COLORADO WATER CONSERVATION BOARD

ALERNATIVE AGRICULTURAL WATER TRANSFER METHODS COMPETITIVE GRANT PROGRAM

GRANT APPLICATION FORM

Options for Maintaining Agricultural Productivity on Historically Irrigated Lands that are the Subject of Water Transfers

Program/Project Name

River Basin Name

$111,030	**$24,000 cash**
Amount of Funds Requested	Amount of Matching Funds

*** The deadline for Grant Applications is November 26, 2010 for consideration at the January 2011CWCB meeting.** It is anticipated that there will be one round of application submittals, yet if funds are not exhausted, the Board will determine when it will consider the next round of grant applications at their January 2011 meeting.

* In completing the application you may attach additional sheets if the form does not provide adequate space. If additional sheets are attached please be sure to reference the section number of the application that you are addressing (i.e., A.1. etc.).

Instructions: This application form must be submitted in electronic format (Microsoft Word or Original PDF). The application can be emailed or a disc can be mailed to the address at the end of the application form. The Alternative Agricultural Water Transfer Methods Competitive Grant Program, Criteria and Guidelines can be found at http://cwcb.state.co.us/LoansGrants/alternative-agricultural-water-transfer-methods-grants/Pages/main.aspx. **The criteria and guidelines must be reviewed and followed when completing this application**. You may attach additional sheets as necessary to fully answer any question, or to provide additional information that you feel would be helpful in evaluating this application. Include with your application a cover letter summarizing your request for a grant. If you have difficulty with any part of the application, contact Todd Doherty of the Water Supply Planning Section (Colorado Water Conservation Board) for assistance, at (303) 866-3441 x3210 or email at todd.doherty@state.co.us.

Generally, the applicant is also the prospective owner and sponsor of the proposed program/project. If this is not the case, contact Todd before completing this application.

Alternative Agricultural Water Transfer Methods – Grant Application Form
October 2010

Part A. - Description of the Applicant(s) (Program/Project Sponsor);

1. Applicant Name(s): East Cherry Creek Valley Water and Sanitation District. A portion of the cash match will be provided by Arapahoe County Water and Wastewater Authority and United Water and Sanitation District

Mailing address: 6201 S. Gun Club Road Aurora, CO 80016

Taxpayer ID#: 84-0699052 Email address: dave@eccv.org

Phone Numbers: Business: 303-226-9205

Mobile: 303-901-5584

Fax: (303) 699-6058

2. Person to contact regarding this application if different from above:

Name:

Position/Title

3. If the Contracting Entity is different then the Applicant, please describe the Contracting Entity here.

Contracting Entity will be East Cherry Creek Valley Water and Sanitation District

4. Provide a brief description of your organization. The applicant may be a public or private entity. Given the diverse range of potential applicants, not all of the following information may be relevant. Where applicable and relevant the description should include the following:

   a) Type of organization, official name, the year formed, and the statutes under which the entity was formed, a contact person and that person's position or title, address and phone number. For private entities, a copy of the Articles of Incorporation and By-laws should be appended to the application.

b) For waters suppliers, information regarding the number of customers, taps, service area, and current water usage, and future growth plans, water related facilities owned or used, funding/revenue sources (existing service charges, tap fees, share assessments, etc.), the number of members or shareholders and shares of stock outstanding or a description of other means of ownership.

c) For other entities, background, organizational size, staffing and budget, and funding related to water that is relevant in determining whether the applicant has the ability to accomplish the program/project for which funding is sought.

d) A brief history of the Applicant(s).

e) Please include any relevant Tabor issues relating to the funding request that may affect the Contracting Entity.

The East Cherry Creek Valley Water and Sanitation District is a quasi-municipal corporation and a political subdivision of the State of Colorado. ECCV was created pursuant to Article 1 of Title 32 C.R.S. for the purpose of providing a complete water supply system, complete sanitary sewer system and a regional storm drainage system for the inhabitants of ECCV. ECCV was formed in 1962. ECCV encompasses approximately 8,725 acres located in unincorporated Arapahoe County and the City of Centennial. It is located approximately 11 miles southeast of downtown Denver, Colorado and immediately south of the City of Aurora, Colorado.

Dave Kaunisto is the ECCV District Manager and can be contacted at 6201 S. Gun Club Road, Aurora, CO and can be reached at 303-226-9205.

ECCV's customer base, as shown below, consists primarily of single-family residential accounts, with the remainder multi-family, commercial and irrigation only accounts. Single-family residential represent 80% of total billed water use with potable irrigation the next largest user class at 9%. Multi-family use is 4% and commercial, industrial and institutional 3% of annual billed water usage.

General Class	2007-2008 Average (Kgal)	% of Total
Single Family	184,671	80
Multi-Family	9,752	4
Commercial, Industrial, Institutional	7,256	3
Irrigation (potable)	21,915	9
Irrigation (nonpotable)	9,426	4
Total	230,162	100

ECCV annual water demand at buildout is projected at 14,060 AF. Additional savings through water conservation is projected to reduce demand to approximately 12,000 AFY. ECCV revenues are derived from water and were rates and tap fees. Additional detail on the ECCV system can be found in the draft ECCV Water Conservation Plan.

Part B. - Description of the Alternative Water Transfer Program/Project –

- Purpose of the Program/Project

  Please provide a summary of the proposed program/project, including a statement of what the program/project is intended to accomplish, the need for the program/project, the problems and opportunities to be addressed, the expectations of the applicant(s), and why the program/project is important to the applicant(s). The summary must include a description of the technical, institutional (i.e., how the program/project will be organized and operated), and legal elements that will and/or have been addressed by the applicant and proposed program/project. The summary should also discuss relevant project history, if applicable, and any other relevant issues.

  Previous Studies
  To the maximum extent possible, the results of any previous studies and investigation should be utilized and incorporated into the proposed program/project. The application for funding should include a brief summary of the results of previous studies and how they will be utilized.

  Project Purpose Summary
  Agricultural transfers are going to occur in the South Platte basin as predicted in the SWSI report. Many M&I water providers prefer traditional water transfers and require dry up covenants at time of purchase. As a result, most agricultural lands that are the subject of transfers no longer remain in any type of agricultural productivity. This Project will:

  a. examine the opportunities to maintain some level of productivity on lands that are the subject of water transfers, either through limited irrigation or dryland farming as a result of permanent dry-up or a rotational fallowing or interruptible supply agreement
  b. continue the field studies on revegetation currently being conducted by Colorado State University at LaSalle, CO
  c. develop and compare the costs and issues with dryland farming, limited irrigation, rotational fallowing or revegetation with no agricultural activity

  Project Purpose Detail
  This Project will build on the findings and results of the current Alternative Ag Transfer Grant Projects in the South Platte. Even with the preference of most South Platte M&I providers for traditional transfers that result in permanent dry-up, there is an opportunity to evaluate other approaches other than a permanent dry-up and/or revegetation with native grasses that eliminates any continued agricultural productivity with of those lands. The Parker study detailed potential crop yields and consumptive use under deficit irrigation techniques. The FRICO Project revealed that there is a very strong bias among M&I users to hold the ownership of transferred agricultural water rights and for traditional transfers. Other projects, such as the Super Ditch, have developed rotational fallowing as an approach that results in temporary, rotated dry-up of historically irrigated lands.

  A significant portion of M&I water rights acquisitions include dry-up covenants as an assurance of achieving the maximum consumptive use through the water court transfer process. The Division Engineer and other objectors in Water Court seek assurances through the water court change of use process that

the consumptive transferred to M&I use does not continue on the historically irrigated lands. Dry-up covenants typically require the seller of the water right to agree to permanently cease irrigation of the lands historically irrigated with the water rights that are sold and transferred. The dry up covenants are normally recorded to ensure that the dry-up provision is enforceable with future land owners. The end result is that agricultural use on the land ceases.

This Project will explore the opportunities to maintain some level of agricultural productivity on lands that are the subject of a water court transfer to M&I uses, either permanently or as part of a rotational fallowing or interruptible supply agreement. The two primary alternatives to revegetation of fallowed land that would be the subject of this Project are:

- dry-land farming
- dry-land farming with the allocation of a specified minimum amount of supplemental water needed to provide greater assurances of producing a dry-land crop yield under most climatic conditions

The following issues associated with dryland and limited irrigation farming and temporary fallowing will be researched:

For some irrigated land there is potential for conversion to dryland farming, but production levels will be reduced. Other irrigated land is not suitable for dryland farming due to very low rainfall and/or poor soil conditions.

In areas where dryland cropping may be suitable, potential crops and crop rotations must be identified on a site specific based on soil type and rainfall patterns. For example, dryland grain crops such as winter wheat and proso millet may be viable, but likely will require a rotation with a summer fallow year. Dryland corn and sunflowers require higher amounts of precipitation and are generally only suited to counties in Eastern Colorado where summer precipitation is adequate.

Some irrigated regions are in a summer rain shadow where dryland farming can be limited to annual forage crops and summer fallow. Summer fallow is an inefficient system, but it does allow for capture and storage of water in the soil profile for a subsequent crop and can reduce risk of crop failure. But the costs associated with reducing risk with summer fallow are high. The water storage efficiency of a fallow period is often less than 20% (only 20% or less of the rain during fallow remains in the soil at time of crop planting), but can be improved some through changes in tillage and cropping practices. Fallowing returns no income and leaves soil prone to erosion and degradation.

As an alternative to fallow when converting irrigated land to dryland either permanently or through rotational fallowing, allowing for a minimal, fixed allocation of irrigation water has the potential to eliminate the need for fallowing, reduce the risk of crop failure and soil degradation, and significantly increasing productivity and profit. The specific amounts and timings of these limited irrigation allocations will vary by crop and location. For example, some dryland crops like winter wheat, would benefit significantly from being able to fill the soil profile prior to planting. Other crops, like corn, are dependent on water availability during critical growth stages like silking/tasselling. Thus, water transfer agreements that include for some limited irrigation should be specific in amounts and timings.

While a priority will be placed in this study on developing alternatives to permanent dry-up and

revegetation, in some situations involving a permanent transfer of water rights, permanent revegetation is the most logical outcome due to the preference of the land owner or to soil and environmental conditions. The complexity of converting formerly irrigated land to permanent vegetation is often underestimated, frequently resulting in high costs and sometimes complete failure.

Colorado Water Law allows the Water Court to require revegetation for certain water rights transfers, but there is little information available to facilitate successful revegetation or to explore alternative agricultural systems. The techniques, costs and issues associated with revegetation would be researched and documented. As an example, the City of Thornton's revegetation of its Water Supply and Storage Company (WSSC) lands took many years at a cost of approximately $1,200/acre. In addition, these lands will no longer have any agricultural productivity.

This project includes funding for continuing the revegetation field studies previously conducted by Colorado State University at the LaSalle demonstration site. The goal is to provide cover crop recommendations for farmers who need to temporarily fallow irrigated land such as under a rotational following or interruptible supply agreement, assume dryland production, or establish grasses in formerly irrigated fields. CSU has been evaluating several cover crop options on a farm near LaSalle, Colorado. Similar to many other situations in the South Platte Valley, this site lost alluvial well water after court decisions curtailed junior pumping rights following the 2005 growing season. The last irrigated crop on this field was sugar beets, leaving the loamy sand soil unstable with little residue to control erosion. The farmer anticipated growing a corn crop the following spring and applied approximately 20 tons of manure after the beets. But, with irrigation water unavailable, corn was not feasible, and the field subsequently grows weeds controlled through mowing and herbicides. With only about 12 inches of annual precipitation and low soil water holding capacity, dryland farming is marginal on this and other farms losing irrigation water in the area.

The strategy previously examined at this demonstration site uses cover crops for nutrient mining and weed suppression during a transitional period between irrigation curtailment and perennial grass establishment. Beginning in 2006, cover and forage crops were planted to assess their ability to suppress weeds, produce residue cover, and uptake nutrients. In varying rotations, barley, winter wheat, triticale, forage sorghum, sorghum sudangrass and hay millet were evaluated. No-till planting was used to minimize soil disturbance and erosion potential. This project will continue the research at that site.

- Study Area/Service Area Description

The study area/service area is generally the geographic area that is the subject of the proposed program/project (include both the source of supply and location and type of new use). The description should include the following items:

a) A narrative description of the study area/service area including: the county, the location of towns or cities, topography, and locations of major surface and ground water features.
b) An area map showing each of the items above, as well as the locations of existing facilities, proposed project facilities and boundaries of lands involved in the proposed program/project.

c) Information regarding the irrigated lands that are involved in the program/project. This must include a tabulation of total irrigated acreage, description of cropping types, crop yields, and total average annual water diversions for existing agricultural lands.
d) Information regarding the location of the new water use(s) that will be served by transferred water including the estimated number of users/taps and/or uses served.
e) Socio-economic characteristics of the area such as population, employment and land use.

The study area will include Water Districts 1, 2, 3 and 64. These water districts cover the Poudre River and the South Platte River from downstream of Denver to the state line and contain a large percentage of the remaining irrigated land in the South Platte basin. As a result, the irrigated agricultural lands in these water districts will likely be the subject of water rights acquisitions for transfer to M&I uses as identified by CWCB studies.

Approximately 80% of the 833,000 irrigated acres in the South Platte are in Water Districts 1, 2, 3 and 64. The loss of irrigated acres in the South Platte as a result of agricultural transfers to meet the gap is estimated at 100,000 to 176,000. The total annual irrigation water requirement for the 664,000 irrigated acres in Water Districts 1, 2, 3 and 64 is estimated at 1,193,700 acre-feet with an estimated water supply limited consumptive use of 924,200 AF (Draft Technical Memorandum State of Colorado Current and 2050 Agricultural Demands, CWCB, 2010).

Water Districts 1, 2, 3 and 64 Ten-year Average Agricultural Demand

Water District	Irrigation Acres	Irrigation Water Requirement (Acre-feet)	Supply Limited CU (Acre-feet)	Shortage (Acre-feet)
1	231,593	399,426	334,911	64,515
2	153,485	285,314	186,577	98,738
3	181,574	323,591	233,086	90,505
64	98,181	185,372	169,640	15,732
Total	664,833	1,193,703	924,214	269,490

Agricultural transfers in the South Platte basin will be used to meet water supply needs and address the M&I water supply gap in the South Platte and Metro basins as shown in the following table, 2050 Municipal and Industrial Gap Analysis Draft Technical Memorandum (CWCB, September 2010).

2050 Municipal and Industrial Gap Analysis

	2050 Water Needs			IPPs			Gap at 100% Success Rate of IPPs		
	Low	Med	High	Low	Med	High	Low	Med	High
Basin	[AF]	[AF]	[AF]	[AF]	[AF]	[AF]	[AF]	[AF]	[AF]
Metro Roundtable Subbasin	183,000	207,400	277,800	141,200	162,400	210,400	62,600	65,900	88,200
South Platte Roundtable Subbasin	157,300	184,300	226,700	121,800	129,400	144,100	35,700	54,900	82,600
South Platte Basin Total	340,300	391,700	504,500	263,000	291,800	354,500	98,300	120,800	170,800

- Description of the Alternative Water Transfer Method

  Please describe the type(s) of water transfers that will be examined/utilized (i.e., conceived transfer methods include, but are not limited to: 1) interruptible water supply agreements; 2) long-term agricultural land fallowing; 3) water banks; 4) reduced consumptive use through efficiency or cropping changes while maintaining historic return flows; and 5) purchase by end users with leaseback under defined conditions). In addition, please describe how the transferable consumptive use will be calculated and quantified, and how return flow patterns will be addressed/maintained.

  The primary assumption will be that ownership of the transferred water rights will be held by an M&I end user. The alternative water transfer methods will include limited irrigation and long-term dry land cropping with some limited irrigation. The water transfers to be examined include the M&I user purchasing the water right with a leaseback to the original agricultural user for limited irrigation purposes and the acquisition and transfer of a portion of the water rights with a small percentage left on the farm or ranch for limited irrigation or to support dry land cropping. In addition, the revegetation or cropping issues associated with rotational fallowing and interruptible supple agreements will also be examined.

  Historical consumptive use is assumed to be calculated and quantified during the individual water court transfer process and historical return flows would be maintained. Under this scenario, a portion of the historical consumptive use would be leased back for the purpose of limited irrigation or to support dry land farming. An alternative scenario would be for the agricultural user to retain a portion of the historical consumptive use for limited irrigation at the time of sale to the M&I user.

- Program/Project Eligibility

  Please describe how the proposed program/project meets each of the following eligibility requirements (please see Criteria and Guidelines for additional information regarding the alternative water transfer methods/strategies that qualify for funding). Note: If these requirements are addressed in other parts of the

application you may simply reference the applicable section(s).

a) A description of how, if implemented, the proposed program/project will protect property and water rights.

Water rights to be acquired would be transferred through the water court process, providing the opportunity for protection of any potentially injured water rights. Property rights will not be impacted as a transaction would be via a willing seller-willing buyer arrangement.

b) Identified group(s) of agricultural users that are or may be willing to transfer a portion of their water and identified entity(s), group(s) or area(s) where the transferred water could or would be put to the new use and a description of the new use.

There have been and will continue to be numerous willing seller/willing buyer water rights acquisitions. This project will focus on agricultural users in Water Districts 1, 2, 3 and 64, but will not focus on specific ditch systems. The agricultural water rights in these water districts can be used by a significant number of entities from the Douglas County/South Metro area, the City of Aurora Prairie Waters/WISE Project, north metro water providers and water providers with existing or planned diversions in the Poudre basin. The new use would be for municipal and industrial.

c) The program/project must at a minimum conceptually describe the technical, institutional, and legal elements of the water transfer. Grant monies may be used to address one or more of these elements. If grant monies are not requested for all three elements, the grant applicant must describe how the applicant has or intends to address the elements, which are not included in the grant request, through other efforts.

A traditional agricultural transfer includes dry up covenants to insure that any transferred consumptive use will cease on the historically irrigated lands. This study will examine the technical and legal aspects associated with continued agricultural productivity on the historically irrigated lands that are the subject of a water transfer. The technical aspects will include the determination of transferrable consumptive use using these alternative transfer techniques and the continued consumptive use as a result of the alternative technique. Legal elements will include the likely water court issues associated with the transfers and if additional clarifying legislation would facilitate these alternative transfers.

d) If grant monies are proposed for use for legal assistance then the use of those funds shall be oriented toward advancing the knowledge of alternative agricultural water transfer methods and techniques; not for preparation of a specific water court case. The total requested funds for legal assistance shall not exceed 40 percent of the total grant request. In addition, grant monies proposed for use for legal assistance must be used to collaboratively address issues and concerns related to agricultural water transfer. Funds shall not be used to solely advance the cause of the project proponents.

None of the funds will be used for a specific water court case. The information developed from this project will be widely transferrable for use throughout the South Platte basin.

e) A minimum of a 10 percent cash match of total project cost (past expenditures and "in kind" can not be

counted toward the 10 percent match).

A 22% cash match is to be provided by the project sponsor/grantee.

- Program/Project Evaluation Criteria

The following grant evaluation criteria will be used by the CWCB to evaluate and make recommendations to fund, partially fund or not fund a grant application. The criteria are aimed at advancing alternative transfer methods from the literature and studies to actual on the ground projects/programs that provide reliable water supply and sustain key elements of the agricultural area from which the water is transferred. The applicant should fully address and explain in detail in the application how, and the extent to which, the proposed project/program meets each of the criteria. However, it should be noted that the project does not have to meet all of the criteria to be eligible to receive funding and the criteria below are not listed in any order of important or priority.

a) The proposed project/program builds upon the work of former alternative water transfer methods efforts and addresses key areas that have been identified (e.g. reduced transaction costs, presumptive consumptive use, and verification/administration issues). For more detailed information on this work, please refer to the draft technical memorandum, "*Alternative Agricultural Transfer Methods Grant Program Summary of Key Issues Evaluation," July 16, 2010.*

This project incorporates and builds upon the work from the Parker, FRICO and Super Ditch efforts.

b) Preference will be given to projects that provide additional matching resources in the form of cash, past expenditures and in-kind contributions that are in addition to the required 10% cash match.

This project provides a 22% cash match.

c) The proposed project/program has the ability/potential to produce a reliable water supply that can be administered by the State of Colorado, Division of Water Resources.

This project has been specifically designed to address the preference of M&I users in the South Platte basin for permanent, reliable supplies by allowing ownership to be in the hands of the M&I end user and achieving firm quantification of transferred consumptive use.

d) The proposed project/program produces information that is transferable and transparent to other users and other areas of the state (i.e., would provide an example "template" or roadmap to others wishing to explore alternate transfer methods).

The development of techniques for dryland cropping, limited irrigation and revegetation will be transferrable and transparent to all other users in the South Platte basin and may have general applicability throughout the state. The study will establish tables of potential crop yields and yield

variability under strict dryland and dryland with a minimal, fixed allocation of irrigation water. Maps will be prepared of soil type (water holding capacity), precipitation, and depth to groundwater (where data is available) that identify regions suitable for conversion to dryland cropping with and without a minimal, fixed allocation of irrigation water. This will include an evaluation of the suitability for specific crops and crop rotations (winter wheat, corn, millet, sunflower, and annual forages).

e) The proposed project/program addresses key water needs identified in SWSI or as identified in a basin's needs assessment.

This project specifically addresses the transfer of agricultural water rights that will occur to address a portion of the gap and the identified projects and processes from the South Platte and Metro Basin Round Tables needs assessments.

f) The proposed project/program advances the preservation of high value agricultural lands. Value can be viewed as: the value of crops produced, the value the agriculture provides to the local community, and the value the agricultural area provides for open space and wildlife habitat.

The identification of lands that are suitable for dryland farming, limited irrigation and revegetation will provide for a means to maximize the value and productivity of historically irrigated lands after a water transfer and maintain open space. Dryland crops such as millet can produce significant wildlife habitat.

g) The proposed project/program addresses water quality, or provides other environmental benefits to rivers, streams and wetlands.

The maintenance of agricultural productivity, either through dryland farming or limited irrigation or in the alternative, successful revegetation, will minimize soil erosion and the use of herbicides, resulting in benefits to water quality from reduced herbicide uses and environmental benefits to rivers streams and wetlands by promoting water infiltration and minimizing erosion.

h) The proposed project/program increases our understanding of and quantifies program/project costs. This could include: institutional, legal, technical costs, and third party impacts.

The study will establish tables of potential crop yields and yield variability under strict dryland and dryland with a minimal, fixed allocation of irrigation water. The study will also develop likely revegetation costs. Other costs to be analyzed include the crop insurance implications of having a specified volume of irrigation supply for a dry-land crop, the costs to the farmer to maintain an irrigation system, that would only be used infrequently to irrigate a dry-land crop and the property tax classification that would result if a dry land crop were to have very limited irrigation.

i) The proposed project/program does not adversely affect access to other sources of water (not subject to/participating in the program) where owners of these water rights may wish to pursue traditional transfer of their rights to other users.

This study specifically recognizes that traditional transfers will continue to occur and attempts to develop methods to minimize the impacts of traditional transfers.

j) The proposed project/program provides a perpetual water supply for the new and/or alternate use and preserves agricultural production and/or helps sustain the area's economy from which the transfer is occurring.

The proposed project results in a permanent supply for the end user. The project also will develop methods to maintain the maximum agricultural productivity, even under a traditional water transfer, thus sustaining the area's economy.

k) The quantity of water produced by the proposed project/program. Preference will be given to programs that can address larger water supply needs.

This project can address the entire amounts of agricultural water that is likely to be transferred to M&I use as identified in the 2050 Municipal and Industrial Gap Analysis Draft Technical Memorandum (CWCB, September 2010).

- Statement of Work

Provide the proposed statement of work. On the following page there is an example format for the statement of work. You can use the example format or your own format, provided that comparable information is included. The statement of work should outline by task how the proposed program/project will be accomplished. It is important that the statement of work detail the specific steps, activities/procedures that will be followed to accomplish each individual task and the overall program/project and the specific products/deliverables that will be accomplished. The statement of work must include but not be limited to: task description, key personnel, budget, schedule and deliverables and the final report/project documentation upon completion of the water activity.

The statement of work will form the basis for the contract between the Applicant and the State of Colorado. In short, the Applicant is agreeing to undertake the work for the compensation outlined in the statement of work and budget, and in return, the State of Colorado is receiving the deliverables/products specified. Please note that costs incurred prior to execution of a contract or purchase order are not subject to reimbursement.

Please provide a detailed statement of work using the following template. Additional sections or modifications may be included as necessary. Please define all acronyms. If a grant is awarded an independent statement of work document will be required with correct page numbers.

Statement of Work

WATER ACTIVITY NAME - Options for Maintaining Agricultural Productivity on Historically Irrigated Lands that are the Subject of Water Transfers

GRANT RECIPIENT – East Cherry Creek Valley Water and Sanitation District

FUNDING SOURCE – CWCB Alternative Agricultural Grant Program plus 22% cash match from grant recipient

INTRODUCTION AND BACKGROUND

Agricultural transfers are going to occur in the South Platte basin as predicted in the SWSI report. Many water providers prefer traditional transfers and require dry up covenants at time of purchase. As a result, most agricultural lands that are the subject of transfers no longer remain in any type of agricultural productivity. This Project will explore the opportunities to maintain some level of agricultural productivity on lands that are the subject of a water court transfer to M&I uses, either permanently or as part of a rotational fallowing or interruptible supply agreement. The two primary alternatives to revegetation of fallowed land that would be the subject of this Project are:

- dry-land farming
- dry-land farming with the allocation of a specified limited amount of water (limited irrigation) needed to provide greater assurances of producing a dry-land crop yield under most climatic conditions

While a priority will be placed in this study on developing alternatives to permanent dry-up and/or revegetation with native grasses, in some situations involving a permanent transfer of water rights, permanent revegetation is the most logical outcome due to the preference of the land owner or to soil and environmental conditions. The costs of revegetation will be compared with the alternative of dryland farming or limited irrigation.

OBJECTIVES

The objectives of this Project are to:

- examine the opportunities to maintain some level of productivity on lands that are the subject of water transfers, either through limited irrigation or dryland farming as a result of permanent dry-up or a rotational fallowing or interruptible supply agreement
- continue the field studies on revegetation currently being conducted by Colorado State University at LaSalle, CO
- compare the costs and issues with limited irrigation, dryland farming, rotational fallowing or revegetation with native grasses resulting in no agricultural activity
- develop tables of potential crop yields and yield variability under strict dryland and dryland with a minimal, fixed allocation of irrigation water (limited irrigation).
- prepare mapping of soil type (water holding capacity), precipitation, and depth to groundwater (where data are available) that identify regions suitable for conversion to dryland cropping with and without a

minimal, fixed allocation of irrigation water. This will include an evaluation of the suitability for specific crops and crop rotations (winter wheat, corn, millet, sunflower, and annual forages).

TASKS

TASK 1 – Conversion to dry land farming and limited irrigation

Description of Task

As an alternative to revegetation/fallow when converting irrigated land to dryland, allowing for a minimal, fixed allocation of irrigation water has the potential to eliminate the need for fallowing, reduce the risk of crop failure and soil degradation, and significantly increasing productivity and profit. The specific amounts and timings of these limited irrigation allocations will vary by crop and location. For example, some dryland crops like winter wheat would benefit significantly from being able to fill the soil profile prior to planting. Other crops, like corn, are dependent on water availability during critical growth stages like silking/tasselling. Thus, water transfer agreements that include for some limited irrigation should be specific in amounts and timings.

The issues and costs associated with the conversion or historically irrigated land to dry land farming and limited irrigation will be examined. The challenges in converting land from irrigated to dry land crops include

a. the suitability of various soil types for conversion to dry land crops
b. the general locations of irrigated lands that are more suitable for dry land crops

Method/Procedure

Existing research, including the Parker study and other existing/new research will evaluate the amount and timing of water that would be needed to provide increased assurances of a dry land crop yield under most climatic conditions for contrasting dryland crops and crop rotations (ie: winter wheat-summer fallow, winter wheat-corn-summer fallow, winter wheat-annual forage crop-summer fallow.

Deliverable

- Tables of potential crop yields and yield variability under strict dryland and dryland with a minimal, fixed allocation of irrigation water.

TASK 2 – Revegetation of previously irrigated lands

Description of Task

Colorado State University has been evaluating several cover crop options on a farm near LaSalle, Colorado. These revegetation field studies, at risk due to lack of funding, will be continued. The goal is to provide cover crop recommendations for farmers who need to temporarily fallow irrigated land such as under a rotational

following or interruptible supply agreement, assume dryland production, or establish grasses in formerly irrigated fields that are subject to dry-up covenants.

Temporary or permanent loss of irrigation water from farms in the semi-arid climate of Colorado can result in severe economic and ecological problems. Abruptly halting intensively managed irrigated crop production may result in several negative consequences: residual soil nutrients threaten water quality, weed infestations cause aesthetic and nuisance complaints from neighbors, wind and water erosion can be significant, and compaction and salinity can initially limit non-irrigated crop and restoration planting choices. The soil conditions that exist after decades of farming are not conducive to permanent grass establishment and are often impeded by soil salinity, compaction, low organic matter, and poor infiltration (Sutherland et al, 1988). Weeds tend to exploit the higher levels of plant-available nutrients, particularly nitrogen in these soils, giving them a competitive advantage over desirable perennial vegetation. For example, evaluations documented adequate cover on only 35% of re-vegetation trials in southeast Colorado (Sutherland and Knapp, 1990). Using cover crops may bridge the transition from irrigated to dryland crop production or grassland, or provide an interim solution to weed and soil management while waiting for irrigation water restoration under a rotational fallowing or interruptible supply agreement.

Method/Procedure

The ongoing field demonstration of alternative techniques for revegetating land will be continued at the CSU LaSalle site. This work has generated considerable interest from local landowners. However, many questions remain regarding the proper conversion of dewatered irrigated land, particularly where water is unavailable for establishment of new vegetation. Additional research on weed control, soil ecological health, localized grass species selection, and appropriate planting techniques will be conducted to provide better recommendations for landowners facing temporary or permanent loss of irrigation water.

Deliverable

- Revegetation fact sheet.

TASK 3 – Identification and mapping of lands by suitability for revegetation, dry land or limited irrigation

Description of Task

Identification and mapping of lands by suitability for revegetation, dry land or limited irrigation will be performed based on results of Tasks 1 and 2.

Method/Procedure

SPDSS and other GIS layers of irrigated acreage, soil types, precipitation and depth to groundwater (where available) will be used to identify regions and soil types suitable for dryland cropping with and without minimal fixed allocation of water will be identified based on criteria developed in Tasks 1 and 2.

Deliverable

- Maps of soil type (water holding capacity), precipitation, and depth to groundwater (where data are available) that identify regions suitable for conversion to dryland cropping with and without a minimal,

fixed allocation of irrigation water. This will include an evaluation of the suitability for specific crops and crop rotations (winter wheat, corn, millet, sunflower, and annual forages).

TASK 4 – Economic issues with conversion to dry land or limited irrigation

Description of Task

The following economic issues associated with the possible conversion of irrigated land to dryland or limited irrigation will be examined:

- The crop insurance implications of having a specified volume of irrigation supply for a dry-land crop
- The costs to the farmer to maintain an irrigation system, that would only be used infrequently to provide limited irrigation for a dry-land crop
- The likely property tax classification that would result if a dry land crop were to have very limited irrigation
- The net economic production of this land under conventional dry-land and partial irrigation/dry-land cropping

Method/Procedure

Inquiries will be made with the respective agencies responsible for crop insurance and property tax classification. For example, interviews will be conducted with the impacted tax assessors to determine the likely tax classification for formerly irrigated lands that are converted to dryland cropping, limited irrigation or permanently fallowed. Contacts may be made with county commissioners to assess their opinions based on feedback from the tax assessors. Irrigation equipment and maintenance vendors and agricultural users will be contacted for feedback on costs of maintaining irrigation systems and the likelihood of irrigation users using limited irrigation techniques.

Deliverable

- List of issues and costs associated with crop insurance, maintenance of irrigation systems and property tax classifications. Tables of potential crop yields and yield variability under strict dryland and dryland with a minimal, fixed allocation of irrigation water.

TASK 5 – Water Court Transfer issues

Description of Task

This task will examine the technical and legal aspects associated with continued agricultural productivity on the historically irrigated lands that are the subject of a water transfer.

Method/Procedure

The technical aspects will include the determination of transferrable consumptive use using these alternative transfer techniques and the continued consumptive use as a result of the alternative technique. Legal elements will include the likely water court issues associated with the transfers and if additional clarifying legislation would facilitate these alternative

Deliverable

- The results of this task will be incorporated into the final report

TASK 6 – Benefits to M&I end users

Description of Task

Colorado Water Law allows the Water Court to require revegetation for certain water rights transfers, but there is little information available to facilitate successful revegetation or to explore alternative agricultural systems. The comparative costs to M&I users under a standard dry-up covenant vs. dryland cropping or limited irrigation will be evaluated.

Method/Procedure

The relative costs of revegetation vs. dryland cropping or limited irrigation will have been documented in previous tasks. This task will evaluate the potential benefits to M&I users in avoiding revegetation or other mitigation costs and include the value of water that could remain with the historically irrigated land under a limited irrigation scenario. Several M&I end users will be contacted to present potential benefits and evaluate interest in alternatives to permanent dry-up/fallowing.

Deliverable

- The results of this task will be incorporated into the final report

TASK 7 – Project Management, Coordination and Reporting

Description of Task

Project management, grant administration and reporting and coordination of consulting team and meetings with CWCB staff. Progress reporting to CWCB will occur every 6 months.

Method/Procedure

CWCB will be provided a progress report every 6 months, beginning from the date of the executed contract. The progress report will describe the completion or partial completion of the tasks identified in the statement of work including a description of any major issues that have occurred and any corrective action taken to address these issues. Project coordination meetings with the consulting team and informational meetings with CWCB staff will be held throughout the project.

Deliverable

- Progress reports every 6 months

TASK 8 - FINAL DELIVERABLE

Description of Task

A final report will be prepared that summarizes the project and documents how the project was completed.

Method/Procedure

Deliverables and results from Tasks 1-7 will be incorporated into the final report.

Deliverable

- Final report

BUDGET

See attached detailed budget

SCHEDULE

Provide a project schedule including key milestones for each task and the completion dates or time period from the Notice to Proceed (NTP). This dating method allows flexibility in the event of potential delays from the procurement process. Sample schedules are provided below. Please note that these schedules are examples and will need to be adapted to fit each individual application.

Task	Start Date	Finish Date
Task 1 - Conversion to dry land farming and limited irrigation	Upon NTP	NTP + 180 days
Task 2 - Revegetation of previously irrigated lands	Upon NTP	NTP + 180 days
Task 3 - Identification and mapping of lands by suitability for revegetation, dry land or limited irrigation	NTP + 60 days	NTP + 180 days
Task 4 - Economic issues with conversion to dry land or limited irrigation	NTP + 120 days	12/31/11
Task 5 - Water Court Transfer issues	NTP + 60 days	12/31/11
Task 6 - Benefits to M&I end users	NTP + 120 days	12/31/11
Task 7 - Project management and coordination	Upon NTP	12/31/11
Task 8 - Summary Report and reproduction	NTP + 240 days	12/31/11

NTP = Notice to Proceed

PAYMENT

Payment will be made based on actual expenditures and invoicing by the applicant. Invoices from any other entity (i.e. subcontractors) cannot be processed by the State. The request for payment must include a description of the work accomplished by major task, and estimate of the percent completion for individual tasks and the entire water activity in relation to the percentage of budget spent, identification of any major issues and proposed or implemented corrective actions. The last 5 percent of the entire water activity budget will be withheld until final project/water activity documentation is completed. All products, data and information developed as a result of this grant must be provided to the CWCB in hard copy and electronic format as part of the project documentation. This information will in turn be made widely available to the public and help promote the development of alternative agricultural transfer methods.

Additional Information – If you would like to add any additional pertinent information please feel free to do so here.

The above statements are true to the best of my knowledge:

Signature of Applicant:

Print Applicant's Name: Dave Kaunisto

Project Title: District Manager

Return this application to:

Mr. Todd Doherty
Colorado Water Conservation Board
Water Supply Planning Section
1580 Logan Street, Suite 200
Denver, CO 80203
Todd.Doherty@state.co.us

Budget for ECCV Study

Options for Maintaining Agricultural Productivity on Historically Irrigated Lands that are the Subject of Water Transfers

	DiNatale Water Consultants		Colorado State University			Subconsultants for GIS and Map Preparation, Peer Review, Report Preparation and Reproduction				Water Court Analysis		Project Total	Grant Request Total*	Cash Match from Grantee	Cash Match Percent of Grant
Tasks	Senior Engineer $170	Total	Labor Lump Sum	Other Direct Costs Lump Sum	CSU Subtotal	Senior Peer Reviewers $200	GIS Specialist $80	Word Processing $80	SUBTOTAL	Attorney $200	Total	All Costs			
Task 1 - Conversion to dry land farming and limited irrigation	20	$3,400	33,000	10,000	43,000	10			2,000		-	48,400	39,797	8,603	22%
Task 2 - Revegetation of previously irrigated lands	20	$3,400	5,000	3,000	8,000	10			2,000		-	13,400	11,018	2,382	22%
Task 3 - Identification and mapping of lands by suitability for revegetation, dry land or limited irrigation	20	$3,400	5,000				40		3,200		-	6,600	5,427	1,173	22%
Task 4 - Economic issues with conversion to dry land or limited irrigation	60	$10,200			-	16			3,200		-	13,400	11,018	2,382	22%
Task 5 - Water Court Transfer issues	20	$3,400			-				-	32	6,400	9,800	8,058	1,742	22%
Task 6 - Benefits to M&I end users	40	$6,800			-				-		-	6,800	5,591	1,209	22%
Task 7 - Project management and coordination	40	$6,800			-				-		-	6,800	5,591	1,209	22%
Task 8 - Summary Report and reproduction	60	$10,200	5,000		5,000	20	12	24	6,880		-	22,080	18,156	3,924	22%
Subtotal Hours	280		N/A	N/A	N/A	56	52	24		32					
Subtotal Labor		$47,600	$48,000		$ 48,000	$11,200	$4,160	$1,920	$17,280		$6,400	$ 119,280	$ 98,079	$ 21,201	22%
Other Direct Costs		$ 1,050		$13,000	$ 13,000	$300	$400	$800	$1,500		$200	$15,750	$12,951	$2,799	22%
Total	$ -	$ 48,650	$ 48,000	$ 13,000	$ 61,000	$ 11,500	4,560	2,720	$ 18,780	$ -	$ 6,600	$ 135,030	$ 111,030	$ 24,000	22%

Other Direct Costs							
Item:	Copies (Black & White)	Copies (Color)	Materials	Equipment and Supplies	Mileage	CSU ODCs	Total
Units:	No.	No	Lump Sum	Lump Sum	Miles	Lump Sum	
Unit Cost:	$ 0.10	$ 1.00			$ 0.550		
Task 1 - Conversion to dry land farming and limited irrigation					400	$ 10,000	
Task 2 - Revegetation of previously irrigated lands					400	$ 3,000	
Task 3 - Identification and mapping of lands by suitability for revegetation, dry land or limited irrigation	100	50	200		400		
Task 4 - Economic issues with conversion to dry land or limited irrigation					600	$ -	
Task 5 - Water Court Transfer issues					300	$ -	
Task 6 - Benefits to M&I end users					300	$ -	
Task 7 - Project management and coordination					600	$ -	
Task 8 - Summary Report and reproduction	1,200	500			400	$ -	
Total Units:	1,300	550	200	0	3,400		
Total Cost:	$130	$550	$200	$0	$1,870	$13,000	$15,750