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## **Common Issues for All Alternatives and an Example of a Combined Alternative**

The following describes different components of any alternative that could be developed and provides an example of an alternative that makes decisions on those components. An attempt was made to describe many possible choices for each component, but there are probably many that were overlooked.

### General Type of Alternative

There are two types of alternatives that could be selected. The first is a prior appropriation alternative. This type of alternative is characterized by treating users differently based on the date of their water right (for surface water) or well date (for groundwater). The first user has rights over the second; the second has rights over the third; and so on. Surface water in Nebraska is regulated on this basis. The second type of alternative is called a correlative alternative. This type of alternative is based on sharing a resource among all users. No user has a right over another regardless of when they developed their use. Groundwater law in Nebraska is based on this principle.

For this combined alternative: A correlative alternative was selected. Regardless of the year a user started water use, users would have an equal opportunity to have their needs met. Surface water is regulated on the basis of prior appropriation and this alternative does not suggest that be changed. It does dictate that groundwater can be managed so that groundwater and surface water users both can use water.

### Management Goal

There are many possible management goals. They include: restore groundwater tables and base flow to predevelopment levels, maintain current conditions, continue the managed lowering of water table, and increase flows in streams and rivers. Meeting compact or lawsuit obligations (by sub-basin or basinwide) could involve some combination of the previous management goals. It is important to keep in mind that regardless of the goal that is chosen, it does not dictate the components of a potential management plan. If the goal would change, they can be lowered or raised to meet that goal. The important thing is to choose how you would like the basin to be managed.

For this combined alternative: For discussion purposes a goal of meeting the annual compact requirements by sub-basin for alluvial groundwater and surface water was selected. The compact requirements would be met by monitoring stream flows and allowing limited water use based on that monitoring. The upland wells would be treated the same as the alluvial wells even though they are currently not part of the compact.

### Calculation of Irrigated Land

Allotments are a way of limiting water use in the basin. For instance, if an allotment of 10 acre-inches was set, the irrigator would be allowed to apply ten inches of water to that field. If allotments are part of an alternative, the amount of irrigated land must first be determined. The following is a list of options that have been raised: based on tax rolls, determined by hearings, establishing groundwater rights similar to surface rights, determined by the regulating body.

For this combined alternative: The actual number of acres that are being irrigated will be determined by the NRD's. They will be determined through field investigations and the owner will have the right to challenge the results of the investigation at a hearing. The reason that this way for determining irrigated acres was chosen was because local control is important for this alternative to work.

#### Amount of Water Meter Use

One way to monitor water use or to enforce water allotments is the use of meters. The options for this is pretty straightforward, you can meter any or all groups of water users. They include surface water users, alluvial groundwater users, and upland groundwater users.

For this combined alternative: Since all users are treated the same and all will be given an allotment, all water users would be metered. The information from these meters would also be used to better compute the compact calculation numbers.

#### Definition of Management Areas

This is another area where there are many choices to consider. Management areas can be the NRD's, the sub-basins as defined in the compact, areas with common characteristics, townships, a buffered area around each well, and so on. Criteria that may be considered include: Proximity to areas with similar characteristics, average precipitation during the growing season, water table status, political boundaries (such as counties or NRDs), and crop use requirements for that location.

For this combined alternative: Since the goal of this management alternative is to meet the needs of the compact, sub-basins as defined by the compact are the larger management areas. But, because there are many differing physical conditions in many of the sub-basins, each sub-basin will be separated into smaller watersheds for the final management areas.

#### Allotments

This is one area that will need a lot of attention. Possible conditions and situations that need to be addressed include:

- Who will be assigned allotments: surface water users, alluvial groundwater users, upland groundwater users, or all water users? If an allotment that is a cutback of what is currently used is given to only some users, it may not seem fair.
- Which types of users will have allotments set: industrial users, commercial users, irrigators, municipalities, or all users? Again, if an allotment that is a cutback of what is currently used is given to only some types of users, it may not seem fair.
- What is the basis for setting the allotment? Possible basis include, current yield of the aquifer or stream, the sub-basin allocations as set in the compact, total allocation to Nebraska of the compact, the managed drawdown of the water table, the current conditions of the base flow. It is important to note that a yield exists for many different levels of the water table and it is important to define at which level you want the yield.
- What would be the minimum or maximum allotment? If it is going to be a correlative alternative, likely all users within the basin would have the same allotment and there would be no need for a minimum or maximum.

- Also, there is the possibility of managing different parts of the basin with different allotments. Because the average rainfall during the growing season differs by 4 inches from west to east, one allotment may be just enough for the Webster county area and not near enough for the Dundy county area.
- What happens when the landowner has a negative "balance" on their allotment?

For this combined alternative: All water users (including surface water users) will be given an allotment. The allotment for the commercial, industrial, and municipal users will be covered in another section. The allotment would be the same for all irrigators in the management area (sub-basin watersheds as defined above), surface and groundwater users alike. It would be based on 1) the status of the water table, 2) the status of the base flow of the sub-basin, 3) the location within the state, and 4) the likelihood of meeting the compact requirements. The reason that 1 and 2 will be considered is that fact that surface water users have been adversely impacted by groundwater pumping in the past, and in an attempt to address their needs, try to increase base flows. Number three is included because of the variation in rainfall across the basin and infiltration amounts. Number four is included because there are sub-basins that are overdeveloped and cutbacks for that reason alone must take place. Beaver Creek, Driftwood Creek, Medicine Creek, Red Willow Creek, and Sappa Creeks all have had a history of not meeting the compact requirements.

A landowner would not be allowed to have a negative balance at the end of two consecutive years.

The allotments will be set on XXX of each year. At that time, the water supply will be evaluated, and an allotment can be set. They could be adjusted up or down on a monthly basis through the end of the irrigation season.

If your management area was in the upper portion of the Frenchman Creek Sub-basin, in Chase County you would start with the basinwide allotment of XX inches. When you consider that the water table has dropped dramatically there and that the stream flows in that portion of Frenchman Creek have also dropped you would suggest lowering the allotment by X inches. The fact that it is in the western part of the basin and that area gets only around 13 inches of precipitation during the growing season may suggest increasing the allotment by X inches. Finally since the Frenchman Creek sub-basin usually meets the compact allocation there will probably be no adjustment for that factor. If on May 1<sup>st</sup>, the flows in Frenchman Creek were greater than normal you would increase the allotment by X inches, or if it were less than normal you would decrease that allotment by X inches.

If your management area was in the lower portion of the Mainstem Republican sub-basin near the state line you would also start with the basinwide allotment of XX inches. Since the water table in this area has not dropped and the streamflows are gaining in this area, there would be no reduction in the allotment. The fact that this area is in the eastern part of the basin and gets around 17 inches of precipitation during the growing season means the allotment may be reduced by X inches. Finally since the Mainstem Republican sub-basin usually meets the compact allocation there would be no reduction in the allotment. Again, if on May 1<sup>st</sup>, the flows in

Republican were greater than normal you would increase the allotment by X inches, or if it were less than normal you would decrease that allotment by X inches.

Because of the complexity involved, water allotments may also be adjusted based on whether they are for surface or groundwater use. Other adjustments that may be necessary are to groundwater to deal with the lag times involved and surface water based on the base flow of the stream.

#### Annual Allotment Carryover

In the simplest terms there are two ways to set the carryover, 1) allow unlimited carryover or 2) limit the allowed carryover. If it is decided to limit the carryover, you can allow a certain cumulative total to be carried over, allow a certain carryover each year, allow a portion to be fully carried over and the amount above that to be carried over at a reduced rate, or allow no carryover.

For this combined alternative: This alternative suggests allowing a carryover equal to the crop use requirements for corn for x years (~ 24" per year). This choice has its pros and cons. One pro is that it will not allow large numbers of acre-inches to be accumulated. One con is that there is a "use it or lose it" effect once the maximum carryover value has been reached.

#### Well Pools

A well pool occurs when one landowner transfers the allotment from one of his fields to another without being assessed any penalty or transfer rate. The options for this component are whether or not this will be allowed.

For this combined alternative: No well pooling would be allowed. If a landowner wants to use water from one field in another, a transfer would have to occur. The reason for this is because if the one field is sold in the future, a lot of headaches will be prevented.

#### Municipal, Industrial, and Commercial Allotments

Options for setting these allotments include: setting the use as of a certain date as the allotment, setting a block of water aside in the basin for these uses, setting no limit on municipal allotments as long as users are metered and charged for water, and setting a per capita allocation for municipalities. In general, the amount of water that is used by commercial, industrial, and municipal users is much less than what is used by irrigation.

For this combined alternative: Municipalities would have a set allocation of XX gallons per person per day. Industrial and commercial users would have their allotment set based on their development at the time of the alternative going into effect. The reason that municipalities would not be given an allotment is because they are generally a small portion of the use and if they are metered and charged, conservation will likely occur. Water would not be allowed to be carried over from year to year.

#### Transfers

This component will need to be thought out in some detail. There are many things to consider when allowing the transferring, marketing, or leasing of water. A partial list includes:

- Will transfers be allowed to be move water outside the original management area?1
- Will there be transfers from one use to another (irrigation to irrigation, irrigation to municipal)?
- Will there be a percentage adjustment made to the allotment?
- Is consumptive use transferred, or the allotment transferred?
- Can the carryover be transferred alone?

For this combined alternative: Transfers would be allowed between irrigation, industrial, and commercial uses. They could only occur within the management area. Irrigation to irrigation transfers would be allowed at a percentage transfer rate. Irrigation to commercial and industrial users would be transferred at a lower percentage transfer rate. Carryover would not be allowed to be transferred alone, only with the annual allotment. Also, lands that have had an irrigation right transferred off of them would not be allowed to receive a new irrigation right, only by transfer could that land be irrigated again.

#### Future Development

A clear plan for development of currently undeveloped land, and for new industrial and commercial uses must be defined so that it does not appear to the public that these things cannot happen. In the plan a well moratorium, the role of transfers, and effects on the management goal need to be addressed.

Another way for future development may be the through increased storage in the basin. Specifically if the Nebraska Bostwick irrigation canals were lined, more water could be stored in Harlan County Lake or a storage reservoir could be constructed on the Republican River near the state line to control flows going into Kansas. Both of these options may be very difficult to justify financially.

For this combined alternative: Because of the diverse physical characteristics of the basin, future development plans would have to be customized for the management areas. In general new development would be allowed in limited areas where the compact sub-basin allocation is not being completely used. In areas where the compact sub-basin allocation is completely allocated, development would have to have a water transfer. Effects on the compact calculations would have to be determined before allowing any new development or transfers for development. If the effect on the compact was harmful and we would exceed our allocation, then the transfer would not be allowed until the depletion was made up (possibly through increased storage).

#### Timing of Implementation

This alternative component is more important for some management goals. For instance if the alternative goal is to restore the water table, your timing may be over the next 50 or 100-years. If your goal is to meet the compact requirements, the timing may be the year immediately following the alternative being adopted. Also, you need to be aware of the large lag times involved in pumping water far from the stream. It may take 20 years before the effects show on the stream.

For this combined alternative: Since the goal of this alternative is to meet the compact requirements, the timing would be for a full implementation no later than five years after the adoption of the alternative. During the five years, the irrigated lands would be determined, the allotments set, and total plans of the NRD's submitted to the Nebraska Department of Natural Resources for approval.

#### Compensation

In implementing any alternative, there may be users who are harmed through loss of water or irrigated acreage. If they need to be compensated it could be by asking the legislature for money, implementing a water tax paid by users, or some other way. Another place where compensation may be needed is if as part of the alternative, you would want to buy out irrigation on some acres. It is possible that the legislature could be approached for funding, especially if the lawsuit is settled and that money isn't needed for the trial. There may be some legal questions surrounding compensation issues.

For this combined alternative: Since this is a fully correlative (sharing) alternative, the gain or loss would be shared equally and no compensation for harm would be expected.