that need not be repeated for each entry, but which nevertheless should be taken into account, as appropriate, when individual analyses occur. The Committee identified these as the “basic premises” listed below.

- ❖ **The transfer evaluation should consider not only immediate impacts, but future impacts, including impacts on local water supply availability.**

Not only the immediate impacts should be taken into account, but also the long-term impacts of the transfer as it relates to such matters as adequate future “local” water supplies, social/economic impacts, etc. This may result in a modification of the appropriate mitigation regime.

- ❖ **The transfer evaluation should address cumulative impacts, not just the impacts of the individual transfer.**

As in traditional NEPA analyses, it may be important to examine the impact of the transfer in the context of past and reasonably foreseeable future transfers. There may be a “tipping point” at which the severity of consequences significantly increases, or the nature of the impacts substantially changes. In addition, it may be necessary to wrestle with how both rights and obligations, that is water yields and mitigation, are most equitably distributed.

- ❖ **In every case, “affected area” is a function of the specific facts associated with the transfer. Potential affected areas may be: ditch, town, county, basin, state, other.**

This premise is particularly significant and somewhat complex in its application. Defining the affected area cannot be done in the abstract and hence the Committee made no attempt to do so. In fact, the “affected area” may even change for individual considerations within a single proposed transfer. For example, the water quality impacts may be felt only in a clearly circumscribed river reach, while the economic impacts may be felt throughout a county or beyond. Consideration must also be given to areas affected by water being transferred through their jurisdiction. Within

any proposed transfer it is probable that there will be numerous affected areas, depending on the considerations and questions posed. It will be important for the involved stakeholders to determine the affected areas for each consideration in advance of dealing with the intricacies of the issues. Otherwise valuable time may be lost as potentially affected interests are left out of the process.



Arkansas Riverwalk, Pueblo, Colorado
Photo courtesy of Aqua Engineering, Inc.

❖ **In some cases, factors to be addressed will be handled in the context of a water court adjudication.**

The Committee is aware that some issues, such as “injury to water rights” are already handled in the water court adjudication process. The Committee did not intend that parties spend time second-guessing the existing or potential outcomes of the court process or other mandated processes, such as section 404 dredge and fill permitting, section 1041 land use permitting, etc. Coordination, however, would be warranted. Where not listing these considerations in the template might have been interpreted as an oversight, they have been listed.

Underlying Issues

There are basic underlying issues not addressed by the Committee, some of which will require a serious and public discussion. These questions are raised, but not answered here. They are included because they may have important effects on how any given transfer is evaluated.

❖ **The problem of judgments and the basis for comparison.**

Evaluating a change requires comparison. We face questions such as whether the transfer does or does not leave “sufficient” water for other purposes or conditions. But, “sufficient” is a comparison based on a judgment, such as “XYZ would be needed to maintain agricultural activity,” or “to meet the instream flow needs for this reach of the river, XYZ is needed in the following months”, or “the future growth of this city will require XYZ in addition to the current holdings.” Many of the problems we address are matters of scale; a small ripple in a large pool is different from the same ripple in a tiny pool. The heart of many of the issues is in ideas like “sufficient”, but that depends on a judgment which may in turn depend on who makes it.

For example, what constitutes sufficient water for future municipal, commercial and industrial needs, and the maintenance of amenity and quality of life values relates to questions which we cannot answer on behalf of local governments. In addition, there are regional issues that have not yet been effectively addressed, and issues of state policy which remain unresolved. Some extent of land-use planning or potential use analysis may be needed to obtain useful answers about what water will be wanted or needed in the future, because the answer “all we can get” is not very useful. Some local governments might describe “build-out”; others might describe rates of growth that can be economically accommodated. Others may fall back on SWSI elaborated demographics. It is not

clear that many local governments have attempted to address this need or that there is capacity to do so.

Some of the information which will be needed is being developed under SWSI and the needs assessment work being undertaken by the basin roundtables. But some analysis and policy decisions are beyond the scope of those processes. There will have to be some underlying estimates or judgments for these data intensive approaches to be used in a meaningful way. We must always be clear about what information we are using for these comparisons, when it seems inadequate, and how it is inadequate. Some decisions might be delayed until there is better information, some may not be delayed, and some might be modified in order to respond to better information when it is obtained. Explaining and substantiating the judgments is important.

❖ **Cumulative assessments and approaches.**

As noted above, many impacts become important when the accumulation of net impacts crosses some threshold and has either a qualitatively different impact, or exceeds some line or standard. Losing the last medical service or grocery store is different from losing one of three big stores or losing a specialist. Biologically, the problems of cumulative impact are common. That is why we recommend that all considerations be examined for cumulative as well as site specific impacts. There are also fairness issues associated with the imposition of impacts without appropriate or adequate mitigation. At issue is who might get stuck with either fixing a very big future problem or being prevented in the future from some desired action. The potential equity issues warrant additional attention at the state level, so that the costs of dealing with an impact which crosses a threshold are not unfairly distributed. This is a major policy question which we can only raise.

❖ **Group Transfers.**

The Committee believes this template will be useful to those considering transfers of any size. Of particular interest toward the end of the Committee's work was the issue of how the template might be used in the case of transfers involving groups of entities, whether on the transferring end or the receiving end, or both. Though the template as it stands will be useful in such circumstances, Committee members would like to encourage further work which stimulates thinking about potentially creating regional wealth and value from transfers, not just slowing down the losses.

The idea here is that if multiple players (transferors, receivers, and third party concerns such as local governments and environmental stewards) were to proactively plan a future that maximizes what the region has going for it, the end result would be much more than the sum of the parts of separate transfers.

One committee member said "We can do so much more and solve many more problems (such as water quality) using organized, proactive water transfers as a mechanism for regional progress. Such planning could actually strengthen rural economies and leave all parties better off than without the deal."



Fort Lyons Intake Canal Diversion Structure
Photo by Dick Stenzel

❖ **Public information and public participation processes: When to disclose pending transfers or plans, and to whom?**

A wide-open question is who will speak for those impacted by the transfers in the affected areas? Which parties should be brought to the table and at what point, is a major policy question which we can only raise here. Currently, involvement may not occur until there is action in water court, at which point the planning and investment has progressed to the point where modifications in the plan are difficult and opportunities for collaboration are minimal.

Improvement of the transfer process to better involve third-party beneficiaries, as well as those adversely impacted, is important. The competitive private property rights framework is part of our legal and social tradition, but the secrecy of many water negotiations may make difficult what the SWSI Phase 1 discussions called “project enhancement.”

Where there are adverse impacts, they should at least be known early enough to promote the kinds of mitigations described in the template. And where there are potentially positive impacts, they should also be known early enough for beneficiaries to identify and promote their interests in the context of a stakeholder dialogue. However one looks at this, there are local, regional and state interests which are affected, and those interests, through their representatives, should at least have a forum in which their issues can be explored. Those interests might include the opportunity to take advantage of economies of scale through “coordinated operations” for most cost-effective use of infrastructure.



Flying Horse Ranch Subdivision, Colorado Springs, Colorado
Photo courtesy of Aqua Engineering, Inc.

❖ **Rural Economic Development and the Viability of Agriculture.**

A prime motivation for doing this work was the concern for rural communities which could be negatively affected by transfers of water from agriculture. However, the Committee was not naïve about the many complex problems faced today by rural communities and by agriculture as well. We recognize that the term rural community is not synonymous with agricultural community and that the degree to which rural communities are dependent on agriculture varies considerably. In addition, we recognize that water is only one part of the puzzle when it comes to the viability of agriculture. Other factors such as the aging of the farm population with fewer young people choosing to farm are also of concern. As one Committee member likes to ask, “Is agriculture in trouble because water is leaving, or is water leaving because agriculture is in trouble?” Far beyond the purpose of this Committee’s work is the need for some serious thinking by the larger society about the place of agriculture in today’s world. Additionally, serious efforts need to be undertaken to pull together the multiple groups working on rural economic development to assist rural communities in taking a “big picture” planning view for their futures.

Who Will Use the Template?

How do we expect this template to be used and by whom? That question was asked by a number of advisors with whom we met, including Harris Sherman and Alex Davis from the Colorado Department of Natural Resources, Jennifer Gimbel, director of the Colorado Water Conservation Board, and Steve Witte, Division 2 Engineer from the State Engineer's Office. We expect that question to be a major topic of future dialogue. The Committee hopes that this work will spur those impacted by water transfers to engage in the dialogue, including not only potential transferring parties on both ends of a transfer but also the third parties who may be impacted.

As we have met with various advisors, we have been asked if we anticipate that the considerations, questions, and mitigations in this template will become the basis for regulation of transfers. We do not speculate. Most of us feel the ideal circumstance would be for this template to serve as an impetus for parties on all sides to recognize that collaborative dialogue is in their best interest. However, we are aware that regulation may eventually be necessary to provide a level playing field. Again, we encourage extensive dialogue among diverse stakeholders. It is not our intent to either promote or impede transfers, nor to affect the value of water rights.

Transfer Examples

The following examples show circumstances in which a potential transfer should be evaluated using the template. Regardless of the complexity or geographic scope of the proposed transfer, evaluators should refer to each part of the template to determine if it is applicable. The examples are provided in order of complexity. The more complex the proposed transfer the more attention should be given to more parts of the template.

For instance, small changes in the local use of water, such as that shown in Example 1, would not require significant resources or mitigation. This type of transfer would need to meet the standard of non-injury required in all Water Court proceedings, and possibly the revegetation of retired farm land.

The transfer in Example 2 would need to meet the standard of non-injury required in all Water Court proceedings and would require additional resources and mitigation due to the scale and complexity of the proposal. Questions regarding the continued viability of irrigated agriculture in the area would need to be evaluated and possibly mitigated. This example might require strict revegetation guidelines and the evaluation and mitigation of environmental concerns. Negative economic impacts might be mitigated by the new commercial development, which could contribute to economic diversity as it brings income, jobs and purchases to the area.

Examples 3 and 4 would require evaluation of all of the questions in the template and significant mitigation. The lease proposal would certainly require less mitigation. However, because of the scope of the proposal it would need to be evaluated with the same level of detail as the purchase and sale proposal.



High Line Canal near Napesta, Colorado
Photo courtesy of Tom Simpson

Example 1

A small community wishes to obtain sufficient supplies for augmentation of its municipal wells. A shareholder in the local irrigation company is willing to sell to the community his 100 acre farm and its associated shares in the irrigation company. The community needs 100 acre-feet of augmentation water to meet its demands. The historic consumptive use of irrigation water on the farm is approximately 150 acre-feet. The community will permanently remove the farm from irrigation. The shares in the ditch company to be changed represent 2% of the total shares in the irrigation company and 2% of the irrigated land served by company water rights. The type of use of the water will change but the new use will remain local.

Example 2

A commercial user has acquired a majority interest in an irrigation company and intends to change the type of use to meet its demands. The commercial use is in the same general vicinity as the original use. The commercial use will be developed over a number of years and the user intends to lease the irrigation water back to the farmers until the water is needed for the commercial use. As the commercial use is developed, farm land will be taken out of production, but development of the commercial use will eventually add to the local economy.

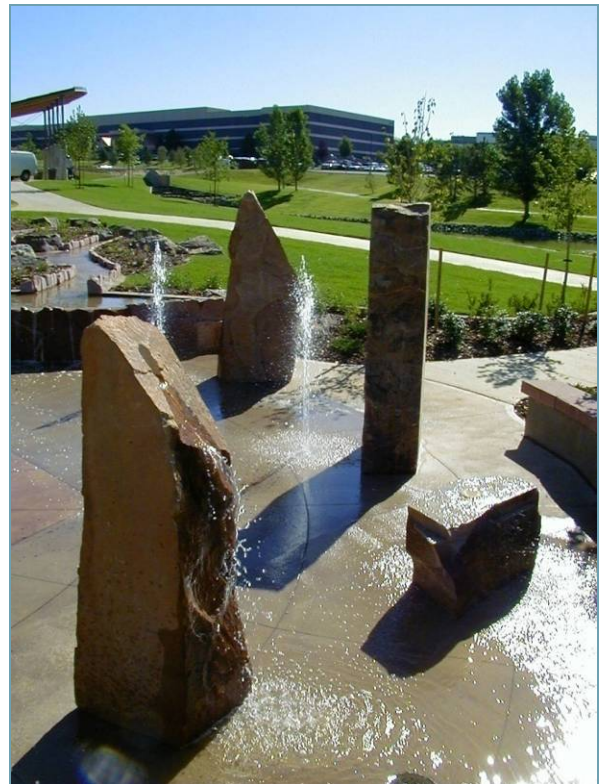
Example 3

A municipality intends to enter into a lease-fallow program with an irrigation company. The terms of the lease require farmers to fallow a portion of their farms to allow the municipality to divert and use the associated historic consumptive use for municipal use. The ownership of the water will not change but the owners will be required to comply with the terms of the lease. The municipality is located a significant distance from the original use, and intends to construct a

pipeline at or near the original point of diversion to convey the leased water to the municipal use.

Example 4

The majority of the shareholders in a large irrigation company have determined they want to sell their shares in the company and have accepted an offer from a municipality 75 miles upstream from the diversion point of the irrigation company. The sellers' shares represent 85% of the company shares and a corresponding amount of the irrigated land it serves. Type of use of the water will change. The new use is located in a different county a significant distance from the original use. The municipality intends to use the river as the means of conveyance through a change in point of diversion or exchange. No pipelines or other major infrastructure is planned.



Westlands Park, Greenwood Village, Colorado
Photo courtesy of Aqua Engineering, Inc.

Framework for Evaluating Water Transfers: A Template

Prepared by Arkansas Basin Roundtable Water Transfer Guidelines Committee

A. Size of Transfer Relative to Affected Areas

Questions—No Particular Order

Potential Mitigation Examples—No Particular Order

QA-1. What are the affected areas?

QA-2. What percentage of the affected areas' water supply does this transfer represent?

QA-3. Will there be sufficient remaining water for viable **agricultural** operations/economy in the affected areas?

QA-4. Will there be sufficient remaining water for other **non-agricultural** economic undertakings in the affected areas?

QA-5. Will there be sufficient remaining water for anticipated growth, drought, or emergencies in the affected areas?

MA-3.1 Assist in transition to alternate crops or irrigation methods requiring less water

MA-3.2 Leaseback Arrangements

MA-3.3 Infrastructure investments, e.g. rehabilitation, efficiency measures, etc.

MA-3.4 Compensate for loss via other mitigation, e.g. financial payment, job relocation to community, assistance with economic development efforts, provision of alternate water supply, etc.

MA-4.1 Modify transfer timing

MA-4.2 Develop alternate transfer mechanisms, i.e. leaseback arrangements

MA-4.3 Assist in planning/assessment efforts for local governments/communities to determine alternative visions, i.e. provide land use planning expertise

MA-4.4 Infrastructure Investments

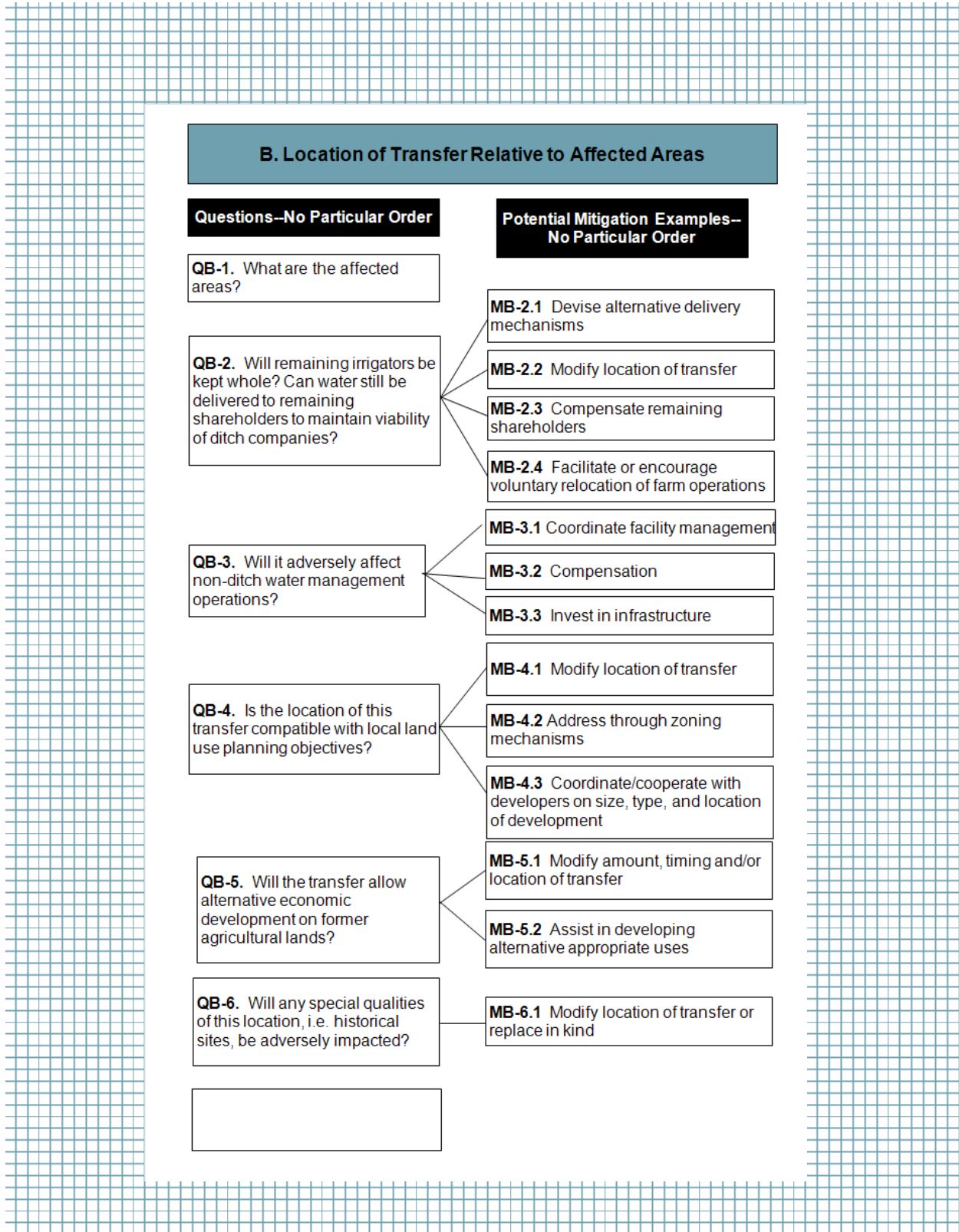
MA-5.1 Develop alternate transfer mechanisms

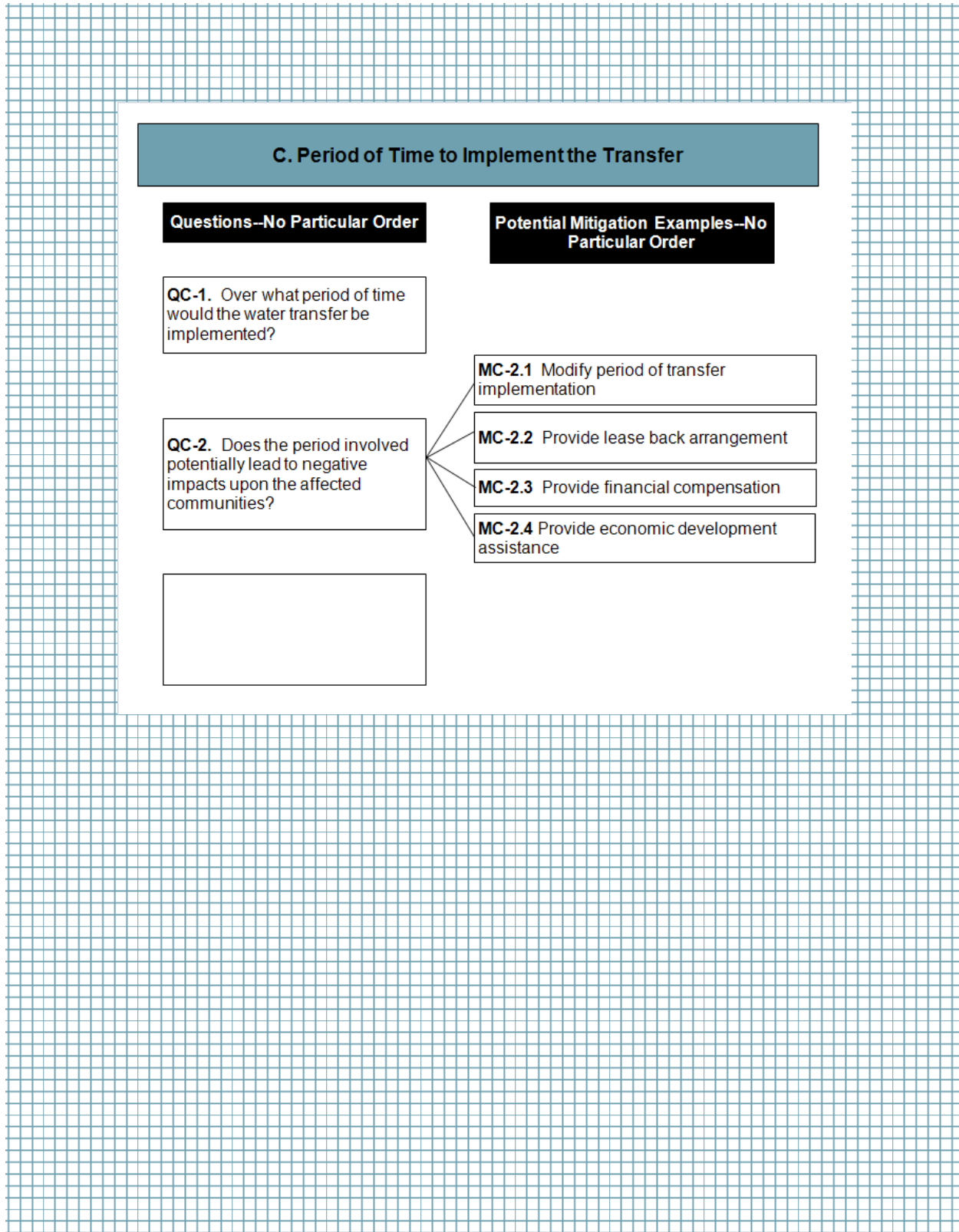
MA-5.2 Modify quantity of water transferred

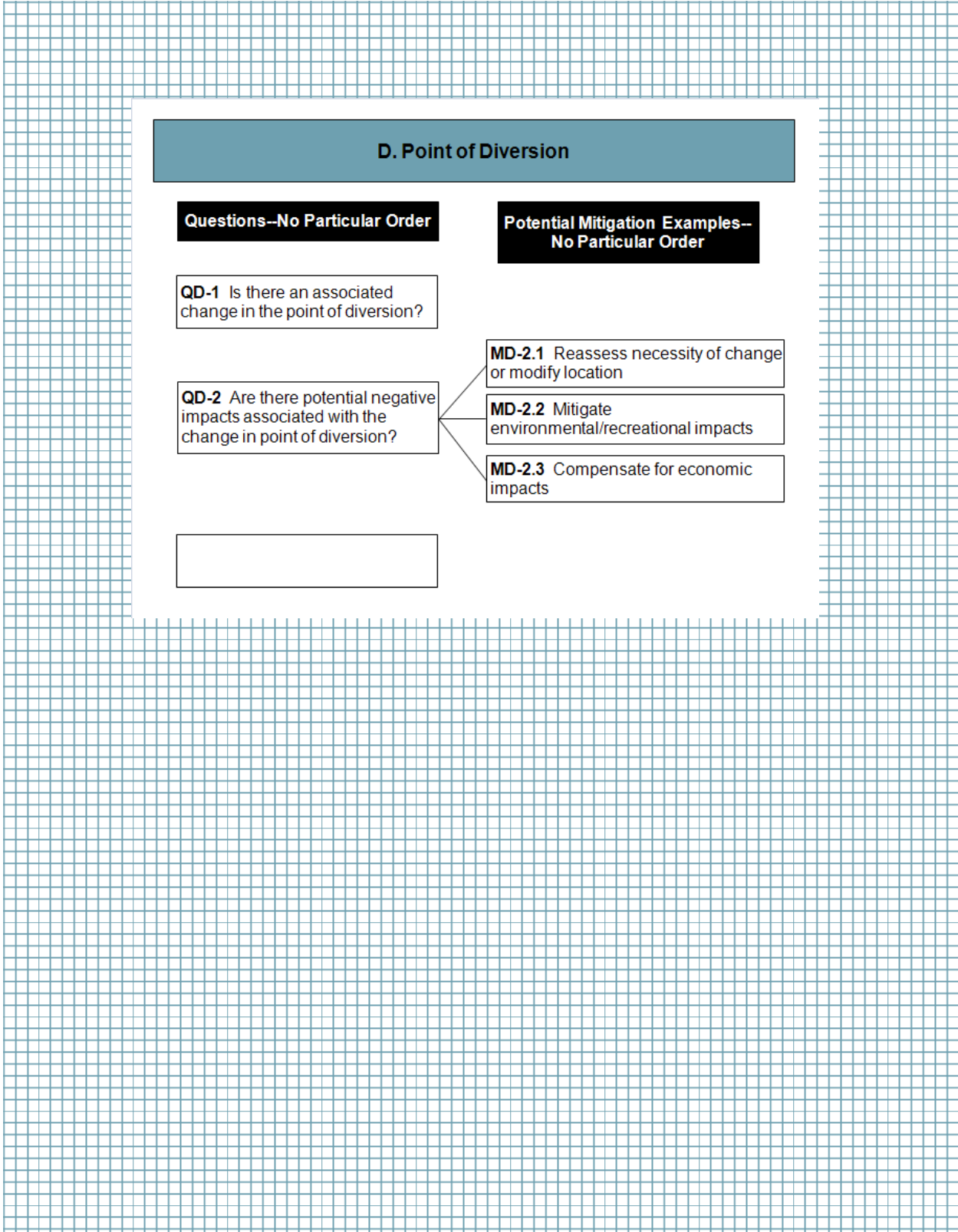
MA-5.3 Locate alternate water supply

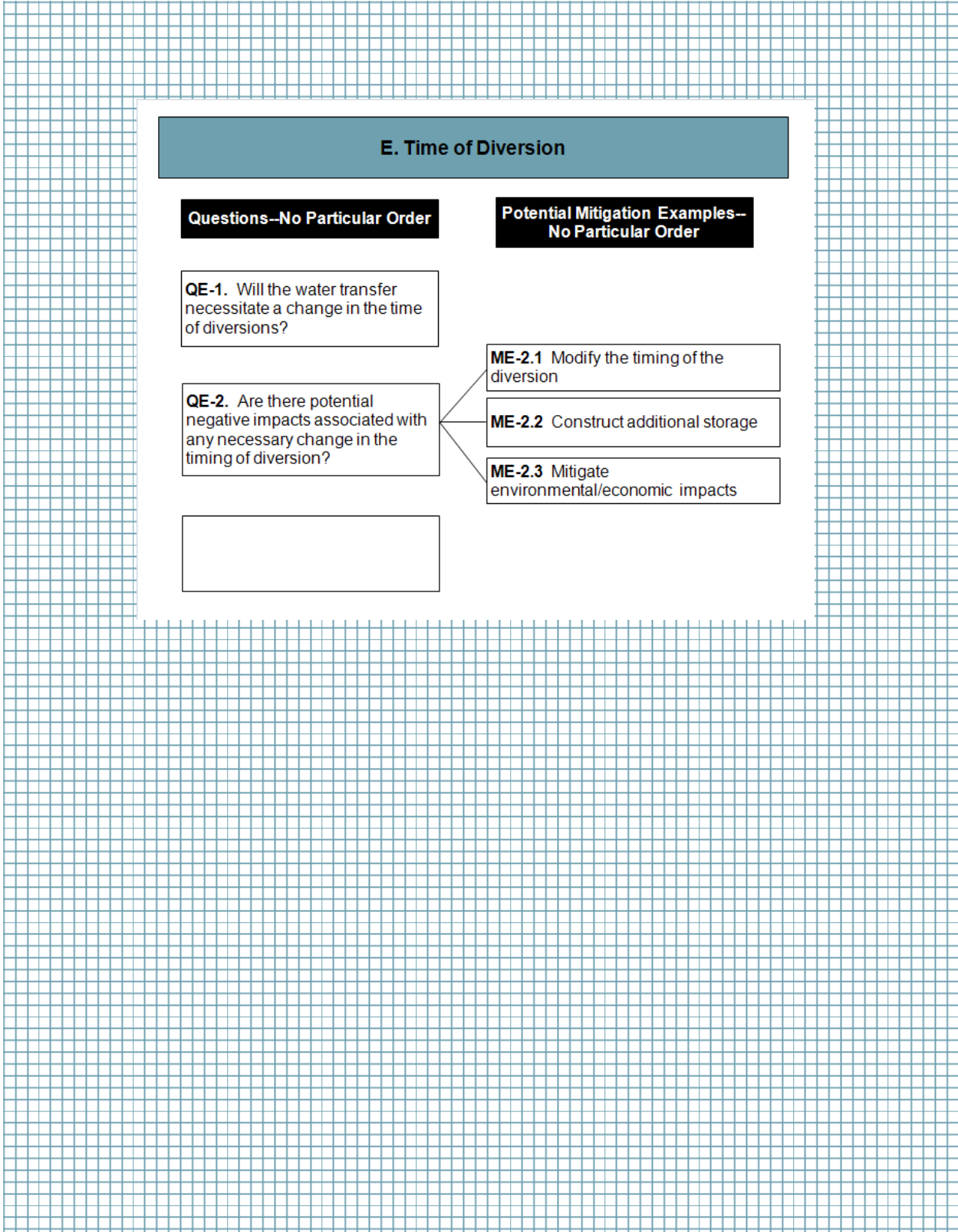
MA-5.4 Assist with water conservation

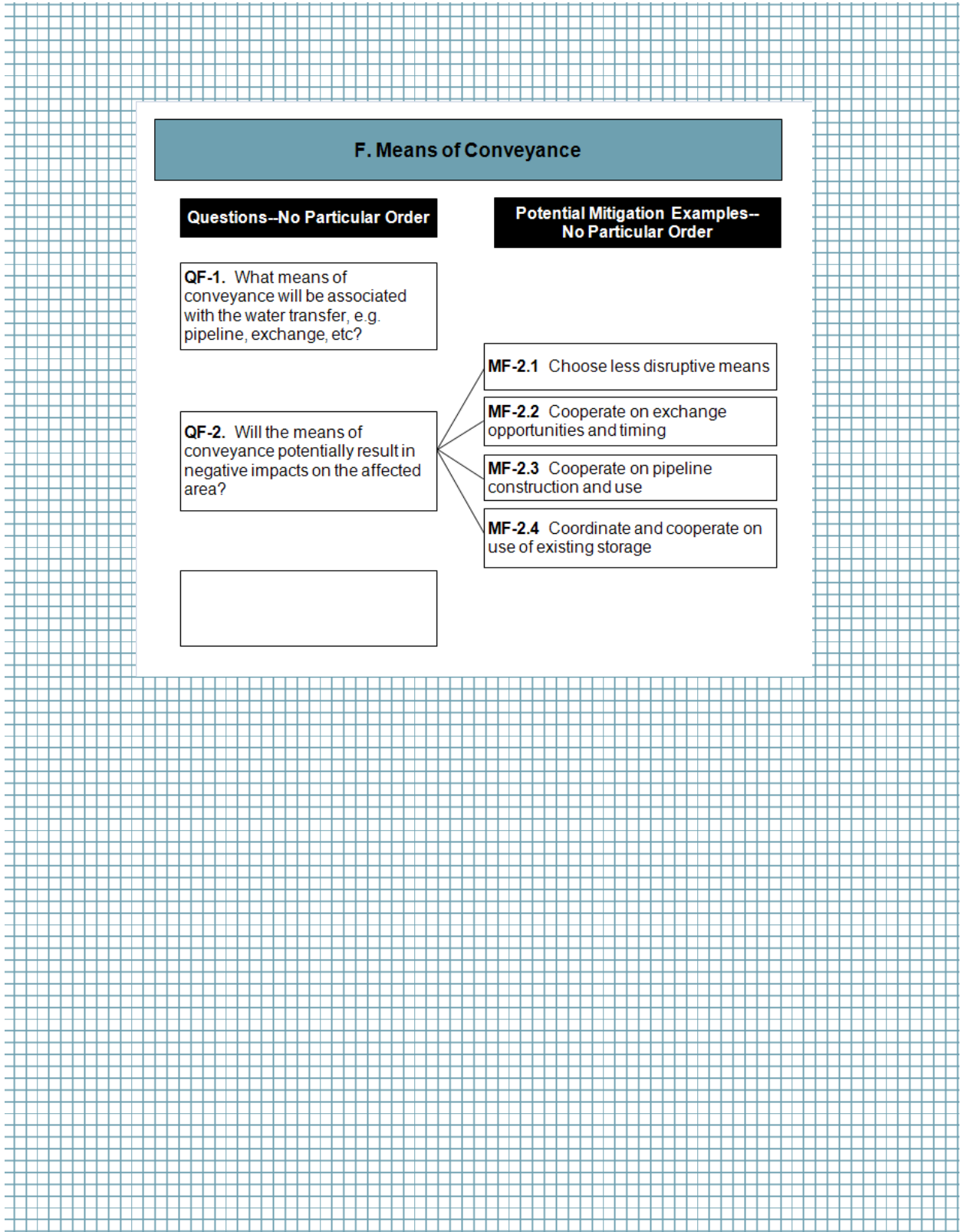
MA-5.5 Infrastructure Investments

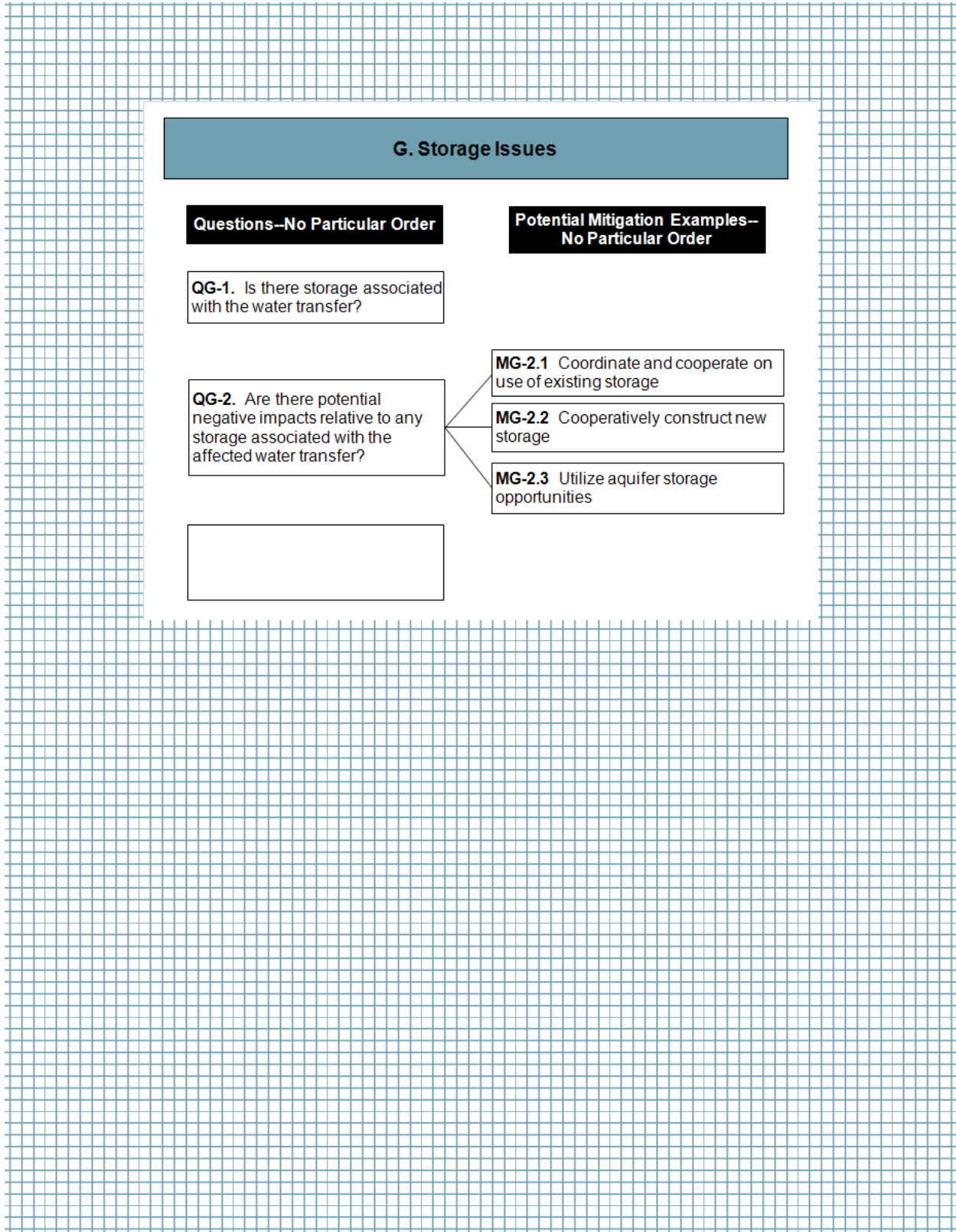


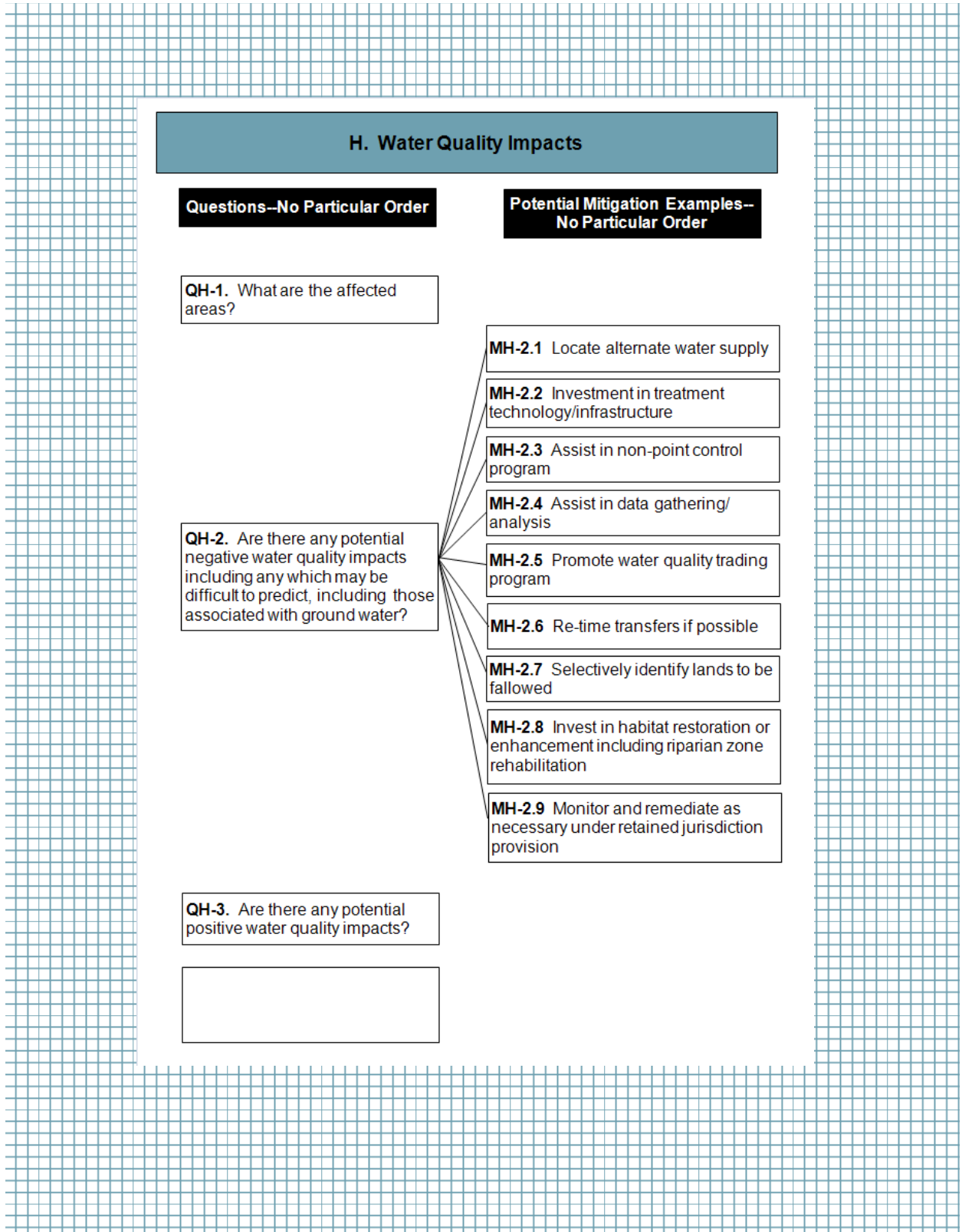


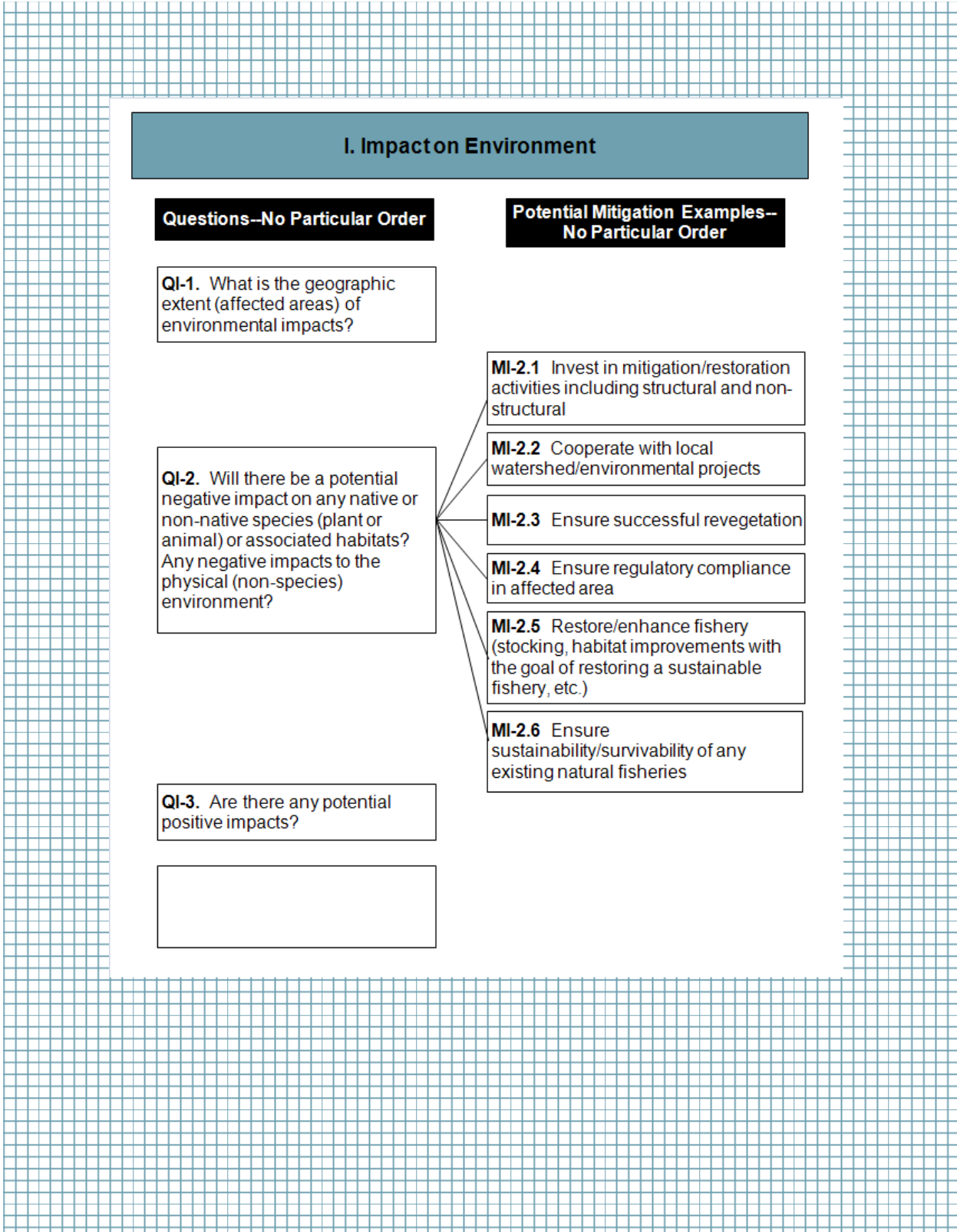


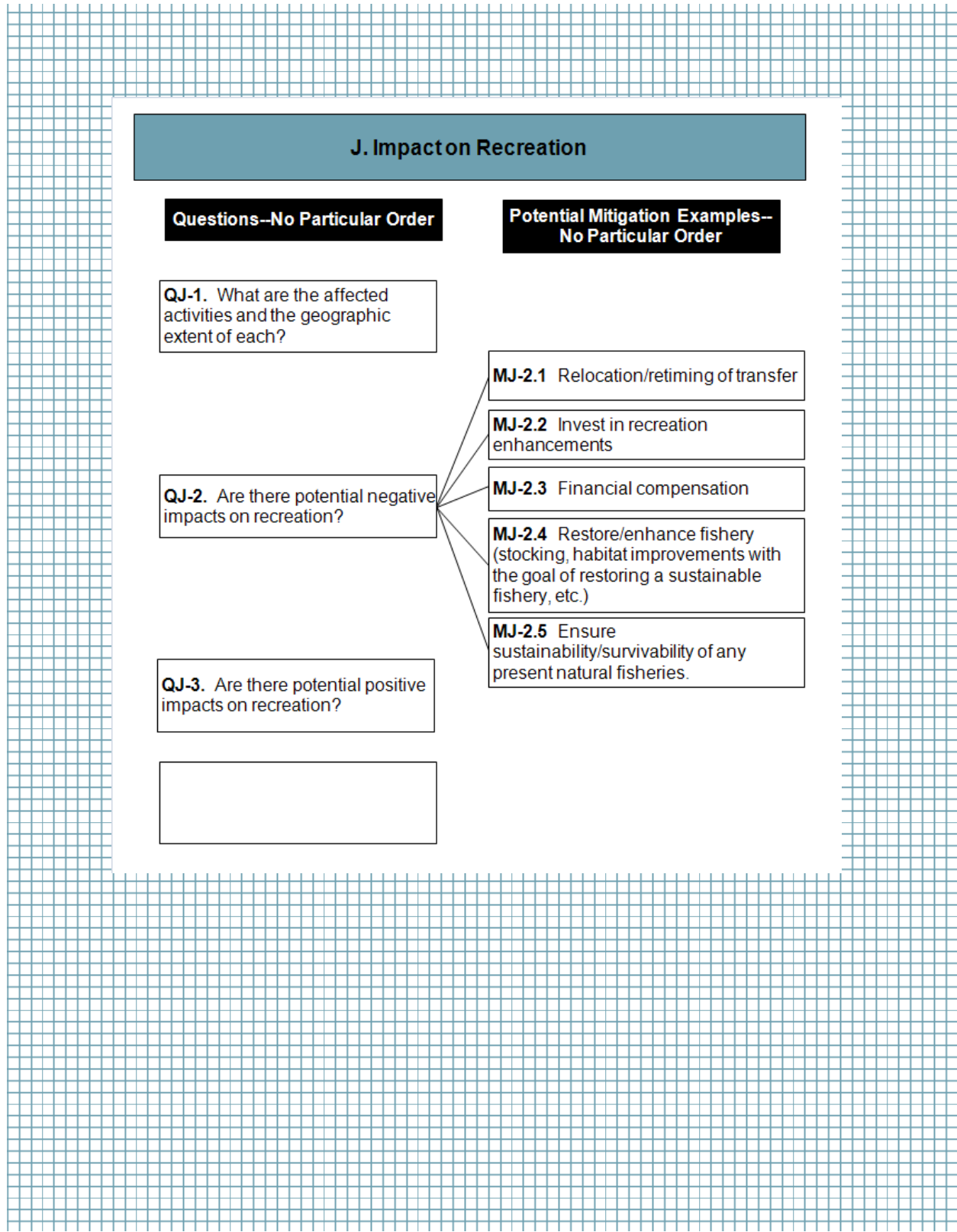


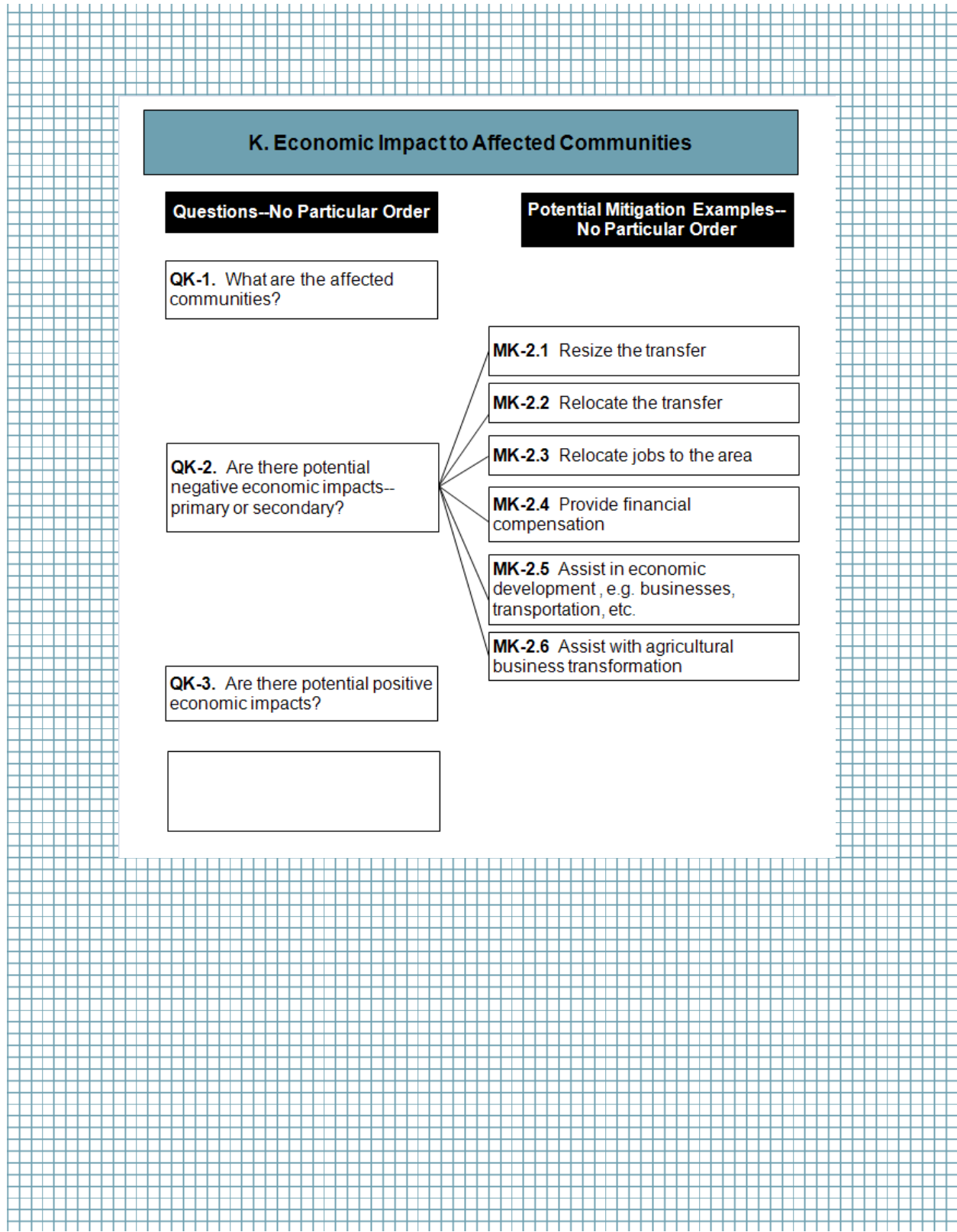












L. Non Economic Social Impacts (Psychological, Health, Cultural, Family, Historical and Aesthetic)

Questions—No Particular Order

**Potential Mitigation Examples—
No Particular Order**

QL-1. What are the affected areas and/or entities?

QL-2. Are there potential negative impacts on directly and/or indirectly affected entities?

QL-3. Are there potential positive impacts on directly and/or indirectly affected entities?

QL-4. Can social costs be fairly distributed? If so, how?

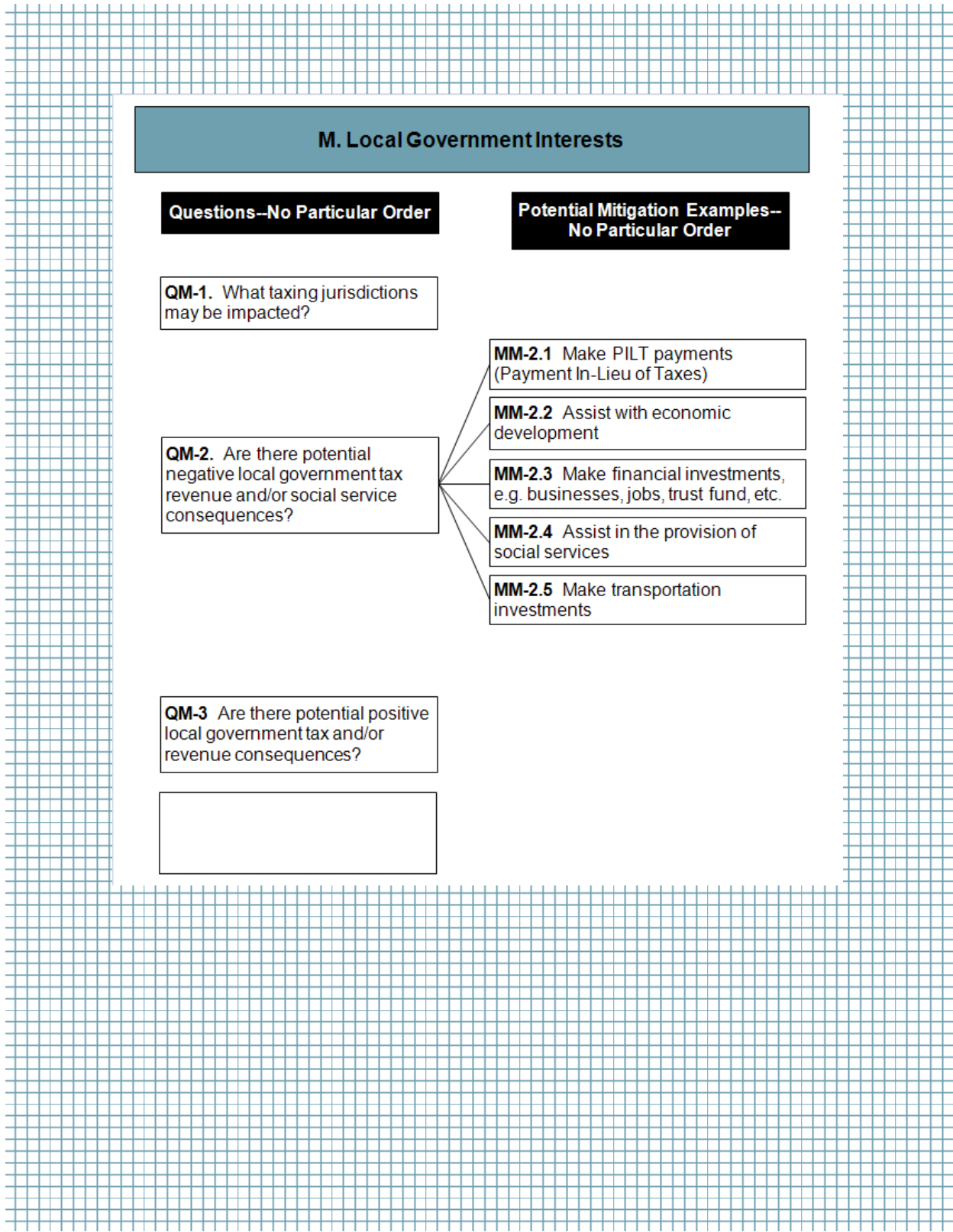
ML-2.1 Modify timing, location and/or amount of transfer

ML-2.2 Provide funding for local use by social agencies

ML-2.3 Provide restoration project assistance

ML-2.4 Provide direct health benefit assistance/ services

ML-2.5 Provide mitigation to offset any loss of quality of life attributes such as taking away the community's favorite fishing hole (add bike trails, etc.)



Additional Water Transfer Considerations Pertinent to Lease Transactions

N. Length of Lease

Questions--No Particular Order

QN-1. What is the length of lease arrangement?

QN-2. Will the proposed term of the lease potentially result in negative impacts to the affected area(s)?

Potential Mitigation Examples--No Particular Order

MN-2.1 Modify the lease term length

MN-2.2 Modify the amount of water taken at various points of time

MN-2.3 Commence the lease term at a different date

MN-2.4 Modify the lease renewal provisions

MN-2.5 Modify compensation due under the lease to further account for impacts

Additional Water Transfer Considerations Pertinent to Lease Transactions

O. Frequency of Transfer

Questions--No Particular Order

QO-1. How often will water be transferred under the lease?

QO-2. Will the frequency of transfer under the lease potentially result in negative impacts on the affected areas?

Potential Mitigation Examples--No Particular Order

MO-2.1 Modify the frequency provisions of the lease

MO-2.2 Modify the amount of water taken at various times under the lease

MO-2.3 Commence the lease term at a different date

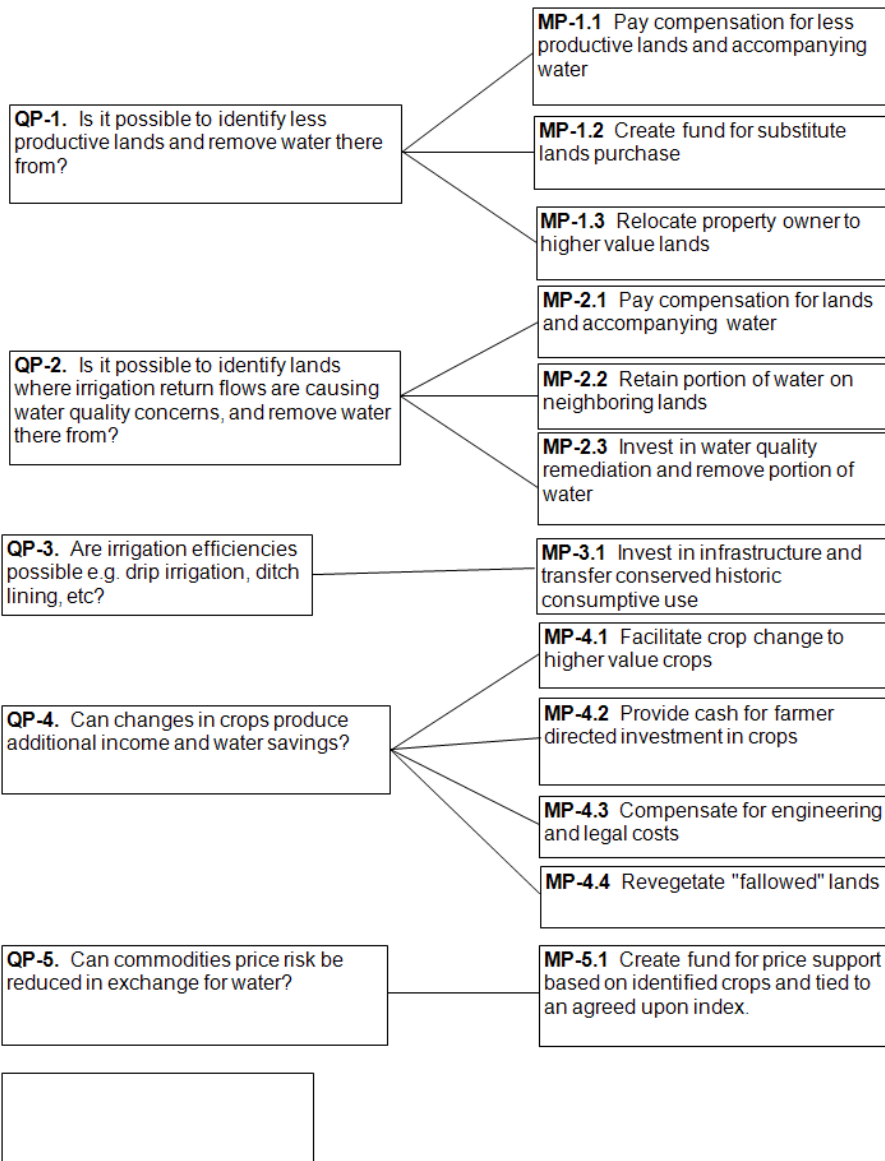
MO-2.4 Modify compensation due under the lease to further account for adverse impacts

P. Considerations for Transfers Involving Groups or Distributed Transferors

The following represent questions to be asked should a more comprehensive approach, i.e. multi-ditch or basinwide, be adopted relative to agriculture to urban water transfers. These questions could be added to the existing matrix at different points or used as a supplement thereto.

Questions—No Particular Order

Potential Mitigation Examples— No Particular Order



Key Points from Meetings with Advisors

Steve Witte

Colorado State Engineer's Office

On the Committee's Coming to Agreement

Mr. Witte was surprised that the Committee, representing both agricultural and urban interests, had come to agreement on the template. He asked "Is this template accepted by everyone on your committee?" Having heard about the process the Committee used to come to agreement, he said, "Good for you for sorting these things out. It would be good if we could do more of this on a statewide basis."

On Whether the Template Would be Accepted

Rather than point out any specific concerns with the template's questions or its potential mitigations, Mr. Witte concentrated on how the template would be promoted to those considering transfers, and whether it would be used. He was concerned that the template might be considered overly onerous to prospective transferors and that they might disregard it: "Your template puts a heck of a burden on the transfer initiator!" Further, he said "For buyers and sellers to treat each other decently upfront is 'enlightened self interest.' But how do you get them to do it?" The Committee took to heart Mr. Witte's concern about how they could influence the template being taken seriously. "Your challenging us is exactly what we wanted", one Committee member said. "We need for our advisors to be 'devil's advocates.'" Another

member acknowledged, "Without regulation, how would you get the buyer from Texas who doesn't care about the Ark Basin economy to pay any attention to this?"

On the Importance of Considering Public Interests

On the other hand, Mr. Witte agreed that the template brings out questions which are important to consider--questions that don't come

out in water court, because, as one Committee member put it, "Buyers and sellers can go to water court, but third parties don't have a place at the table. We have tried to think of the questions those third parties should be asking." Mr.

Witte said, "You keep rolling back to the public interest thing—the idea that it's important to keep places like Holly on the map. That's good. There are interests in water that go beyond the individual water right. Acknowledging the legitimacy of (third party) interests is a first start."

On the Potential Role of Counties

The discussion turned to the potential role of counties, and whether counties would be in a position to promote the use of the template as a part of their 1041 powers or separate from that. Mr. Witte suggested that we might find in a cartel of counties an audience with a broader perspective than, for instance, a group of ditch companies. He suggested we might say to the eight Ark Basin counties "These are principles we think should be considered in the case of a transfer. We hope you will consider revising your 1041 process to set up a mechanism whereby these questions have to be addressed before a

transfer could take place.” Some on the Committee pointed out, however that a problem with the 1041 powers is that counties get stuck enforcing them, which is a considerable burden. On discussing what role counties might have without invoking 1041 powers, the question turned to whether counties could have standing in water court, to which Mr. Witte responded that the public interest being represented by the county in water court makes sense, because then you wouldn’t have to have a separate procedure for protecting the public interest. But he presumed it would take legislation for that to be possible.

“What if we could agree generally there is nonbeneficial use due to upflux, and do something about it, giving more to the stream, and let the saved water accrue to the priority system?”

On Transferring Water Saved from Evaporative “Upflux”

Committee members earlier learned from its water quality advisors about upflux, a situation occurring in some places in the lower Arkansas Basin where the water table is high enough that return flows from irrigation actually rise to the surface and evaporate—losing a considerable amount of water. They asked Mr. Witte his opinion on whether water transfers could be configured in such a way as to use this lost water. The ensuing discussion centered on the topic of historic consumption use as the measure of a water right, and having to strike a balance of what’s been representative over a historic period. He said that non-beneficial consumptive use has traditionally never been counted as part of the historic consumptive use. He expressed an opinion that there is commonly a misunderstanding of the Shelton Farms case in which the court said you can’t claim a water right on the basis of killing phreatophytes, because you don’t have a water right for that part. (Pre-appropriation salvage.) But, Mr. Witte said, “if you have water rights for a diversion and part of that water right is being used up by non-beneficial consumption, why can’t that non-

beneficial use that’s prevented give the water rights owner a credit? That’s post-appropriation salvage. But it would be hard to quantify to the court’s satisfaction that the salvage will not only take place but that it will continue to take place.”

He pointed out that, in the case of upflux, it might be hard to tie reducing it back to the appropriator. For example, he asked, “If we can prove the high water table is a direct result of deep percolation from the Fort Lyon, are they entitled to the saved

or salvaged water? Or does the “stream” get the benefit?” Then, Mr. Witte asked, “Is the historical condition when the buffalo roamed, when irrigation started, when the drains went in, when the drains failed? What if we could agree generally there is nonbeneficial use due to upflux, and do something about it, giving more to the stream, and let the saved water accrue to the priority system? That seems more doable than trying to figure out who gets that savings. Tying the benefit to an individual would be a tough sell.”

On Transferring Water Gained from Changed Cropping

Committee members asked, “What if I change crops and use less water than I have historically used? If my historic use is 1.7 but I say that in the future I am never going to grow anything that takes more than 1.4, can I transfer the remainder?” Mr. Witte answered that the difficulty would be in administration—that it would be very costly. However, he said, there are monitoring technologies that could be used.

On Water Quality Affecting Opportunity for Transfers

The Committee asked if anticipated upcoming federal non-point source pollution regulations could put a damper on the continuation of

irrigation, in which case, “strategizing to transfer some water to urban from ag might actually improve water quality.” One question was whether irrigators might be required to make water quality improvements even if natural causes such as selenium were shown to be the major culprit. “If irrigation adds to the problem, and curtailing irrigation would stop the problem, could irrigators be identified as the ones to target?” Mr. Witte responded that not only could federal water quality regulations trigger such an issue, but also our compact with Kansas. He expressed the opinion that Colorado needs to be proactive on this issue by opening a dialogue with Kansas, even though he concurred with one Committee member that “there is no example of one state being successful at imposing their water quality standards on another state,” and that water quality is not spelled out in our compact with Kansas. Still, he said, “Enlightened self-interest might make it advisable for us to be proactive with Kansas in terms of water quality.”

Final Thoughts

Asked if he thought our template would be too much for transferors to take seriously, Witte answered:

“If the kind of trust you have established in this Committee could be accomplished in other venues, you have a chance.”

Jim Ramsey
Colorado Division of Wildlife

Paul Flack
Colorado State Parks

Rob White
Arkansas Headwaters Recreation Area

On Protecting Recreation and the Environment in View of Water Transfers

When asked what impacts the advisors expect past and future water transfers to have on recreation and the environment, the point was made by Mr. Flack that exchanges from Pueblo upstream create the biggest impacts, but that as long as those transferring water abide

“Regarding the implications of water transfers, we would just like to be sure those transferring respect the (State Parks’ Flow Control Management Program.)”

by the State Parks’ Flow Control Management Program there shouldn’t be any negative impacts. He said the Flow Program, in effect since 1990, determines target flows for the environment, fisheries and recreation (the latter primarily for the July 1-Aug 15 rafting season). He clarified that State Parks has a memo of understanding with the Colorado Department of Natural Resources and others which lines out how the Flow Program is operated, including the specific targets. He said that if water and storage are available, the Bureau of Reclamation tries to meet those targets. “So, regarding the implications of water transfers, we would just like to be sure those transferring respect the Flow Program. We would like for this to come up as early as possible when people are considering water transfers.” Mr. Flack pointed out that the State Parks’ “indexing scenario” was part of the negotiations when the City of Aurora made its Colorado Canal deal,

because while the Flow Program is not a vested water right, it is an integral part of the Fry-Ark project.

On Water Transfers Often Having Good Results for the Environment

Both Mr. Flack and Mr. White pointed out that water transfers can be good for their programs, because transfers can open up the water market. “Under certain circumstances when a city buys water, they then make it available for lease to state parks,” Mr. Flack said. He pointed out that water lease agreements resulting from water transfers can increase his flexibility for managing the Flow Program, especially if the program’s indexing model is used when water transfers occur.

Mr. White noted, “When leases occur, the water is often available first for a non-consumption use.”

“When leases occur, the water is often available first for a non-consumptive use.”

On How the Flow Program Got Compliance: Lessons for Ag to Urban Transfer Guidelines?

Mr. Flack was asked, “Since it’s not a regulatory requirement, how did you get the Flow Program accepted?” Once everybody understood the Flow Program was a reality, everybody understood it had to be paid attention to, he said. Groups as diverse as SECWCD, DNR, Trout Unlimited, and various water providers agreed to sign the agreement as a result of transparent, inclusive negotiation.

“Having been on both sides of a water transfer, I am convinced that communication and cooperation has to happen,” Mr. Flack said. He pointed out that since water transferors typically don’t really want to comply with the Flow Program, getting them to cooperate without regulation has been a work in progress. “It has taken 18 years of brain damage to get to where we are right now. We bumped, stumbled, ran

into walls, but it’s working, thanks to a massive amount of dialogue and communication.”

On Storage for Recreation

Storage is another component to be considered, Mr. Flack said, because the evaporation that occurs when water is stored for recreation amounts to consumptive use. Mr. Ramsey pointed out that the Division of Wildlife gets involved in that issue because, for example, “In years we store a lot of water in John Martin, we see a good fishery.” He acknowledged that John Martin is meant for flood control and to release water for Kansas when they want it, but that “we could have a heck of a fishery if we had money

to buy more water to stay in there.” One Committee member suggested that perhaps transfers could include mitigation to maintain

a level to save seed stock. Another asked if mitigation of a transfer could help State Parks add to its permanent pool. Mr. Flack responded that State Parks and the Division of Wildlife once tried unsuccessfully to do a transfer into John Martin with the City of Longmont to add to its permanent pool without having to secure a permanent water supply. He said that “ultimately the best solution would be a permanent water supply, but how to get it?”

Timing of Transfers—Effects on the Fisheries

The point was made that if water transfers affect the level of John Martin, then recreation goes down and that affects the local economy. “John Martin dry vs. wet makes a lot of difference in the number of visitors,” Mr. Ramsey agreed.

Even though the level of John Martin is affected more by hydrology than transfers, the timing of a transfer could affect the viability of a fishery in John Martin, he said. One Committee member pointed out that the timing for fisheries works better after Kansas and Colorado created the

1980 Management Plan, because if timing is going to cause a fisheries problem, they take care of it as a “paper” transaction, which gives some operational flexibility to protect spawn.

On Preserving Instream Flows

When asked if State Parks has any recommendations for instream flows in the lower stretch of the Arkansas River, Mr. Flack responded that this is more of a concern for the Division of Wildlife.

He said that both agencies have thought about fighting for instream flow rights, but the question is are they willing to get into the politics of the deal. One member of the Committee suggested that if there were a known wish-list, some of the mitigation from transfer might be to donate an instream flow right, upon which another Committee member pointed out that only one stream in the Arkansas basin has instream flow rights because the very nature of the way the river is used for irrigation is such that it would be a “futile call.”

On Irrigation Drainage Providing Water for Certain Species

Mr. Ramsey stated that the state has listed a couple of fish species as endangered and some “of special concern”

but that we don’t know what the flow requirement for them is. He said that the Arkansas Darter (found only in the spring fed tributaries

north of the Arkansas River) is most likely the main species to be affected by water transfers. “They need cool water. If water is transferred away from the tributary feeding the spring, that could affect this fish.” Mr. Ramsey pointed out that anything that affects spring flows affects fish

habitation, and could be detrimental. “In fact,” he said, “some lakes would actually dry up if certain ditches were dried up.” When a Committee member pointed out that canal leakage and other return flows from irrigation can sometimes be the source of water for a spring upon which a fish species depends, Mr. Ramsey replied that since we don’t know where the source of water

for some of these springs is, water transfers could affect fisheries without our really knowing it. The environmental representative on the Arkansas Basin Roundtable invited to

attend this meeting reported that the Arkansas Basin Roundtable Non-Consumptive Group has developed maps which might be useful in this context.

The Committee asked, if changing the irrigation regime causes problems with species, is it mitigatable? As a result of irrigation we have created new expectations, new habitat—one member pointed out, showing a specialized slide depicting large areas of bright green surrounding ditches. “What do we know about this green area?” he asked. “What habitat for species is artificially sustained through irrigation? If we withdraw water currently sustaining that habitat, will we have surprises?” The environmental representative replied “As a birder, I can tell you that between Las Animas and John Martin is a huge wetlands. Is it historic, or fed by the ditches? Either way, it is extremely important biologically for birds.

Another question asked referred to cumulative impacts. “What if a transferor finds out that her transfer triggers a problem, when hers is only the last in a long line of transfers?” He asserted that the ecology created by irrigation does not appear to have been studied by anyone. Mr.

“The Arkansas Darter needs cool water. If water is transferred away from the tributary feeding the spring, that could affect this fish.”

“What if a transferor finds out that her transfer triggers a problem, when hers is only the last in a long line of transfers?”

Ramsey pointed out that the only way we could know what's there now because of irrigation vs. what was there before, would require an inventory from the 1900's to compare to an inventory today, upon which the point was made that it may be more important to just take inventory of what's there now.

On Final Thoughts

Committee members asked the advisors, are there any questions we need to be asking that we are not asking?

The meeting closed on the note that we have to approach these issues with common sense. Cities

don't have an endless pot of cash and many others who want to buy water have an even smaller pot of cash to draw from, one member said. Agreement was reached that the question shouldn't be "Is this going to cause a little environmental problem" but "is this going to cause an environmental mess?" Like the Flow Program, "it will take folks awhile to appreciate the importance of these environmental areas of concern," it was concluded.

"It will take folks awhile to appreciate the importance of these environmental areas of concern."

Jennifer Gimbel

Executive Director, Colorado Water Conservation Board

Most of the advisors with whom the Committee met were scheduled in advance and were given a list of questions to consider ahead of time. At one point, the Committee had the good fortune of a spur of the moment meeting with the new director of the Colorado Water Conservation Board, Jennifer Gimbel.

In response to Jennifer Gimbel's question, "What is your goal? What do you hope to do with this template you've developed?" these points were made:

- We will present our transfer guidelines as a proposal for adoption by the Ark Basin Roundtable
- Our goal is to have this template accepted by the water community
- We hope to help some transferring agents avoid some pitfalls—reduce the surprise factor and point out the blind alleys when considering transfers
- We hope to even out currently uneven knowledge on the part of buyers, sellers, third parties
 - Cities will be wise to abide by these guidelines in order to proactively avoid problems
 - Viable, sustainable rural communities is an end goal.
- Our aim is to stay neutral on whether there should be transfers, but show how to do it right if you do transfer
- We want to take these guidelines to other basins, all over the state, and incorporate feedback
- Help both rural and urban people make more informed decisions
- Get the idea across: "It's in my best interest to use best practices."
- Move the peg of understanding further along, a "step along the way"
- Put some meat on the bones of the Colorado 64 Principles
- Getting policy makers to buy in will be a tougher piece. (Maybe IBCC can help.)
- We don't intend to push for legislation, though we believe this work could eventually lead to some legislation or regulation. (Not trying to get law; trying to get dialogue.)
- These guidelines might be considered not so much recommendations as "observations, suggestions, perspectives."

- We want to show a pragmatic approach: these are the things you probably will want to look at, form side agreements about; they will not necessarily be part of the eventual decree.
- We sense urgency but not pressure. We have attempted to build slowly, without media attention.
- Try to help make up for 50 years of non-planning on the part of the state

In response to Jennifer Gimbel's questions about our process, these points were made:

- Venting has been part of our process
- You have to spend the first few meetings on group process
- Dialogue instead of debate has been important to get where we are
- We couldn't have done it without an outside neutral facilitator
- Water transfers are a social process more than a technological process—especially now that we have to manage water, not develop water
- All the players had to endorse the process
- Work like this requires a dedicated, long-term group
- The group should be relatively small and it is critical for membership to be consistent in order to build trust
- Broad representation is important, but not a one-man, one-vote rule
- It takes open-minded people caring about the other guy's point of view
- Good facilitation is critical. Sometimes facilitator has to be strict
- What we have accomplished raises the bar on how to move forward on an issue

“Dialogue instead of debate has been important to get where we are. We couldn't have done it without an outside, neutral facilitator.”

like this. Normally the bar gets raised through litigation or legislation

- End product is important—we feel we are accomplishing something with the template (Gimbel response: Your PROCESS here is your biggest accomplishment.)
- This process would be useful for any water issue.
- Forming, storming, norming, performing are all steps we took
- There are no formal processes like ours in Colorado that we know of
- Gimbel: Exemplary grassroots effort

John Stulp

Commissioner, Colorado Department of Agriculture

On Motives for Developing the Template

In response to Commissioner Stulp's question, “What was the motive behind your developing this template?” the Committee said that though the water court protects private

property holders from injury in the case of transfers, we wanted to come up with guidelines that could be voluntarily used to help protect rural communities and third parties from negative impacts of such transfers. Committee members explained that at first some wanted to see a reduction in the need for water transfers from agriculture by insisting that urban areas figure out how to control their growth, but they soon determined they couldn't have any influence over that. “At one point we considered the concept of a special severance tax on water transfers that would go into a pool to help ameliorate negative effects. But we decided it

would be almost impossible to establish mitigation uniformly, so we worked, instead, toward this template—to try to line out the issues that should be addressed if there is going to be a transfer.”

On Sustaining Agriculture

Commissioner Stulp expressed appreciation for the work of the Committee in developing the template, but challenged them to push for consideration of a bigger question. “Your Committee’s work is impressive. But I would like for you to ask the Arkansas Basin Roundtable to help answer this question: “Is there a limitation on how much ag water we should allow to be transferred, and if so how can that be affected in reality? We need to keep ag as a significant component of our economy and our use of water. We need to maintain a baseline of ag for rural communities. What is that baseline? It will be specific to each community.” Further, he asked, “What is the critical mass of water that ag needs to retain to keep eastern Colorado from drying up? Agriculture is losing water to cities. 86% of the water resources in Colorado are now held in agriculture, down from 92%. When rural communities lose basic infrastructure, no amount of money can build them back up. At some point, the critical mass is such that it is non-recoverable. The rub is how to protect both private rights and the public good at the same time.” Specific to the Committee’s template, he said “ Even if those transferring were required to pay attention to your guidelines, we could still lose all agriculture.” In reference to the critical mass question, Commissioner Stulp referred to the Super Ditch plans to limit rotational fallowing to 25-30%. Though he expressed support for the concept, he questioned whether there is any guarantee the remaining 70-75% will stay in irrigated agriculture. “How can we keep that

“Is there a limitation on how much ag water we should allow to be transferred? What is the critical mass of water that ag needs to retain to keep eastern Colorado from drying up?”

portion from gradually getting carved out, so we don’t get down to 0% available for ag production?”

On the Viability of Rural Communities

The Committee wanted to engage Commissioner Stulp in a dialogue about the viability of rural communities in a larger sense, of which agriculture is a part, but not the whole. They asked the question “ What can realistically be done to help rural communities in the lower Arkansas survive and maybe even thrive?” The commissioner’s response was thoughtful and led to considerable discussion. “Let’s entice 100,000 people to move to the valley to help sustain these communities. How do we do that? We need infrastructure, broadband, healthcare. It’s a chicken and egg dilemma. How do we stimulate this on a private enterprise basis? What have some other countries done around the world in a situation like this?” Committee members agreed, suggesting that we need to mesh the agricultural economy with other economy in these communities, and to do that takes careful consideration of what amenities would attract just the right mix, including more white collar jobs, perhaps location neutral jobs which are increasing as a result of the internet. It was proposed that the production of good, locally available food could be a magnet for newcomers.

On Recent and Current Rural Economic Development Efforts

The Committee asked why the many agencies working on rural economic development aren’t more successful. “What if we could use the transfer of water from agriculture as leverage to get funds for rural economic development? Where would we put the money to ensure success? Is rural economic development

consolidation needed?” Stulp responded that he believes we have too many different agencies working on economic development, that they don’t know where to put their resources, or what kind of development to be going after. He and Committee members cited examples of economic development gone astray, possibly for lack of a clear vision for those communities.

On Cities Helping Rural Areas Develop Economically

Getting new business into your community requires sophistication, the Committee pointed out—and municipalities can pull in high paid folks to make that happen. If cities were to partner up with rural areas, could they help rural communities bring their game up to the same level? Commissioner Stulp’s response combined the idea of improving agriculture’s outlook with bringing in additional economic development. “Profitability may be coming back for ag,” he said. “If ag is profitable, water won’t leave ag. With new tech and new opportunity, young people are coming back to the farm. We aren’t looking for the same kind of economic development for ag communities that you look for in urban communities. We need to take what we are good at in these rural communities and add value. Not try to be a miniature city.” He referred to a presentation by a Mr. Gravenstock at the recent Governor’s Ag Forum. This gentleman from Indiana talked about there being a leadership vacuum in rural areas and the need to get these small communities to work together to each build on what they are good at. He said in Southern Minnesota, 32 county groups came together, with three community members providing the leadership. State government helped them break down political boundaries by specifying they couldn’t get resources unless they cooperated.

“We need to take what we are good at in these rural communities and add value. Not try to be a miniature city.”

On Higher Value Crops

Questioned about whether agricultural producers in the Arkansas Basin need to explore the possibility of higher value crops, Commissioner Stulp said specialty crops are often lauded as a means for agriculture to be more profitable, but they are labor intensive at a time when agriculture is facing a labor shortage. Plus, he said, we need to keep crops like hay to support the feedlot industry. Stulp referred to the situation in the South Platte Basin, where “there is a booming economy from sources other than ag, so the rural communities are more resilient, even though it does hurt to have 1600 wells shut down.”

On Water Transfers Providing Funds for Rural Economic Development

The discussion was summed up by the Committee pointing out that it can’t really do anything about rural economic development, but perhaps it could influence a direction by promoting the idea that mitigation of water transfers from agriculture might be “a leg of the stool that’s available.” One member said, “Water can be a catalyst,” and then went on to suggest that perhaps transfers could be

assessed a surcharge to go into a regional development fund, applicable for communities to use if they came up with an effective means of using the money. Another

member reminded the Committee that any such concept would have to be part of a larger view of the community’s economic diversity, that what’s needed is an integrated solution.

On Whether the Template will Have Teeth

Commissioner Stulp asked, “If folks use your template, and the transfer they are considering looks ill-advised, what’s to keep them from going through with it?” The Committee agreed that

this is a difficult question, that they realize that it might take some sort of regulation, but that they hope first the template will be used short of law. An urban member of the Committee pointed out that municipalities will feel political pressure to look at the template. He pointed out that water court adjudication, water quality regulatory overlays, and County 1041 rulings all cost municipalities a lot of money, so municipalities will want to follow guidelines like those provided by the template. “Private entities may not follow the guidelines at first, but those private entities will begin to see the handwriting on the wall. These guidelines help put everyone on the same level playing field.” When asked why urban ratepayers would be willing to spend extra money for mitigation of negative effects on rural communities, one Committee member answered that it is because citizens have repeatedly voted money for open space, and there is a tie-in. He believes that people will add to their water bill to help preserve agriculture. An agricultural Committee member expressed that he believes ditch companies will be interested in using the template, because having these issues laid out upfront will save hassles later on. He said that it would have been helpful to have had this template when the Highline Canal was negotiating its 2002 lease with the City of Aurora because it lays out all the potential impacts which need to be considered.

About Launching the Template

Commissioner Stulp closed by saying he thinks the Arkansas Basin Roundtable will be supportive of the Committee’s work, and that the next step should be to begin getting it out all over the state. He said it was good that the Committee was meeting with DNR Director Harris Sherman and CWCB Director Jennifer Gimbel, and that they should also get the information out to State Engineer Dick Wolfe. And he encouraged the Committee to tap the

resources of the Roundtable to take the report to the smaller communities at the right time, being careful to break down the information to match the learning curve of those they are presenting it to. “Stage a community meeting in Lamar and invite the county commissioners—the power structure,” he said. “Put DRAFT all over it and begin getting it out.”

David Carlson Resource Analysis, Inc.

On Maximizing Use of Agricultural Water

Dr. Carlson, who spent much of his career as a researcher with the Colorado Department of Agriculture, and is currently a Civil Engineering adjunct faculty member at the University of Colorado-Denver, started his conversation with the Committee by saying that it is inevitable that

there will be transfers from agriculture to urban areas. He stressed that what’s important is to “minimize the loss of total agricultural economic benefit by

using the remaining water in the most beneficial way.” He told the Committee about having gathered crop data from 63 Colorado counties to see how much water certain crops need in one county versus another, and how much water is sufficient 8 out of 10 years, or 5 out of 10 years. He expressed frustration that policy makers don’t seem to see the importance of using this data to make decisions.

When asked whether this data could be used by individual farmers to decide what to grow, he said the more likely use would be at the irrigation district or ditch company level, but that “if a rancher has enough water for his hay, but sees that the veggie grower is lacking water, he might want to lease his water to the veggie farmer and let his crop go for the year.” A Committee member acknowledged that in some

“These guidelines help put everyone on the same level playing field.”

years a rancher could lease his water and buy hay for his cattle and come out better economically. On the question of farmers choosing higher value crops to make better use of their water, this rural member said, “There are farmers who would be willing to give up some of the security of the lower value crops to take some risk with higher value crops, but you are dealing with rugged individualism.” And he pointed out that you have to keep a certain number of acres of hay in production to keep the feedlots going.

Dr. Carlson

referenced the case of Bob Sakata, a major South Platte farmer, in the drought of 2003 waiting for water for his vegetables while someone down the way was using the available water to irrigate far less valuable hay. “Why not have the ditch company convene shareholders to decide how to balance things out?” he asked. “Let those irrigators decide among themselves how they are going to maximize the benefit for everyone.” He considers this a way to both equalize as well as reduce risk to all the farmers involved, citing stories he has heard from irrigators in the Coachella and Imperial Valleys of California about how they were cooperating to resolve conflicts about water.

On Environmental and Social Benefits of Keeping Water in Agriculture

Dr. Carlson asked, “What is the contribution ag land makes to the environment? What about the social web of ranchers, farmers and rural communities—the cultural part?” He posited that even though these environmental and social externalities are “squishy” and hard to quantify,

they are there and we need to explore them. One Committee member asked if these externalities shouldn’t be funded by the public, at which point another member pointed out that we already have a model for such, in the form of conservation easements and instream flow rights. Why couldn’t we expand our thinking even further?

What’s important is to “minimize the loss of total agricultural economic benefit by using the remaining water in the most beneficial way.”

Dr. Carlson pointed out that we often think of the loss of wildlife corridors as an environmental issue with transferring water from agriculture, but another issue is having open space

corridors for other purposes. For instance, he said, “What is it going to be worth for the U.S. Air Force to have open corridors 50 years from now, 100 years from now? If 90% of the ranchers in a 600 mile rectangle were to cooperate to save the land, that scale could make a difference.” He said that the ranchers he knows want to come to the table as equals with

“What is the contribution ag land makes to the environment? The social web of ranchers, farmers and rural communities—the cultural part?”

the urban sector, to monetarize some of these benefits, similar to what is being done with carbon sequestration. But he said our benefit/cost analysis methodology is faulty—that it’s too short term

and doesn’t address intergenerational equity.

On Population Growth and Keeping Enough Water in Agriculture to Feed the People

The Committee brought up the issue of population growth, questioning how it can be regulated to avoid outrunning our water resources. Dr. Carlson replied that he had long ago realized that as population grows, it would be good for Colorado to keep its wealth of agriculture. He said the equation we will have to work with is “*Population times per capita*

consumption= acreage times yield” and that when push comes to shove, people will use a lot less water. (To which, one Committee member pointed out we are already seeing this—that Denver uses no more water today than they did 10 years ago, even with their growth.)

This line of thinking lead one Committee member to ask the question, “If we could take 10% of the water out of agriculture without reducing the economic yield and if doubling the population of Colorado takes only 10% more water, what’s the problem?”

On Keeping Prime Land in Agriculture / Transferring Water from Lesser Productive Lands

Dr. Carlson cited soil mapping he had done which showed that in Colorado only 2.5% of our land base is prime. He asserted that the less productive lands should be those converted from agriculture, but that the big question is how to do it in a voluntary process, taking into consideration who wants to stay in ag and other factors. One of the rural members of the Committee agreed, saying that some areas in the Arkansas Basin should be dried up because they add to water quality degradation. “But in reality,” he said, “the most productive land gets taken for its water instead of those poor lands.” He asked how we could change that. “How much water could we extract by just taking out the bad land? And once you identify the low value lands, how do you get those folks to sell? Pay them prime land values?”

Another Committee member answered that you need a working market for this to happen. He said, “You have good land, good water, and a long term contract saying that in a dry year you are going to get money instead of water.” He said bankers consider that a high level of security because of the long-term income stream and they would loan on that basis.

On How to Reduce Parochialism for the Good of All

Committee members asked Dr. Carlson his opinion on how you get folks to look beyond their own parochial interests to embrace policies which benefit everyone. Dr. Carlson suggested that one of the best ways to break down parochialism is to take busloads of farm and ranch leaders to other places in the country, such as California, to see how cooperation works.

Committee members thanked Dr. Carlson for expanding their understanding of these issues and taking them in directions no other advisor had taken them. One member suggested that after meeting with Dr. Carlson maybe we should put in our template the warning: *Radically different approach may be required!*

Mark Smith
The Colorado College

On What Brings Us to the Table

Dr. Smith shared that he has conducted two pieces of Arkansas Basin research relevant to our topic. The first was a GIS study of the Colorado Canal transfer; the second regarded permanent dryup vs. rotational fallowing—the different effects they have on communities because of the different types of expenditures. He expressed that while working on the Colorado Canal Transfer study he was told that some of the best land was taken out of production, leaving some of the worst land still in production. “It’s too bad there couldn’t have been some consideration of that, plus low efficiency laterals vs. high efficiency laterals, low soil capacity vs. high soil capacity,” he said. Committee members concurred that there has to be a better way to do transfers, and that’s what brings us all to the table. One member said “I am optimistic that there are structural, innovative

things that could be done in an orderly fashion to maximize benefit to everyone.”

On Opportunities Created by Thinking about “Types of Water”

Dr. Smith asked, “are there opportunities that are created in the context of using transfers to firm up yields?” For example, if the Rocky Ford ditch is your most reliable source, he said, maybe you hold that back but take the water from another ditch, depending on the difference in yields. One Committee member answered that we see opportunities for portfolio management—different kinds of transfers for different purposes. Long term fallowing is one part of the portfolio, interruptible supply is another. For instance, in a portfolio of water rights that a group like the Super Ditch could manage, the high yield water rights would cost more. You write up another contract if you want a different combination of risks.

The next question Dr. Smith asked is, “Are there opportunities created by trying to look at the full picture—the ‘types’ of water not just the ‘amount’ of water?”

How the market is institutionally arranged could favor one kind of transfer over another, he pointed out. Committee members agreed that you need to look at the picture from both ends and for the long term. “Things aren’t working very efficiently now,” they agreed, “because there’s not much partnering.” Suggestions generated included:

- Team up a ditch that is storage-long, with a ditch that is diversion-weak
- Look at baseline supply vs. drought protection supply

- Share the means of conveyance

On Market Transaction Costs

“You need to keep transaction costs low by providing good information to the transferring parties,” Dr. Smith said. It was agreed that The Northern District (Northern Colorado Water Conservancy District) is the best example of how good information lowers transaction costs.

“Where you can make the market work better, more people participate.”

“But how do you get the information out in the case of water?” the Committee asked. What’s lacking in the Arkansas Basin, it was

agreed, is a pricing mechanism so that people recognize the value of their water.

Dr. Smith suggested that when there’s a lack of information, there’s an opportunity to profit. The case he gave is when water brokers know a

seller and a buyer who don’t know each other. “There’s a real opportunity to make money then,” he said. On the other hand, he said, “The Cosmic Settlement allowed the transfers related to

Clear Creek to work smoothly. Different cities who bought water rights from there had to play by the same rules, which reduced transaction costs.” Markets work well when transactions are homogeneous, Dr. Smith said. “It’s easy to buy Twinkies because they are all the same. But water is not all the same.”

An urban member of the Committee shared: “I come from the power business, where you have an integrated, transparent market with a cost premium depending on where the resource is located. Power is a more standardized, fungible

“You need to keep transaction costs low by providing good information to the transferring parties.”

“Markets work well when transactions are homogeneous. It’s easy to buy Twinkies because they are all the same. But water is not all the same.”

commodity than water. If we could inch the water business in that direction, we would be in a better place for full disclosure. But there is a big cultural difference between the water business and the power business. The emotional content in water overwhelms the facts.”

A rural member shared: “In the Ark Basin, people are forced to sell when the opportunity exists, which is disorderly. In other areas of the state, where urbanization is gradually moving out onto ag lands, a farmer can be assured of a market, whether or not he is willing to sell now or not.”

On Mitigation for Third Parties Affected by Transfers

Referring to the Committee’s template, Dr. Smith said mitigation could be thought of in the same vein as depletion allowances in mineral rights terms. The question is what do you owe third parties affected by the transfer? Some people argue that you owe them a lot; others would argue that you owe them nothing. One person might say that if significant damage is done, significant mitigation should be paid. Another might say that farmers should move if they are damaged. “What should be paid in mitigation is not straightforward,” he said. He gave the example that a rural town might say they want compensation consistent with maintaining the vitality of the area. But the City of Colorado Springs might say, “Your area is already not vital. That’s not my problem.”

One member said that small rural communities don’t have the expertise to figure out what the impacts on them are. Could urban acquirers provide that expertise, or would that be a conflict of interest? How can rural areas get the resources to figure this out, so there’s not an abuse on either side? “Perhaps arbitration could

be used as a means to keep folks on both sides in line,” he suggested.

One of the urban members said that mitigation is nothing more than requiring cities to pay the true value of the water, including the externalities. Dr. Smith agreed. “Water is like sunshine and soil,” he said. “It’s just an input. You can’t consider it by itself; you have to think of the larger ag economy.”

The economic impact of a transaction is completely different in one basin versus another, members pointed out, emphasizing that there’s no way to charge people a fair amount if you try to come up with one size fits all. Dr. Smith agreed, citing the difference in the South Platte and the Ark Basin. He said that there is economic dislocation when water transfers occur in the Ark Basin compared to the South Platte

because water leaves the land, and houses don’t grow onto that land like they do in the South Platte. Another economic factor which is hard to overlook, one member said, is that

“you may lose four jobs in ag by transferring the water, but provide 40 jobs in the urban arena from the addition of that same water.”

One member of the Committee wanted to remind everyone that “it’s not just about mitigation if there is damage, but also about how to structure a transfer to minimize damage.”

On Taxing Water Transfers

The Committee discussed with Dr. Smith the pros and cons of a water transfer severance tax to provide rural communities with funds to mitigate negative effects of a transfer. One of the reasons you tax things is to give people incentives to do one thing rather than another, Dr. Smith answered. “If taking water from Prowers County costs me a tax for rural economic development, maybe I will decide to

“It’s not just about mitigation if there is damage, but also how to structure a transfer to minimize damage.”

get my water someplace else, where I don't have to pay a tax," he said. One member asked if that would still be a problem if the tax applied to all water transfers in the basin.

Whether it's a tax or some other kind of mitigation, what's needed is "outcome based mitigation," one member asserted, referring to the idea of needing to have some way of measuring the outcome of any particular mitigation employed. "But loss of water isn't the only thing that kills rural communities, so outcome based mitigation wouldn't necessarily be fair to the purchasing cities." He said it would be hard to determine how much of the damage to the rural community is from the loss of water and how much is from other factors.

One member asked "How are we going to answer the farmer who says you are making it more difficult for me to sell my water, and selling my water is my God-given right?" to which other members quickly responded "Why are water rights different than land rights?" We put restrictions on the value of other assets, through things like zoning, they pointed out.

On How to Insure the Template Doesn't Discourage all but Large Transfers

Dr. Smith expressed concern that the template might discourage all but the largest transfers. "To answer all the questions in your template would be quite expensive so most buyers will decide to go after a big chunk of a transfer, to make it worth their while. But wouldn't it be easier for rural communities to respond to the effects of a small transfer than a large one?" he asked. Concentration of the impact seems to be one of the problems with past transfers, he suggested. With this template, you are giving rural folks a whole bunch of new things to be thinking about, he said. "But you are

inadvertently biasing things against those who want to transfer a small amount."

Obviously, the Committee shared Dr. Smith's concern. One member said "Since our advisor here is telling us that only a large transfer would be worth going through our whole template, maybe we need to point out that what we have here is comprehensive but that not every transfer deserves this much work." Another asked, "Can we point out to one transferor that

they can use the information gained by the last transferor?" to which another responded "do you really think the public will have access to the

answers given by the previous transferor? Where would such info reside?"

Dr. Smith recommended that the Committee package the template such that readers first have a chance to understand the context in which it is presented. "Show where the motivation comes from. Show how the product you came up with was based on common concerns, good will." Another idea that surfaced was to include with the template some examples of different sized transfers and how the template might be used differently depending on the size of the transfer. Committee members agreed that they should clarify that "as transfers grow in size, more of these issues kick in, so that it becomes more complex."

"Your template is impressive," Dr. Smith said. "Every board of county commissioners should have a copy."

"Your template is impressive. Every board of county commissioners should have a copy."

Harris Sherman

Director, Colorado Department of Natural Resources

Don Elliman

Director, Colorado Office of Economic Development

On the Colorado Office of Economic Development

Director Elliman expressed that he was brought into Governor Ritter's cabinet from the private sector to "try to figure out what state government's role is in job and wealth creation around the state." He said his office began by focusing on four industry segments—tourism, renewable energy, aerospace, and bioscience/life sciences—the last two being what he called "metro-centric."

"The most impact on southeast Colorado of what we do is in tourism," Director Elliman said, noting that he sees potential there for heritage tourism. He cited two efforts his office is engaged in which should have implications for rural economic development. One is a jobs cabinet which is taking a look at each region of the state, to connect the education community with jobs. The second is an innovation council which is looking at things like the widespread availability of broadband which would have implications for rural economic development. The next step for the Economic Development Office, he said, is to focus on specific economic development opportunities in the five regions of the state. "We want to sit down soon with leaders in southeast Colorado to discuss their economic development," he said.

The Committee thanked Director Elliman for taking time to come down to their part of the state to discuss rural economic development in

light of water transfers. One member said, "When you talk about how so much of what you are doing is metro-centric, it occurs to me that what started the work of our Committee is the concern that more and more, water is metro-centric too!"

On the Motivation Behind the Committee's Work

Several Committee members shared with Director Elliman their view of the motivation behind the Committee's work:

- "At first some of us believed we shouldn't be transferring water from agriculture to cities. But now we realize that farmers have a right to dispose of their water, and growth is hard to manage. So we are trying to create a win-win."
- "Figuring out how to make ag to urban water transfers fair for everyone is an important component of the full portfolio for meeting water needs in the state. It will happen because of the economic development and growth in metro areas and because some folks in agriculture want to sell. How to make it happen in a way that supports rural economies better than in the past is what we're interested in."
- "There is a perennial fear in Prowers County of water leaving the area, which makes potential investors wary of investing. Third parties affected by transfers sometimes try to sabotage deals. We would like to see those interests be expressed more directly. Can we share water without so much social disruption?"
- "The initial sentiment of the group was no growth, no transfers. I wanted to get

"We want to sit down soon with leaders in southeast Colorado to discuss their economic development."

involved to balance out that view. Aurora has had a successful leasing experience following the earlier not so great buy and dry deals. Since we knew the range of issues firsthand, we wanted to participate in the Committee to help put forward from our experience what needed to be looked at. As an urbanite, I don't attempt to judge what is best for rural Colorado, but I am as interested as others in seeing these regions stay viable."

- Can farmers be assisted in looking at crops with high economic value but low water needs to increase profit while making some of the water available for a price to cities?
- Can farmers harvest a margin of water from less sustainable land?
- Can willing farmers somehow be relocated from less productive lands so that land can be fallowed and its water used by cities?

On the Effect Ag Transfers Can Have on Rural Economies

One Committee member pointed out that traditional marginal analysis doesn't work when assessing the effect of ag transfers on rural communities, because there is no margin. "There is only one of everything. It's not a matter of one food store leaving the rural community, it's the only food store leaving the community. Another said, "As a consulting engineer from a buy and dry county—Crowley—I see the pain folks experience when water leaves the community." A rural member of the Committee countered with the question, "Is the rural ag economy poor because water is leaving, or is water leaving because rural ag economy is poor?" He cited the example that "Crowley County went south because the water transferred. But Eads is hurting without any water leaving the area."

On Increasing Profitability of Agriculture

"Part of the puzzle is figuring out how to make agriculture more profitable—long term, not just a flash in the pan like we are seeing to some extent with this biofuel episode," one Committee member said. Questions asked included:

On the State's Concern

Harris Sherman joined the meeting and applauded the Committee for its work, having read the full packet of information sent to him in preparation for the meeting. He said, "This is one of the most important issues in Colorado. We have talked to the governor about these issues. Our administration wants to help you piece this together."

On Building on What Rural Communities Have to Offer

"We have to remember that rural Colorado doesn't necessarily mean just agriculture...What are the non-ag, non-water intensive activities that can provide a sustainable economy for rural Colorado?"

Director Elliman presented a formula for rural economic development which includes looking at what assets and liabilities you have to build on, then looking at the potential economic tradeoffs of whatever economic activity you bring in. "You have to factor in risk, and ask the question, is it sustainable?" he said. Building off that formula, members questioned how rural communities can get an economic mix that preserves the culture piece that's important beyond the product.

"We have to remember that rural Colorado doesn't necessarily mean just agriculture," Director Sherman said. Committee members

agreed the economic portfolio must be broader. “What are the non-ag, non-water intensive activities that can provide a sustainable economy for rural Colorado?” they asked.

“It’s difficult to say what kind of economic development would fit for rural Colorado,” Director Elliman said. He acknowledged that his office doesn’t have expertise in that area. “But if we were to look at rural Colorado, we would want to look at the big picture and develop a plan.” But the typical economic development pros aren’t going to be able to do much for rural Colorado, he said, because “it has a different set of attributes. What kind of industries can we think of that will fit in this economic model? Can you make that a part of the negotiation over water?”

“You are asking all the right questions. How do we take these concepts you’ve come up with and do something with them?”

How about the renewable energy industry, trying to get folks to locate their manufacturing facilities in Colorado? Director Sherman asked.

Director Elliman pointed out that wind and solar are two big assets of rural areas but it isn’t a panacea. “Though solar could be significant to create jobs”, he said, “unfortunately, wind doesn’t create a lot of jobs.” A rural member of the Committee concurred. “The 108 turbines brought into Prowers County during the drought were a hurry up deal,” he said. It was a boon to the community with lots of workers staying in hotels and eating in restaurants. Now, though the turbine plant does add to the ad valorem revenue, it employs just five people. Another problem with the renewable energy business, he said, is that “you can’t get your product to market for lack of transmission.”

Director Sherman said that the state has received proposals for setting up regional government centers in communities like Salida. Perhaps eastern Colorado would be appropriate

for such centers as well. “And how about eastern Colorado for retirement communities?” One big difficulty with these ideas, according to Committee members, is the lack of medical facilities and other basic amenities. “It’s a chicken and egg situation,” said Director Elliman. Do you build a health care center first, or wait for economic growth? Since health care is the fastest growing industry in the U.S. today, both directors said they could see a situation where you could put in a health care facility and it could generate economic growth. But it’s risky, they concluded.

If you could get a certain base of community amenities in place, perhaps you could begin to attract folks who have “location neutral jobs,” it was suggested. Director Elliman agreed. Many folks in

Western Colorado work all over the world, he said, because of computers. They become part of the communities in which they live. “But it is easier to sell mountains than plains to former urbanites,” he said.

More On Next Steps

“DNR is prepared to put some resources into this,” Director Sherman said. “You are asking all the right questions. How do we take these concepts you’ve come up with and do something with them?” He suggested the next step might be to start to work on prototypes and models.

Committee members were glad to hear of this interest. First, they said, the Committee has to get its work approved by the Arkansas Basin Roundtable and then they plan to take it to the CWCB which provided much of their funding. At that point, hopefully CWCB and DNR can offer suggestions for where it goes – pilot projects for instance. When asked if they had thought about pursuing legislation, Committee members voiced that they had thought about a legislative

approach, but decided it was too controversial, at least for now. One member said, “A lot of us have a fear of legislation because rural Colorado doesn’t have much voice there. Rural Colorado says never touch water law because you are going to lose the fight.” Directors Sherman and Elliman encouraged the Committee to not limit itself unduly. Director Sherman said, “But here (on this Committee) you have Aurora, Colorado Springs, Denver with you; with them you can go further than just rural Colorado alone.” Director Elliman said, “I think you have more power than you think you have. Rural Colorado has a stronger voice than you think. I see a unanimity of opinion around the state that we don’t want to see the rural lifestyle go away.”

In Closing

Committee members asked how eastern Colorado rural communities could find or build the expertise to explore the issue of economic viability. Director Elliman responded, “our department would be willing to try to put some effort into it.” Director Sherman expressed support for rural economic development exploration, but he said, “We need to keep moving on the water aspect of this issue independently—the sooner the better. The economic aspect is important, but it’s longer term.” He said he would like to see prototypes and models now, not waiting to get the economic development part worked out. “Let’s get going,” he said.

“Rural Colorado has a stronger voice than you think. I see a unanimity of opinion around the state that we don’t want to see the rural lifestyle go away.”

Tim Gates

Colorado State University

Pat Edelman

United States Geological Survey

Del Nimmo

Colorado State University – Pueblo

On the Effect of Water Transfers on Water Quality

When our advisors were asked what effects they thought transfers of water from agriculture could have on water quality, Mr. Edelman said that he is concerned about the effects on water quality that could come from changes in land use such as the annexation of agricultural ground for new home development and manufacturing. He cited issues with the increase in rural septic systems that comes from some types of new home developments.

The point was made that in some cases, transferring water from agricultural land could improve water quality. Dr. Gates, for instance, pointed out that as water moves from the Upper Arkansas Basin to Pueblo Reservoir, the quality is pretty good. But by the time it gets to the state line it has a factor of 10 more concentration, mostly the result of agricultural irrigation. The dialogue of the day, however, was not focused on improving water quality by reducing the amount of agriculture, but by better managing agricultural water.

On Improving Water Quality in the Lower Arkansas Basin

Dr. Gates asserted that “almost everything you do to improve water quality will also help with water quantity.” He said that the 9-10 years of research he and his colleagues have conducted in the lower Arkansas basin have provided extensive baseline data which is helping them to begin to form a picture of how the hydrologic system works, both its natural aspects and those that are human induced. He discussed the movement of water out of the tributaries of the Arkansas, into the main stem, then into the groundwater and back out again. He pointed out that growing agricultural crops and providing habitat for wildlife is an example of beneficial evaporation, while the proliferation of non-native phreatophytes is an example of non-beneficial evaporation. He introduced the word *evapo/concentration* and said that every step down the river adds concentration. Another word Dr. Gates introduced to the Committee was *dissolution*, which is what happens when water percolating down through the subsurface soil profile encounters exposed shale. Canal water seepage and surface irrigation seepage both add to this problem, he said. “Less than 5% of the 250,000 acres of irrigated ground in the basin is being irrigated by methods more efficient than flood or furrow irrigation,” he said, “which results in excessive non-point source flow due to high gradients.”

On the Loss of Water Through Evaporative Upflux

Some of the non-beneficial evaporation is causing “upflux” Dr. Gates said, the loss of water evaporating off non-irrigated ground because of a high water table caused by over-irrigation. He asserted that valley wide as much as 150KAF to 180KAF is lost to upflux, and that 10-30% of that, probably 50KAF, could be recovered by better

“Almost everything you do to improve water quality will also help with water quantity.”

management. Obviously, upflux affects not only the loss of water—quantity—but also water quality as evaporated water leaves behind salts. (One Committee member, also a member of the Tamarisk Coalition, pointed out that in terms of water quantity, we are losing an additional 48KAF to phreatophytes, making the total that could be saved from upflux and phreatophyte control at least 200KAF—a large number.)

On Improving Irrigation Efficiency in Light of Colorado’s Compact with Kansas

Members of the Committee, acknowledging that improved irrigation efficiency and canal lining can improve water quality, asked the advisors how we can promote such in view of Colorado’s compact with Kansas and the current controversy around that issue. (The current controversy revolves around the state engineer’s office having issued draft rules requiring farmers who have put in irrigation improvements since 1999 to hire an engineer to prove they are still providing historic return flows, or that they are impounding water to simulate historic return flows, as required by Colorado’s compact with Kansas.) Mr. Edelman agreed that while irrigation efficiency can improve water quality by allowing a farmer to use less water, he cannot divert and use that “saved” water for the purpose of growing more crops, unless he can somehow do that without increasing the amount of consumptive use.

Dr. Gates said that the challenge is to reduce both canal seepage and over-irrigation, at the same time maintaining routine flow patterns. He believes by setting up storage accounts and mimicking the pattern in the river, we could

achieve better water management. “For instance,” he said, “One wild idea, would be to arrange with Kansas to not send them any water in the winter, only in the summer.” He pointed out that by using the model they have developed at CSU

to keep track of the water both physically and in terms of water rights, “water can be stored and released wisely to fully meet both water rights and compact demands.”

On Aquifer Storage

According to Mr. Edelman, some think we could better manage return flows by utilizing underground storage, or by creating surface water impoundments without drying up ground water systems. He said “There is growing interest in using surface reservoirs in cooperation with aquifer storage.”

“Water can be stored and released wisely to fully meet both water rights and compact demands.”

On Selenium and Water Quality Regulations

Asked about how big a problem selenium is, Dr. Nimmo stated that “selenium measured at the Highway 50 bridge showed a concentration 4.4 times Colorado’s state standard” and that instream standards for selenium will be coming in 2010. Mr. Edelman pointed out, however, that “when Pueblo wanted to know how much of their selenium problem was from irrigation and how much from shale, they found that most of it was the result of shale.”

Pertinent to the question of anticipated regulations for selenium that could affect agriculture, a Committee member asked why we don’t have extensive regulation of agriculture at the nonpoint source level, such as we have at the point source level, like confined animal feeding. The answer generally agreed upon was that the national ag lobby has fought hard against regulation of nonpoint source pollution because of the economic sensitivity—that ag cannot afford to modernize to eliminate the degradation of water quality.

On Fallowing to Improve Water Quality

The Committee asked its advisors if we might see an indirect beneficial effect on water quality

if certain fields were targeted to be fallowed. For instance, they asked, what if you were to fallow fields which you expect contribute a large amount of selenium? Dr. Gates responded that where there is a high concentration of nitrate, selenium problems are greatly increased, so wisely rotating nitrogen could be useful, and that would be one of the benefits of rotational fallowing. He said that as you would expect, with

the increased forced fallowing that resulted from the 2002 drought, the salt load back to the river was measurably less. That lead to the question, “if

you leave a field out of production for awhile, do you get more concentration of salts so that when you DO apply water you get a slug of salt going down into the soil?” Dr. Gates answered that the benefits of fallowing would outweigh the negatives of that, even if it were to occur.

On Targeting Hot Spots for Fallowing to Improve Water Quality

One Committee member showed a slide depicting salinity hot spots along the Arkansas and asked about the possibility of targeting those hot spots for fallowing to improve total water quality. Wouldn’t everybody benefit? Dr. Gates and Mr. Edelman both pointed out that even if those salinity hot spots were shown to be the result of over-irrigation, it would be hard to pin down exactly where the over-irrigation is occurring that causes those hot spots. Furthermore, Dr. Gates said, “we would probably get more bang for the buck by looking at the whole picture, not just the hot spots.”

On Changes in Diversion Patterns and Better Management of Storage

Changes in diversion patterns to gain spatial and temporal differences could help with water quality, according to Dr. Gates. He also believes we can better manage our storage vessels—“the two large in-line reservoirs we have, plus maybe

off-channel reservoirs as well, through agreements with irrigation companies.”

On Benefits of Canal Seepage to Maintain Habitat

The issue of whether our inefficient irrigation practices have a side benefit of sustaining wildlife habitat was discussed. The point was made that we have had 100 years of irrigation, creating an artificial environment which now supports a great deal of biological diversity. An aerial photograph was shown depicting large green areas emanating from irrigation ditches

but extending far beyond what would be the result of direct return flow. Dr. Nimmo agreed, pointing out that the Arkansas darter, a forage species, likes our inefficient watering and that “as a result of our

water management practices we have set up new biological communities that could be negatively affected by returning more water to the river.” The point was made that as we consider how to “get it right” when doing transfers, we need to bring in these biological interests as another of the “third parties.” Dr. Gates referred the Committee to a book which discusses this issue—*Irrigated Eden* by CSU professor Mark Fiege. A member of the Committee related his experience that in an area with which he is familiar, when they put in gated and underground pipe the number of cottonwoods diminished significantly. Another Committee member asserted that “if there is a public interest in maintaining this biology, the farmer should be getting some remuneration for providing it.”

On What Can Be Done to Improve Water Quality in the Lower Arkansas

The Committee was quite interested in the research Dr. Gates and his CSU colleagues are

doing related to agriculture’s effect on water quality in the lower Arkansas Basin. One member asked, “If we had two million dollars to give you, what pilot projects would give us the most bang for the buck?” Dr. Gates’ answer was that he would “take a sizeable plot, for instance 15,000 acres under the Catlin Canal, and seriously control seepage there for 20 years. Get growers willing to put in drip and sprinklers to help them achieve efficiency. Get extension to help them manage it properly. Test things over a large enough region that you can get marked benefits. Over time, monitor intensely, then

compare that to the baseline we have measured over the past nine years. Monitor return flows, not just seepage. Also, undertake biological monitoring. It’s hard to prove to people the need for changes

“As a result of our water management practices, we have set up new biological communities that could be negatively affected by returning more water to the river.”

unless you can show what you are finding on a small scale is true on a large scale.” A member of the Committee added, “and while you are doing it, social documentation of the process is needed along with the technological.”

On Water Quality and the Relationship to Environmental Quality

In discussing water quality, related issues of environmental quality were also covered. For instance, one member asked, “Isn’t loss of wetland habitat a negative side to increasing irrigation efficiencies?” The answer given by another Committee member was affirmative. “We have created an underground reservoir through agricultural irrigation which supports an undocumented volume and variety of biological plants and animals. When water is taken off the farm and transferred elsewhere, we are likely going to have some ‘ugly surprises’ without the return flow.” Dr. Nimmo countered that reducing seepage might allow us to keep or put more water back into the river, allowing biological entities to better thrive. “Not only fish but macro-

invertebrates have instream flow needs,” he said.

Mr. Edelman pointed out that sediment transport/erosive settlement which physically changes a streambed is a major concern. For instance, as farmers push sand back in to the river the bed continues to rise.

The Committee agreed that they would like for all those considering transfers to ask whether a potential transfer would harm water quality, regardless of whether the exchange or transfer is large enough to trigger the new state statute. (The statute requires that a transfer involving more than 1000AF or that involves an exchange requires a review of water quality implications.) The question was asked “Can there be some sort of ‘retained jurisdiction’ so that you can go back and revisit the situation in later years to see if mitigation which was applied worked?” The intent would not be to require an open checkbook, but perhaps the transferor could be required to spend “up to” a particular amount, depending on how things work out.

Dr. Gates was asked what it would take to predict with reasonable accuracy the impact of a transfer on water quality, to which he responded that we are much more advanced now in our ability to predict water quality impacts but that we need models tested against historical observations. He said that distributions of possible answers is more important than a single answer, that we should acknowledge that in the application of models there is uncertainty. “What’s important is to quantify the amount of uncertainty,” he said. “We need to use ‘retrodictive’ modeling instead of ‘predictive’ modeling.” He further explained that in retrodictive modeling you use the model to try to match what we have historically observed under

baseline conditions. In other words, “what would have happened had we done that transfer?”

There are places where the beneficiary of the transfer could help solve a water quality problem as a sort of “payback” of damage, according to Dr. Gates, who pointed out that the state accepts “water quality credits.”

In closing

“There are places where the beneficiary of the transfer could help solve a water quality problem as a sort of ‘payback’ of damage.”

Summing up the day’s value, one member of the Committee stated that “Informed knowledge about water quality is hard to find. We should pull advisors like these into a think

tank to consider each step anyone is wanting to take on the river to see how it affects water quality, including not just the lower basin but the upper basin as well.”

Alex Davis

Colorado Department of Natural Resources

On Motivation for Embarking on this Work

Both rural and urban members of the Committee wanted to give Ms. Davis some background on what motivated them to work together on the issue of ag to urban water transfers. One member started out by stating “We have experienced a tremendous breakdown of the initial polarization in the Committee.” A rural member explained how the lease the High Line Canal negotiated with Aurora and Colorado Springs after the 2002 drought was such a lifesaver for farmers and implement dealers. He said 13 shareholders had their equipment lined up for foreclosure, but with the lease money they were able to keep farming. “Knowing that leases can have such a positive impact on farmers, I wanted to work with the Committee to make such leases easier in the future.” An urban

member said “Aurora has made an agreement not to buy any more water in the valley for 40 years as part of an intergovernmental agreement. So we are really interested in helping figure out how water can best be leased in the future while avoiding unintended consequences for rural communities.”

On How We Expect This to Be Implemented / How to Gain Compliance

Ms. Davis was relentless in her questioning what we think will happen with our template. “Who will be answering these questions?” she asked. When the Committee answered that we want the template to be used by folks who want to cooperatively work out these issues, she asked “Can you get people to do that voluntarily? You are hoping to get this implemented strictly through education?”

The ensuing dialogue explored the range of possibilities from regulation to voluntary compliance which the Committee has been struggling with all along. One member said “Options for implementation ought to be investigated. We think voluntary compliance is better than regulatory control, but the idea of legislation has come up in several of our meetings with advisors.” Ideas discussed included:

- Remove secrecy and create an opportunity for collaboration by requiring parties entertaining a transfer to announce their plans six months before it goes to water court
- Give counties more authority
- Require the water court to incorporate the guidelines into the transfer process

Ms. Davis thought these ideas are worth exploring, because without regulation it’s hard to

get compliance. On the other hand, she agreed that trying to make progress first with voluntary compliance might be a good idea because attempting to gain compliance through legislated regulation could create a backlash. She said it sounded to her that if we decided legislation were the route to take, we are talking about either “a fundamental change in the water court process or a completely new structure.”

The mention of water court brought up many opinions. One member talked about there being serious incompatibilities about using the current water law system, because third party interests don’t have standing or money to pay a lawyer. He said, “What we are looking at is putting on the pressure before it goes to water court.” Another said that changing water court is one way to do it, but the Committee was hoping it could be done more simply by leveling the playing field—encouraging everyone to step up

“The Committee was hoping it could be done more simply by leveling the playing field – encouraging everyone to step up to the plate.”

to the plate. Still, he said, “I hate to say it, but it probably does mean enforcement in the future. Whether that’s legislation or something else, maybe that’s what it takes. Otherwise you don’t have a level

playing field.” Another pointed out that voluntary compliance may be more feasible than some think because cities are hoping to follow guidelines to prevent errors which in the past have caused them “public relations indigestion.”

On the State’s Role

Ms. Davis wanted the Committee to know that the Department of Natural Resources is very interested in the Committee’s work and how DNR could help move things forward. “That’s why I’m here,” she said. When asked what DNR could do to get folks to approach this issue openly without positional battling, she said, “What you are doing is exactly the kind of thing Harris Sherman wants to help get going during his tenure.” She said he would like for the kind of

process the Committee had employed to be higher on his list, but time, money, and putting out fires gets in the way.

The Committee's dialogue with Ms. Davis generated several ideas for assistance from DNR and/or the state:

- Play a role in exploring options for getting compliance for our guidelines
- Take a stand on behalf of the public interest in these matters
- Take on a more assertive planning role
- Get behind the template and bring folks together to have a dialogue about it
- Facilitate threshold studies to evaluate how much water can be transferred without drying up agriculture
- Help fund the fight against phreatophytes
- Help deal with the problem of non-beneficial "upflux" resulting from high water tables which increases salinity and causes huge amounts of water to be lost through evaporation
- Take the role of bringing out the template for consideration before potential transfers go to water court
- Help fund the mechanism (maybe a pipeline) to move some of the water, with requirements that the water has to be transferred responsibly—incorporating answers to the questions our work has raised
- Resolve dilemma of need to improve irrigation efficiencies while not increasing consumptive use because of legal issues, including our compact with Kansas

"The Department of Natural Resources is very interested in the Committee's work and how we can help move things forward. That's why I am here."

Without intending to convey a tone of "yeah, but...", several members of the Committee voiced concerns about some of these ideas. One said

that DNR and CWCB had earlier tried to take on a more assertive planning role via SWSI, but "they got resistance for trying to create a 'state plan'." In regard to the pipeline assistance idea, one member asked "Who

says the state is going to be better to deal with this issue than a private water entity? The reason our water law is written the way it is, is because citizens did not trust that government would not get in bed with corporations to control the water." On the issue of studies, the point was made that studies can delay action on this issue. One said "Delay is success for those who are currently holding the power," to which Ms. Davis responded, "We have seen that. Folks who keep wanting to delay for study, study, more study—an attitude of 'Let's just talk—not do anything'."

On the issue of irrigation efficiencies, the point was made that were it not for questions of guarding against consumptive use gains, "urban money could be used to modernize irrigation to improve water quality in the lower valley and help farmers turn to alternative crops."

On the Bigger Picture

Ms. Davis pointed out that a number of larger institutional challenges must be addressed related to the ag to urban water transfer issue. For instance, she asked, "What about the land use planning/water planning nexus?" One Committee member proposed that the best way to look at things holistically would be to look at things from the point of view of "What would I do if I owned all the pieces?" He said that we need the state to take on the planning function to help us see how we could be managing things to meet all of our goals—both urban and rural.

Another member pointed out that we need to change the thinking that cities have to get water for their citizens as cheaply as possible.

On Where Now? How to Get the Word Out

Ms. Davis expressed the opinion that whether the guidelines we have proposed will end up being regulatory or voluntary, the process will certainly be evolutionary. “I think you need to cast a big net,” she said. “Get your message out not just to the principle representatives and those who may be entrenched in their status quo positions, but also to those who may be ready to look at things differently—those who will listen and then filter things back to their folks.”

This generated several ideas, including:

- We need to put on two sets of workshops—for Joe Ordinary Citizen and for Policy Makers.
- The Extension Service wants to be asked and funded to get the word out about things like this.
- After we take it to the Arkansas Basin Roundtable, let’s take it to the IBCC via our roundtable, and then to other roundtables. Ask all of them: How would you implement this?
- We need to let this be seen as a work in progress—to be improved through trial and error.
- Let’s take it to the conservancy districts.
- Counties who signed the Colorado 64 principals--reach out to them?
- We have to get a lot of feedback, a lot of comments before we do much more with this.
- We need to get across the message that there’s good food for thought here, that this is just a catalyst. We need to say to folks “Please don’t jump the Committee. Help us advance the ball, because the goal line is coming up quickly.”
- We need to educate “This is what a water transfer entails.” If the public

knows what to expect they can raise the bar by themselves, or at least citizens will then support legislation later.

In closing, Ms. Davis endorsed the Committee’s idea of combining education with dialogue, but she cautioned us to “stay pretty firm about your product. Make recommendations to go along with it. Then begin collecting issues that would have to be addressed in order for it to be implemented. Most encouraging to the Committee were her last words, “This is only the beginning of our dialogue. Let’s keep talking.”

James Pritchett
Colorado State University

John Wilkens-Wells
Colorado State University

On the Motivation Behind the Committee’s Work

Several members of the Committee are familiar with Dr. Wilkens-Wells because of his extensive work in the Arkansas Basin. They expressed to him why they have undertaken this work, including:

- Decrease the damage up and down the river if transfers are going to occur
- Evaluate impacts of transfers on rural residents who are not direct parties in the transactions
- Find a way to include these “third parties” in the process.

On What Wilkens-Wells Sees in Other Western States

Heading up CSU’s Sociology Water Lab, from which he has recently retired, Dr. Wilkens-Wells has over the years taken a number of folks to Idaho, Utah, and California to see other ways of dealing with rural development and water transfers. Particularly in Idaho and Utah, water is tied to the land more than in Colorado, he said.

“When water is tied to the land there is a tendency for rural development to continue.” A good example is the Wasatch Front Range, he said, where there is a lot of subdivision development into rural areas. This has impacts on ag production, too, he said, but ag production can continue while development uses the water on the land for its expansion. In Idaho, most ditch companies mandate that water be attached to the land. “To an economist this can result in inefficiencies, but we often see the rural areas continuing to grow under this scenario,” he said. How does this translate to Colorado? Dr. Wilkens-Wells asserted that we have to find other ways for rural areas to grow. We have to check out the benefits of different approaches compared to their costs. “Having made friends with landowners in the Arkansas Basin,” he said, “I see lots of concern for the future.”

On Colorado Water Law

“Colorado water law is way out there from other states, you know,” Dr. Wilkens-Wells said. “In Colorado, our law makes things much more difficult.” He said that we can learn from other states. “Even in California, water is frequently tied to the land,” he said. There transfer deals are prevalent between municipalities and Irrigation districts, not between municipalities and individual farmers. One of the members of the Committee asserted that in Colorado the courts have been “used and abused and reused by money versus need, with some regions being cannibalized for the benefit not of the whole state but of those who were ahead of the game, doing the hard hitting up front.” Dr. Wilkens-Wells responded that Colorado water law has a potential of making water management more efficient, “but for the water to be used efficiently, you have to have a market where everyone has access to the same information. What you are saying is when private property rights take precedence,

you have to have a level playing field for it to work.” He asserted that “more effort is needed to be sure the public is aware of what’s coming down the line in terms of a potential transfer.” Though some would say that’s private, the concept of water as a public good (also in state law) requires some degree of transparency in the filing process, he said. “When we get into discussions of transparency and who needs to be at the table, the question of who has legal standing comes out.”

On Regulation versus Education

“There is a third leg to the animal besides transparency and legal standing, and that’s mitigation,” Dr. Wilkens-Wells said. He asserted that the mitigation process needs to be nailed down, that it cannot be a moving target. “Mitigation cannot be an open question in place of understood rules. It has to be nailed down on paper so people know what the situation is. If it’s open to constant interpretation and

“More effort is needed to be sure the public is aware of what’s coming down the line in terms of a potential transfer.”

reinterpretation, everyone is going to be uncomfortable. You need to be able to say ‘This is what it means, this is how far it goes.’

It can be changed in five years, but for now that’s the rules, the procedures, the roadmap.”

One of the Committee members tied what Dr. Wilkens-Wells was saying into what he was seeing. “Folks say they don’t want to invest in Lamar, that it’s going to be dried up in the next few years. Where do we break into that set of uncertainties?” Dr. Wilkens-Wells’ response was that investors are willing to invest only if they have a clear understanding of what the nature of things is, that you create a disincentive to invest if the rules are not clear. Once the rules are set, investment is encouraged because it is seen as a friendly environment, he said. “If the mitigation

process is ill-defined, investors are going to be wary,” he said.

A member of the Committee told Dr. Wilkens-Wells that while the Committee is unsure about how what we are proposing would be implemented, “we mostly lean away from regulatory change in favor of education.” Dr. Wilkens-Wells, understanding the Committee’s concern with

regulation, said “Regulation is always a two edged sword. You need a little bit to drive the investment engine but not too much to

make for disincentive. You need a balance. Maybe guidelines instead of regulations is a good idea. Guidelines for the transparency process. For the legal process. Maybe that’s sufficient. But something needs to be down on paper that represents the way we are going to do things.” The Committee asked how you would go about providing that balance, to which Dr. Wilkens-Wells replied that states have codes, such as zoning considerations, that land transfers are accountable to. And they have public oversight over the process. “Perhaps there could be a comparable process for water transfers,” he said.

On Engaging Rural Communities to Act on Their Own Behalf

Dr. Pritchett joined the group, having bicycled eight miles across town to be at the meeting. He brought up several ideas for how communities might band together to provide incentives in the case of water transfers much as they do for other kinds of actions which affect them. “Rural communities would be more proactive in developing their communities if there were more transparency in water dealings,” he said. He stressed that when there are third party effects, if you can involve those third parties and get them to help guide you, that’s good. One of the Committee members chimed in that the ability of third parties to be involved is not on paper

anywhere today, and that without that, there is no transparency. “We need not just open info about what is happening but a process that invokes certain kinds of things that need to happen,” he said.

One member said, “If you want to transfer water in the state of Washington you pay a fee to help deal with the issues related to the transfer.”

Another member brainstormed that a basin coordinating group could be set up to coordinate the interests of third parties. A third member pointed out

that the water courts have brought in moderators to help small entities. “Or how about a special master—someone who can look at the bigger picture and help make decisions?” Dr. Pritchett asked. Committee members thought that idea had some potential, because, as one member pointed out, “You have to weed out and control the chaff from legitimate third party concerns, to protect the water sellers and water acquirers.”

Dr. Pritchett suggested that a basinwide or multi-community approach is needed to help rural folks understand what water means to their communities. He said, “Communities will object to transfers unless they can see how a transfer might actually help them. Getting more information into the hands of community leaders would help,” he said. “You have to show them the ‘in kind’ mitigation which could have a positive multiplier effect.” Dr. Pritchett expressed that he believes negative feelings from prior water transfers cause people to object out of fear, and that one reason water transfers are so expensive is because all objections have to be satisfied. He said we should say to the rural communities first, before a potential transferor comes to the door, “if a water transfer is going to affect your community, what would you like to ask for?” The Committee responded that when rural communities see that they could benefit, they might even help facilitate transfers.

“Getting more information into the hands of community leaders would help.”

On Conveyance and Storage

A rural member of the Committee said “There is a fourth leg on the animal—conveyance and storage.” He asserted that if a given community doesn’t have the infrastructure to move water, they become backseat to the transfer, and that “We can’t look at the needs of all the people unless we break open the monopoly of storage and conveyance.” Another member concurred that access to capital and infrastructure would appear to be important for participation in the process. “Transfers and exchanges could be used more fully if the control were more widespread,” he said. An urban member of the Committee expressed a different view. He said the fact that there is no unappropriated water left and the high cost of infrastructure is leading to regionalization instead of balkanization. “We will see the bigger players pick up the little ones out of necessity,” he said.

“Mitigation should include opportunities for third party communities to sit down and talk to cities about their needs, instead of just dollar for dollar mitigation.”

On Mitigation

The Committee turned to the issue of mitigation of negative effects on third parties. Dr. Pritchett suggested that mitigation should take the form of investment in human capital, but “where do you make the investment if you don’t know what’s needed?” He said payment in lieu of taxes for lost tax revenues is easy to understand, but other kinds of mitigation are not easy to understand, because we don’t know how to put a dollar value on the human capital loss. He suggested it might be beneficial to provide resources for rural communities to do an assessment so they would know what to ask. One problem with mitigation, he said, is that we don’t know how an investment in one community might provide benefits to a neighboring community. “By putting a number on it do we handcuff the communities with lump sum amounts instead of investments that could be in-

kind, not cash?” he asked. He followed up by suggesting that a monetary settlement may not be so important as setting up partnerships. “Mitigation should include opportunities for third party communities to sit down and talk to cities about their needs, instead of just dollar for dollar mitigation.”

Dr. Wilkens-Wells agreed. He said if water transfers are important for rural communities, some mechanism needs to be in place for rural communities to have the resources to give them an opportunity for fair representation. “I am thinking of some kind of fund that would be available for rural

communities to tap into to hire an economist to come in and do an evaluation for them,” he said. One of the Committee members suggested that the state could be asked to put together a group of consultants available to communities through their basin roundtable for that purpose. Dr. Wilkens-Wells speculated that probably parties involved in the water transfer process would have to absorb some of the third party mitigation cost. One Committee member asked “Shouldn’t the public have to pay some of the cost, since having healthy rural areas and green ag lands is something we all benefit from?”

On Public Good and Private Rights

One member asserted that the state of Colorado is refusing to look at the public interest aspect. “The state pretends it is paying attention to the public interest when it says the water belongs to the people. But then it says it can all be appropriated. We allow the appropriator/diverter to exercise almost total control over it.” Dr. Wilkens-Wells told the group that in California, things have evolved such that public interests have taken precedence over private property rights. Eventually, public interests will win out,

he said. “But what you have come up with here with this template may provide a softer landing.”

In Closing

Dr. Wilkens-Wells congratulated the Committee on how far they had come on this issue. “Your work is very positive,” he said. Dr. Pritchett closed by suggesting that the Committee might want to call its template “Water Transfers Guide for County Commissioners.” Then you could distribute it to them in advance of a chance to discuss how they want to prepare for water transfers. “The transactions happen anyway,” he said. “It’s the path those transactions take that matters.”

Where Do We Go From Here?

The major question with which the Committee has wrestled in the last few months is what do we think will happen with our report? Will it be used? How and by whom? Will it form the basis for proactive planning on the part of those wanting to transfer water from agriculture? Will it be of interest to local governments or counties as they look to the future of rural communities? The Committee generally favors voluntary use of the guidelines rather than their being adopted as state or local mandates. However, more than one of the experts with whom the Committee met questioned whether legislation might be needed so that all those transferring water would be subject to the same expectations.

The Committee presents this report to the Arkansas Basin Roundtable, as well as to the Colorado Water Conservation Board (CWCB) which provided much of the funding for the Committee’s facilitation. It is our hope that the report can be presented widely to gain broad input from a variety of stakeholders, stimulating a lively dialogue which will lead to serious action to “do it right” if water is to be transferred from

agriculture to urban uses. Readers who would like to share their views are encouraged to contact Committee members or to email them through the Committee’s facilitator at mlsmith@aquaengr.com.



Electronic Appendix

Contents

An Electronic Appendix to this report is available by emailing: mlsmith@aquaengr.com. The Appendix includes:

- Bibliography of literature about water transfers and related topics
- Published paper about the Committee’s process

Arkansas Basin Roundtable Water Transfers Committee

Bibliography

RECOMMENDED TITLES OF PUBLICATIONS AND REFERENCES ¹

1. "Otero County: A Demographic History of a Colorado High Plains County, 1889-1987." The Social Science Journal 26(3):265-275. 1989.
2. "What Becomes of Farmers Who Sell Their Irrigation Water? The Case of Water Sales in Crowley County, Colorado." Completion Report prepared for The Ford Foundation, Environment and Behavior Program, Institute of Behavioral Science, University of Colorado, Boulder. 56 pp. 1989.
3. "On the Pricing of Forwards and Options on Water Rights." Report prepared by Jay Lindgren, Ph.D., Cortney Brand, Chris Gibbons, Brett Gracely, Wayne Vanderschuere, Jeff Schultz, Glen Justis, Lynn Adams, Joe Mancinelli
4. Boomers, Busters, and Buffalo Commons: Historic Patterns and Alternative Futures for the Great Plains, Kenneth R. Weber, circ 1990.
5. Communities in Decline, Water Transfers, and Socioeconomic Analysis: A Methodological Note, Kenneth R. Weber, circ 1990.
6. "An Offer I Can't Refuse: Social Consequences of Water Transfers to the Transferring Area." Forum of the Association for Arid Lands Studies 8:21-28 1992.
7. Economic Values of Freshwater in the United States. Kenneth D. Frederick, Tim VandenBerg, Jean Hanson.
8. "Water and Growth in Colorado: A Review of Legal and Policy Issues" Summary Report. Peter D. Nichols, Megan K. Murphy, and Douglas S. Kenney. Natural Resources Law Center, University of Colorado School of Law.
9. Colorado Senate Bill 03-115 concerning the authority of governing bodies of local governments to protect the in-basin use of agricultural water rights, 2003.
10. Colorado House Joint Resolution 03-1019 concerning the General Assembly's endorsement of the Colorado 64 Water Principles, 2003.
11. "Arkansas River Water Preservation Principles", September, 2003.
12. "Building the Rural/Urban Water Partnership", Frank Jaeger, 2005
13. "Agricultural Transfer Alternatives to Permanent Dry-up", Colorado SWSI Phase 2 Technical Roundtable, September 6, 2005.
14. Survey from Colorado State University's Dept. of Agricultural and Resource Economic, James Pritchett, August, 2007
15. "Water and Western Growth", The Water Report, September 15, 2007
16. "Great Plains, Small Towns: Population Change in a Region's Towns and Cities, 1930-1990." Kenneth R. Weber, Ph.D.
17. "Irrigation, Economic Development, and Water Sales: Historic Patterns and Competing Uses for Water in the Arkansas Valley, Colorado. Kenneth R. Weber, Ph.D.
18. "Climate, History, and Economics: Three Marginalities and the Context of Irrigation Water Sales in Crowley County, Colorado". Kenneth R. Weber, Ph.D.
19. "Social and Community-Level Impacts of Water Sales and Transfers on Crowley County: A Longitudinal Study." Kenneth R. Weber, Ph.D.
20. "Aggradation and Aggravation: More Dam Problems Along Colorado's Arkansas River. Kenneth R. Weber, Ph.D.
21. "Moving Toward Climate-Responsive Water Management – Digest of Current Findings." John Wiener, J.D., Ph.D.
22. "Optioning Agricultural Water Rights for Urban Water Supplies During Drought." Ari M. Michelsen and Robert A. Young.
23. "Next Steps for Water Banks in Colorado." Charles W. Howe and John D. Wiener, Research Program on Environmental and Behavior. Institute of Behavioral Science, University of Colorado, Boulder, CO.
24. "Liquid Assets – Turning Water Into Gold." Denver Post articles. November 2005.
25. "Moving Towards More Efficient Water Markets: Institutional Barriers and Innovations." Charles W. Howe and John D. Wiener.
26. Frypan-Arkansas Project Land Use and Recreation Study. Prepared of Southeastern Colorado Water Activity Enterprise and Lake County. February, 2006
27. Toward Optimal Water Management in Colorado's Lower Arkansas River Valley, by Timothy Gates, Luis Garcia, and John Labadie. June, 2006
28. Rural Economy, Ray Wright. February 5, 2007
29. Brief Review of Some Relevant Issues in Considering Water Transfers, John Wiener, 10/2007.

¹ The Intellectual works of John Wiener, JD, Ph.D., do not represent a position of the University of Colorado, National Center for Atmospheric Research, or National Oceanic and Atmospheric Administration. Partial funding from NOAA is gratefully acknowledged.

Arkansas Basin Roundtable Water Transfers Committee

Bibliography

RECOMMENDED TITLES OF PUBLICATIONS AND REFERENCES TOO LARGE TO BE INCLUDED OR COPYWRITE PERMISSION NOT OBTAINED:

1. The Economic Value of Water, Diana C. Gibbons, A study from Resources for the Future, 1986
2. MacDonnell, L.J. and C.W. Howe, 1986, Area-of-Origin Protection in Trans-Basin Water Diversions: An Evaluation of Alternative Approaches. University of Colorado Law Review 57: 527-548.
3. Miller, K.A., 1987, The Right to Use Versus the Right to Sell: Spillover Effects and Constraints on the Water Rights of Irrigation Organization Members. Water Resources Research 23(12): 2166-2174.
4. "Irrigation Water Sales in Crowley and Otero Counties, Colorado: Social and Historic Context", Completion Report prepared for General Service Foundation, Environment and Behavior Program, Institute of Behavioral Science, University of Colorado, Boulder. 25 pp. 1988.
5. Effects of Water Transfers on Rural Areas: A Response to Shupe, Weatherford, and Checchio. Natural Resources Journal 30(1):13-15. 1990.
6. Impacts of Water Transfers on Rural Regions and Communities: A Case Study of the Arkansas Valley, Colorado." Transferability of Water Entitlements. Howe, Charles W., Kenneth R. Weber, and Jeffrey K. Lazo. Pigram, John J. and Bruce P. Hooper (eds.). Centre for Water Policy Research, University of New England, Armidale, New South Wales, Australia. 147-153. 1990.
7. The Economic Impacts of Agriculture-to-Urban Water Transfers on the Area of Origin: A Case Study of the Arkansas River Valley in Colorado. Howe, Charles W., Jeffrey K. Lazo, and Kenneth R. Weber American Journal of Agricultural Economics 1200-1204. 1990.
8. "Irrigation Water Sales from the Seller's Perspective: The Crowley County, Colorado Case." Forum of the Association for Arid Lands Studies 6:23-28. 1990. W
9. "Prologue to Which Future? Demographic Patterns and Prospects for Colorado Plains Counties One Hundred Years after Settlement." Forum of the Association for Arid Lands Studies 7:33-38. 1991.
10. Michelsen, A.M., 1994, Administrative, Institutional and Structural Characteristics of an Active Water Markets. Water Resources Bulletin 30(6): 971-982.
11. MacDonnell, Lawrence J., Charles W. Howe and Kathleen A. Miller, 1994, Water Banks in the West. Natural Resources Law Center, University of Colorado School of Law.
12. MacDonnell, L.J., and T.A. Rice, 1994, Moving Agricultural Water to Cities: the Search for Smarter Approaches. Hastings West-Northwest Journal of Environmental Law and Policy: 2(1): 27-55.
13. "Economic Values of Freshwater in the United States". Kenneth D. Frederick, Tim VandenBerg, Jean Hanson. 10/1996.
14. McGranahan, D.A., 1999, Natural Amenities Drive Rural Population Change. USDA Economic Research Service, Agricultural Economic Report No. 781, Sep. 1999.
15. Protecting Public Values in a Water Market Setting: Improving Water Markets to Increase Economic Efficiency and Equity, Charles Howe, University of Denver Water Law Review, Spring, 2000.
16. Miller, K..A., 2000, Managing Supply Variability: The Use of Water Banks in the Western United States, Pp. 70-86 in Wilhite, D.A., Ed., Drought: A Global Assessment, Vol. II. London: Routledge.
17. Nichols, P.D., M.K. Murphy, and D.S. Kenney, 2001, Water and Growth in Colorado: A review of Legal and Policy Issues. Boulder: University of Colorado, Natural Resources Law Center.
18. Trout Unlimited, 2002 and 2003, A Dry Legacy: Challenge for Colorado's Rivers (2002), and A Dry Legacy 2: Progress and New Threats in a Drought Year. (2003). Boulder, CO: Trout Unlimited
19. Water Transfers and Their Impacts: Lessons from Three Colorado River Markets, Charles W. Howe and Christopher Goemans, October 2003.
20. Luecke, D. et al., 2003, What the Current Drought Means for the Future of Water Management in Colorado. Available on-line from Trout Unlimited
21. Colorado's State Water Supply Initiative, Colorado Water Conservation Board, Department of Natural Resources, 2004
22. Analysis of Water Banks in the Western States. Washington State Department of Ecology, and WestWater Research Clifford, P., C. Landry, and A. Larsen-Hayden, 2004,
23. The Value of Water: Concepts, Estimates, and Applications for Water Managers. Awwa Research Foundation, 2005.
24. Water Utility/Agricultural Alliances: Working Together for Cleaner Water, Awwa Research Foundation, 2005
25. Determining the Economic Value of Water: Concepts and Methods, Robert A. Young, 2005
26. The Moral Consequences of Economic Growth, Benjamin M. Friedman, 2005
27. Water Resource Economics: The Analysis of Scarcity, Policies, and Projects, Ronald C. Griffin, 2006
28. Water in 2025 Beliefs and Values as a Means for Cooperation, Colorado Institute of Public Policy, Colorado State University, January 2006
29. Colorado's Water Future, University of Denver, 2007
30. Water Sustainability in the Rockies: Agriculture to Urban Transfers and Implications for Future Water Use, Tyler McMahon and Matthew Reuer, Ph.D, Pages 30-49 in The 2007 Colorado College State of the Rockies Report Card, April,, 2007.
31. Michelsen, A.M. and R. A. Young, 1993, Optioning Agricultural Water Rights for Urban Water Supplies During Drought, American Journal of Agricultural Economics 75(4): 1010-1020.

**FARMERS AND URBAN WATER MANAGERS WORKING TOGETHER TO
SEEK SOLUTIONS: IF WATER IS GOING TO BE TRANSFERRED FROM AG
TO URBAN, HOW CAN WE “GET IT RIGHT?”**

MaryLou M. Smith¹

For Urbanization of Irrigated Land and Water Transfers—A Water Management
Conference of U.S. Committee on Irrigation and Drainage
May 28-31, 2008
Scottsdale, Arizona

ABSTRACT

Following a major investigation into its water supply needs by the year 2030 which projects a significant shortage, Colorado’s state legislature in 2006 enacted a Colorado Water for the 21st Century act. Stakeholders from each of the state’s major water basins formed roundtables to first assess their respective basins’ water challenges, and then to potentially agree on “interbasin” compacts to affect multi-basin solutions to the state’s water supply dilemma.

One of the issues of particular concern in the Arkansas Basin is the effect on the viability of agricultural communities when water is transferred from agriculture to cities—a practice which is expected to increase in the state as water supplies for urban needs fall short. A group of stakeholders from rural communities in the lower stretch of the Arkansas Basin proposed a set of guidelines to govern such transfers, upon which stakeholders representing basin urban areas proposed an alternate set of guidelines. In an attempt to resolve their differences, an “ag to urban water transfers” committee was established.

This paper provides something of a sociological case study of the committee’s progress in understanding their underlying beliefs and values, approaching such concerns as how to manage urban growth and revitalize rural economies, and attempting to develop prototypes for “how to get it right” when water is transferred, whether through “buy and dry” or such alternative practices as rotational fallowing. Their use of outside resources in “joint fact finding” is discussed.

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