COLORADO
Colorado Water Conservation Board
Department of Natural Resources

1313 Sherman Street, Room 721
Denver, CO 80203

November 19, 2014

Ms. Marilyn Morrissey, Senior Research Administrator
Mr. Dale Manning, Assistant Professor
Colorado State University
Sponsored Programs
2002 Campus Delivery
Fort Collins, CO 80523

RE: Notice to Proceed – WSRA Grant – Economic Analysis & Design of Policies to Reduce Colorado's Groundwater Use in the Northern High Plans Groundwater Basin

Dear Grantee:

This letter is to inform you that the contract request for the WSRA grant to assist in the above project in the South Platte River Basin was approved on November 14, 2014.

With the executed contract, you are now able to proceed with the project and begin invoicing the State of Colorado for costs incurred through March 31, 2017. Upon receipt of your invoice(s), the State of Colorado will provide payment no later than 45 days after signed approval by the project manager. I wish you much success in your project.

Sincerely,

/s/

Craig Godbout
Program Manager
Colorado Water Conservation Board
Water Supply Planning Section
1313 Sherman St, Rm. 721
Denver CO 80203
(303) 866-3441, ext 3210 (office)
~~*(303) 547-8061 (cell)*~~
craig.godbout@state.co.us

Attachments

CMS#74133

STATE OF COLORADO
Colorado Water Conservation Board
INTERAGENCY AGREEMENT
with
Board of Governors of the Colorado State University System acting by and through Colorado State University
Contract Number CTGG1 2015-1793

1. PARTIES

This Interagency Agreement (hereinafter called "Agreement") is entered into by and between the Colorado Water Conservation Board (hereinafter called "Payor"), and the Board of Governors of the Colorado State University System acting by and through Colorado State University (hereinafter called "Payee"), who may collectively be called the "Parties" and individually a "Party", both of which are agencies or higher education institutions of the STATE OF COLORADO, hereinafter called the "State".

2. EFFECTIVE DATE AND NOTICE OF NONLIABILITY.

This Agreement shall not be effective or enforceable until it is approved and signed by the Colorado State Controller or designee (hereinafter called the "Effective Date"), but shall be effective and enforceable thereafter in accordance with its provisions.

3. RECITALS

A. Authority, Appropriation, And Approval

Authority to enter into this Agreement exists pursuant to State Fiscal Rule 3-3 and funds have been budgeted, appropriated and otherwise made available pursuant to Colorado Revised Statutes (CRS) 39-29-109(2)(c), 37-75-104(2)(c) and 37-75-102 et al., and Senate Bill 06-179 adopted by the 2006 General Assembly and a sufficient unencumbered balance thereof remains available for payment. Required approvals, clearance and coordination have been accomplished from and with appropriate agencies.

B. Purpose

The Water Supply Reserve Account provides money for grants and loans to complete water activities, which are broadly defined and include water supply and environmental projects and/or studies. This Grant is for the Economic Analysis and Design of Policies to Reduce Colorado's Groundwater Use in the Northern High Plains Ground Water Basin in the South Platte River Basin.

4. TERM AND EARLY TERMINATION

A. Term-Work Commencement

The Parties respective performances under this Agreement shall commence on the later of either the Effective Date or November 1, 2014. This Agreement shall terminate on March 31, 2017 unless sooner terminated or further extended as specified elsewhere herein. Either Party may terminate this Agreement by giving the other Party 30 days prior written notice setting forth the date of termination. Upon termination the liabilities of the Parties for future performance hereunder shall cease, but the Parties shall perform their respective obligations up to the date of termination.

5. STATEMENT OF WORK

A. Work

Payee shall complete the Work and its other obligations as described herein and in **Exhibit A** on or before March 31, 2017.

B. Goods and Services

Payee shall procure goods and services necessary to complete its obligations. Such procurement shall be accomplished using Agreement Funds and shall not increase the maximum amount payable hereunder by Payor.

6. PAYMENTS-MAXIUM AMOUNT

The maximum amount payable under this Agreement to Payee by Payor is $159,882. Payor shall make payment for purchases of goods and services within 45 days after receipt of valid invoices from Payee. Payments shall be made by an interagency transfer in lieu of a State warrant whenever possible. The maximum amount payable by Payor to Payee during each State fiscal year of this Agreement shall be:

$159,882 in FY2015
$159,882 in FY2016, minus any funds expended in FY2015
$159,882 in FY2017, minus any funds expended in FY2016, and FY2015

7. RECORDS-MAINTENANCE AND INSPECTION

A. Maintenance

During the term of this Agreement and for a period terminating upon the later of **(i)** the five year anniversary of the final payment under this Agreement or **(ii)** the resolution of any pending Agreement matters (the "Record Retention Period"), each Party shall maintain, and allow inspection and monitoring by the other Party, and any other duly authorized agent of a governmental agency, of a complete file of all records, documents, communications, notes and other written materials, electronic media files, and communications, pertaining in any manner to the work or the delivery of services or goods hereunder.

B. Inspection

Payor shall have the right to inspect Payee's performance at all reasonable times and places during the term of this Agreement. Payee shall permit Payor, and any other duly authorized agent of a governmental agency having jurisdiction to monitor all activities conducted pursuant to this Agreement, to audit, inspect, examine, excerpt, copy and/or transcribe Payee's records related to this Agreement during the Record Retention Period to assure compliance with the terms hereof or to evaluate performance hereunder. Monitoring activities controlled by Payor shall not unduly interfere with Payee's performance hereunder.

8. CONFIDENTIAL INFORMATION-STATE RECORDS

Each Party shall treat the confidential information of the other Party with the same degree of care and protection it affords to its own confidential information, unless a different standard is set forth in this Agreement. Each Party shall notify the other Party immediately if it receives a request or demand from a third party for records or information of the other Party.

9. FAILURE TO PERFORM-DISPUTES

The failure of a Party to perform its respective obligations in accordance with the provisions of this Agreement is a breach of this Agreement. In the event of disputes concerning performance hereunder or otherwise related to this Agreement, the Parties shall attempt to resolve them at the divisional level. If this fails, disputes shall be referred to senior departmental management staff designated by each Party. If this fails, the executive director of each Party shall meet and attempt resolution. If this fails, the matter shall be submitted in writing by both Parties, or either of them, to the State Controller, whose decision shall be final.

10. NOTICE AND REPRESENTATIVES

Each individual identified below is the principal representative of the designating Party. All notices required to be given hereunder shall be hand delivered with receipt required or sent by certified or registered mail to such Party's principal representative at the address set forth below. In addition to, but not in lieu of a hard-copy notice, notice also may be sent by e-mail to the e-mail addresses, if any, set forth below. Either Party may from time to time designate by written notice substitute addresses or persons to whom such notices shall be sent. Unless otherwise provided herein, all notices shall be effective upon receipt.

Payor:

Craig Godbout, Program Manager, Water Supply Planning Section
Colorado Water Conservation Board
1313 Sherman Street, Rm. 718
Denver, CO 80203
Craig.godbout@state.co.us

Payee:

Dale Manning, Assistant Professor
Co State University
2002 Campus Delivery
Fort Collins, CO 80523-2002
Dale.manning@colostate.edu

11. GENERAL PROVISIONS

A. Assignment

The rights and obligations of each Party hereunder are personal to such Party and may not be transferred, assigned or subcontracted without the prior, written consent of the other Party.

B. Order of Precedence

In the event of conflicts or inconsistencies between this Agreement and its exhibits and attachments, such conflicts or inconsistencies shall be resolved by reference to the documents in the order of priority: exhibits and attachments first; this Agreement second.

C. Third Party Beneficiaries-Negation

Enforcement of all rights and obligations hereunder are reserved solely to the Parties. Any services or benefits which third parties receive as a result of this Agreement are incidental and do not create any rights for such third parties.

CTGG1 2015-1793
CMS# 74133

12. SIGNATURE PAGE

THE PARTIES HERETO HAVE EXECUTED THIS INTERAGENCY AGREEMENT

*** Persons signing for Parties hereby swear and affirm that they are authorized to act on behalf of their respective Party and acknowledge that the other Party is relying on their representations to that effect.**

STATE OF COLORADO
John W. Hickenlooper, Governor

Board of Governors of the Colorado State University System acting by and through Colorado State University

Douglas Leavell
Signature

By: Douglas Leavell
Title: Director, Sponsored Programs

Date: 10-17-14

Department of Natural Resources
Mike King, Executive Director

Rebecca Mitchell

By: Rebecca Mitchell Chief,
Water Supply Planning Section, CWCB
Signatory avers to the State Controller or delegate that Grantee has not begun performance or that a Statutory Violation waiver has been requested under Fiscal Rules

Date: 10-28-14

ALL CONTRACTS REQUIRE APPROVAL BY THE STATE CONTROLLER

STATE CONTROLLER
Robert Jaros, CPA, MBA, JD

By: Teresa Bonny

Date: 11/14/14

Exhibit A

Water Activity Name: Economic Analysis and Design of Policies to Reduce Colorado's Groundwater Use in the Northern High Plains Ground Water Basin

Grant Recipient: Colorado State University

Funding Source: Statewide Water Supply Reserve Account with matching funds from CSU and the South Platte Basin Roundtable

Project Team: Dale Manning (PI, Assistant Professor, Department of Agricultural and Resource Economics (DARE), Colorado State University), Jordan Suter (Co-PI, Assistant Professor, DARE), Christopher Goemans (Co-PI, Associate Professor, DARE), and MaryLou Smith (Policy and Collaboration Specialist, Colorado Water Institute Policy and Collaboration Specialist)

In collaboration with: The Water Preservation Partnership

Introduction and Background:

Colorado residents in the Northern High Plains Ground Water Basin (NHPGWB) face significant challenges related to groundwater use in the basin. Groundwater pumping within the basin currently exceeds recharge by close to 400,000 acre-feet per year, a deficit that cannot be sustained.[1] Realizing the potentially devastating social and economic impacts associated with continued pumping at these levels, representatives from each of the basin's eight management districts formed the Water Preservation Partnership (WPP).[2] The challenges facing the WPP are determining (1) by how much pumping should be reduced and (2) which policies should be used to achieve the desired reductions. The WPP has identified a lack of information surrounding the economic impacts of different levels of reductions, the effectiveness of different policies, and the preferences of the producers within each of their districts as the immediate barriers preventing the adoption of policy measures.

Objectives:

The primary goal of this project is to provide the WPP with the information needed to develop, and get support for, long-term solutions to the over-pumping problem, while at the same time promoting wise water use in the short-run through the targeted dissemination of information about the problem and strategies for water conservation best management practices. A reduction in pumping is inevitable, either as wells begin to run dry due to continued over pumping or as a result of polices developed as part of a coordinated effort from pumpers in the area that is designed to promote the long-term sustainable use of the aquifer while minimizing the economic impacts of the reductions. Again, the question is by how much and by what means should the reductions be achieved.

Since all of the groundwater users distributed throughout the aquifer are connected in complex ways, and there exists a significant amount of heterogeneity in the production practices and lands of producers

[1] This figure is based on previous work done by Slattery and Hendrix Engineering. On average, the basin uses 947,291 acre-feet per year, of which 749,880 comes from agricultural well pumping. The average recharge rate is just 550,997 acre-feet per year, leaving a deficit of 396,294 acre-feet.

[2] The WPP mission is to lead water conservation efforts and initiate the implementation of policies that will minimize the impacts of the inevitable reduction in groundwater pumping.

throughout the area, reducing agricultural water will require a coordinated, yet flexible, conservation strategy. Moreover, given agricultures' role in the regional economy (accounting for roughly half of economic activity), impacts to the larger economy must be considered in addition to those on the agriculture sector.

Members of the WPP have already begun considering alternative ways to encourage farmers to reduce groundwater use in order to extend the economic viability of the aquifer, however, there is limited understanding of how different conservation policies may affect economic outcomes across water users and regions over time. The proposed analysis will provide the WPP and producers throughout the region with information on the economic impacts of a set of potential policy alternatives as well as assess the acceptability among constituents of these policies. Specifically, a dynamic cost-benefit analysis of policies will reveal the distribution of costs and benefits across the management districts over time while outreach and surveys will be used to inform constituents and elicit their preferences towards particular policies. The proposed project will be carried out over two+ years (January 2015-March 2017).

The following provides a detailed overview of each of the tasks that will be completed as part of the project:

Task 1: Development of Dynamic, Hydrologic-Economic Model

Description of Task

Any reduction in pumping is likely to impact agricultural pumpers throughout the region. The timing and magnitude of the impacts on production will differ depending on the policy implemented. Moreover, agricultural industries in the Northern High Plains Ground Water Basin represent a key component of the regional economy (Pritchett and Thorvaldson, 2008); the value of agricultural production represents roughly 50% of the regional economy. Because significant linkages exist between agriculture and other sectors of the local economy, a reduction in water supply will impact producers as well as the local economy as a whole. Task 1 will involve the development of a dynamic hydrologic-economic model capable of estimating the impact of reductions in pumping (different levels and at different times) on agricultural producers and the broader economy across the next 100 years. Importantly, output from the model will illustrate, over the short and long-term, the magnitude and the distribution of costs and benefits across farmers and in the broader local economy. The economic assessments will account for the complex hydrology of the groundwater system, as well as the heterogeneity in production practices and lands that exist throughout the region.

Method/Procedure

The project team will develop a dynamic, hydrologic-economic model of the NHPGWB incorporating the previous hydrologic modelling efforts of Slattery and Hendrix Engineering, input from members of the WPP, and feedback obtained from focus groups. The model will be spatially explicit and capable of analyzing short- and long-run effects of different levels of aquifer pumping on agricultural production. It will allow us to look at economic impacts across time and among different types of water users. The agricultural sector model will account for differences in groundwater levels, saturated thickness, soil type, and precipitation at various points in the aquifer. It will also account for changes in these variables over time. We will build off the work of Jim Slattery (previously funded by the Republican River Water Conservation District) to integrate our model of the agricultural sector with an accurate representation of the hydrology in the region.

Agricultural profits over a period of 100 years will be estimated under the proposed policy alternatives and compared to the baseline of current use levels. In modeling policy impacts, an important input into the economic model is how crop yields respond to deficit irrigation. For example, the first 12 inches of water applied per acre may greatly increase yields and profits. Additional water application above 12 inches will continue to increase yields but by a smaller amount than the first 12. At some quantity of water application, applying additional water may cost more than the value of the yield increase that it brings about. We will work with farmers and agronomists to construct an appropriate water/yield curve for the major crop(s) that reflects the conditions faced by producers. Current water-use rates will be used to construct the baseline scenario.

A model of the regional economy, capturing the linkages between agriculture and other economic sectors (e.g., retail and manufacturing), will overlay the base model and be used to illustrate indirect impacts of various pumping polices on the general economy. Specifically, the model will estimate the impacts of changes in groundwater pumping and agricultural production on regional economic activity, household income, and employment opportunities.

Deliverable

In addition to the model, which will be made publicly available, a report outlining the agricultural and economy-wide impacts associated with different reductions in pumping will be completed. A synopsis of this report will be prepared for submission to an outlet similar to the Colorado Water Institute's Colorado Water. Oral presentations of project findings will be given to the WPP and other interested parties. Most importantly, output from the analysis will be incorporated into the producer survey (Task 3).

Task 2: Education and Outreach

Description of Task

Public understanding of the problem and options available are critical to the ability of the WPP to promote and implement policy initiatives. This component of the project will revolve around the dissemination of a series of outreach materials designed to (a) educate groundwater users about the state of groundwater pumping, (b) provide them information about best management practices, and (c) inform them of the modelling results.

Method/Procedure

This task will focus on utilizing public meetings, focus groups, print advertisements, mailings, etc. to educate the public on the problem faced by groundwater users throughout the NHPGWB. A variety of tools will be utilized to maximize public understanding of the overall problem faced by groundwater users. The particular tools utilized will be determined in conjunction with the WPP; however, they potentially include public meetings, newspaper articles, radio and print advertisements, mailings, flyers, social media presence, and brochures.

In addition, the WPP plans to host a series of meetings with the general public as well as meetings with individual groundwater management districts throughout the Basin to provide accurate information about declining aquifer levels. To ensure that the information reaches broadly, the WPP plans to partner with area organizations (e.g., management districts). The first series of public meetings will be held prior to the release of the economic analysis in order to develop understanding of the physical problem facing area irrigators. A second set of public meetings is planned after the final report and survey are completed to share the findings with the public.

Following the outreach component of this project, pumping data will be analyzed to identify the short-term effects of this information on water use.

Deliverable

Outreach materials created for this portion of the project will be made available online. Estimates of the impacts on water use resulting from the education materials will be incorporated into the final report. Feedback collected during public meetings and focus groups will be incorporated into Tasks 1 and 3.

Task 3: Producer Survey

Description of Task

Once the distributional impacts of policy alternatives are known, we will administer a survey that elicits groundwater users' preferences over the different policies. As part of the survey, we will collect (anonymous) baseline information on farm and farmer characteristics that may explain attitudes toward specific policies.[3] The survey will be analyzed to explore differences across farms and across water management districts. Together with the economic analysis, survey results will provide the baseline information needed by the WPP and management districts to design a politically viable policy aimed at water conservation in the Basin.

Method/Procedure

The survey will be designed by the project team in conjunction with members of the WPP. Prior to mailing, feedback on the survey will be obtained from focus groups. The survey will then be mailed to members of each of the groundwater districts and made available online. In addition to collecting baseline information, the survey will be designed to elicit producer's preferences regarding the type of policy they would like to see implemented as well as the preferred timing of the policy.

Potential conservation policies typically fall under two categories: quantity caps and water use fees. Quantity caps place a limit on the quantity of water each farm or field can use. Limits can be the same or vary by farm or district based on cropping patterns, soil type, historical water use, etc. Normally caps can be used across several years and in some cases (e.g., farmers on the Nebraska side of the Republican River) markets exist to give farmers the option to buy more water if necessary or sell unused water.

A fee-based policy would entail charging irrigators for each unit of water they apply above a particular threshold. Fees can consist of a flat rate, or a fee schedule depending on water use. A key component of a fee-based policy is deciding how to use the revenue. In other contexts (e.g., the San Luis Valley in Colorado), revenue has been used to subsidize water conservation and/or rent land to fallow. Revenue can be used in conjunction with other programs (e.g., CREP, EQIP, AWEP) to increase impacts.

Within each of these categories a wide-range of alternatives exists depending on the details of implementation (examples above). This includes using a combination of both types of policies. A choice-experiment style approach will be used to elicit producer's preferences for the different types of policies and the details of those policies. The particular policies presented in the survey will be based on the analysis completed in Task 1 and conversations with members of the WPP.

[3] Potentially important information includes acres farmed, conservation attitudes, years farming, age, willingness to participate in voluntary programs, etc.

Deliverable

Survey results will be presented to the WPP, presented at outreach talks, and incorporated into the analysis completed in Task 4 and the final report.

Task 4: Policy Recommendations

Description of Task

Based on modelling (Task 1) and survey (Task 3) results, the project team will outline a set of recommended polices that reflect the findings of the economic modelling and the producer preference survey.

Method/Procedure

Results from Task 1 will be combined with the analysis of the survey to create a ranking of policy options. Potential policies will be ranked based on their ability to reduce pumping, their impact on producers and the regional economy, and likely acceptability of the policy based on the survey.

Deliverable

The project team will prepare and deliver a detailed report for decision makers of the WPP. The final report will be submitted to the CWCB and also made available on the WPP website. A project summary will also be prepared for submission to an outlet similar to the Colorado Water Institute's *Colorado Water*. In addition to the project summary, a series of fact sheets will be prepared and delivered to the WPP. Oral presentations of project findings will be given to the WPP and other interested parties.

Future Work: Policy Implementation

Future work, beyond the timeline for the funding, will involve the planning required for implementing the preferred policy. Two broad areas must be considered. First, the appropriate institutions must be used to develop and enforce the policy. This will include the appropriate time for incorporating constituent feedback and other institutional requirements. Second, the researchers will provide information to the public about the policy to help irrigators plan for how best to respond to the policy's implementation. Survey results will inform communication between the research team and the irrigators. Potential methods for disseminating the information include:

1. Town meeting
2. Newspaper articles
3. Information by mail

In addition, we will conduct a follow-up survey that will investigate changes that occur as a result of the policy. We will also utilize pumping-rate data collected by the State of Colorado to assess how the policies influence the choices made by irrigators. We will also ask about acceptance of the policy and investigate if it is achieving the goals of the individual farmers and of the Basin as a whole. Results of the follow-up survey will allow verification of model predictions about the size and distribution of the costs and benefits of the implemented policy.

Summary of Project Deliverables Across all Tasks

Two summary reports will be generated. The first report will outline the dynamic hydrologic-economic model and results, while the second will be a final report detailing project findings and recommendations. Both reports will be made available to the WPP and CWCB, as well as being posted online. A project summary will also be prepared for submission to an outlet similar to the Colorado Water Institute's *Colorado Water*. In addition to the project summary, a series of fact sheets will be prepared and delivered to the WPP. All materials developed as part of the project will be made publically available. This includes the economic model, outreach materials, and survey developed as part of Tasks 1, 2, and 3. Oral presentations of project findings will be given to the WPP and other interested parties.

Budget

The project team is requesting a total of $159,882. Five percent of that amount ($7,994) is being requested as matching funds from the South Platte Roundtable Basin Funds account, representing the minimum match required. The remaining $151,888 is being requested from the Statewide Account. Colorado State University is providing a matching amount equivalent to approximately 30 percent of the total requested amount. A detailed breakdown of the budget and a budget justification follows.

Table 1: Budget Breakdown

Category		CWCB	CSU Match	Total
Personnel	Faculty time	$48,591	$26,421	$75,012
	Graduate Research Assistant	27,146		27,146
	Colorado Water Institute Policy and Collaboration Specialist	15,022		15,022
Fringe Benefits		16,186	6,152	22,338
Travel - Domestic		5,880		5,880
Materials		227		227
Other	Survey and Outreach Mailing Costs	7,273		7,273
	Publication/Presentation Design and Production	2,000		2,000
	Meeting Space and Refreshments	1,400		1,400
	Consultants - Slattery and Hendrix Engineering	6,000		6,000
	GRA Tuition	9,303		9,303
Total Direct Costs		$139,028	$32,573	$171,601
15% Indirect (CWCB)		20,854		20,854
48.7% Indirect (CSU)			15,863	15,863
Total		$159,882	$48,436	$208,318

Budget Justification - CWCB

Personnel

1. Faculty Time: 2 months in year 1 (1.5 mos Manning @ $9203/mo & 0.5 mo Suter @ $9918/mo) and 3 months in year 2 (1.5 mos Manning @ $9571/mo & 1.5 mos Suter @ $10315/mo) for activities related to Tasks 1-4. This includes modelling (e.g., development, runs, and analysis), outreach (e.g., meetings in Wray, presentation of results, etc.), and survey (e.g., design, implementation and analysis) related activities, in addition to time for completing the final report.

2. Graduate Research Assistant: 7.5 months per year (@ $1774/mo in Y1 with 4% annual increase) for data collection, model development, and administering the survey.
3. Colorado Water Institute Policy and Collaboration Specialist: .93 months in years one and two to facilitate meetings of the WPP, meetings of groundwater management districts, and public meetings to assist in educating about and gaining support for the need for pumping reduction policies. Based on a current salary of $7918/mo and 4% annual increase.

Fringe Benefits

4. Fringe benefits are calculated at estimates for each category and fiscal year:

   Faculty and Professional Staff – 23.12% Y1 and 23.44% Y2

   GRA – 4.97 Y1 and 5.04% Y2

Travel - Domestic

5. Economics Team: Includes travels costs (1 day hotel/per diem and mileage) for approximately 5 trips (@ $300/trip) to Wray, Colorado for meeting with the WPP advisory board and producers to collect data and design scenarios, as well as for presentation of results.
6. Specialist: Includes travel costs associated with outreach in Task 2 for approximately 10 meetings per year located throughout the RRB. $219/trip on average includes one night hotel and per diem and mileage or rental car.

Materials

7. $227 is budgeted for outgoing and return envelopes, as well as letterhead needed for survey distribution.

Other

8. Survey and Outreach Costs: $7,273 to cover costs of printing/postage/incentives for approximately 875 survey and 200 pre-survey mailings. See table below for detailed breakdown:

# of surveys (500 desired responses x 1.75 multiple mailing factor)	875				**$7,273.00**
		Per Survey			
	Survey Printing	$1.00			
	Cover Letter Printing	0.05			
	Outgoing Postage	1.50			
	Return Postage	0.55			
	Monetary Incentive	2.00			

	Survey Assembly Service	1.00			
	Sub-total	$6.10	x 875		$5,337.50
	Survey open and data entry service	$3.25	X 500		$1,625.00
# of pre-survey mailers	200				
	printing	$1.00			
	postage	0.55			
	Sub-total	$1.55	X 200		$ 310.00

9. Publication and Presentation Design and Production: Includes costs associated with hiring a professional to aid in the design of outreach materials. Presentation of recommended policies will require professional design help in order to clearly display complex material. Some materials will be presented electronically while others will be distributed in print form.
10. Meeting Space and Refreshments Expense: Covers costs associated with 4 public meetings to be held over two years. Total includes costs associated with the meeting space ($100/meeting) and light refreshments ($5/person x 50 people/meeting = $250/meeting). These public meetings are held to assist in educating about and gaining support for the need for pumping reduction policies, and refreshments are a typical offering at events like this.
11. Slattery and Hendrix Engineering: Slattery and Hendrix have prepared engineering studies and analysis for the groundwater management districts and the Republican River Water Conservation District. They will attend four public meetings during the two year period to present data that shows the need for pumping reduction policies. Lump sum per meeting costs, including preparation time and other expenses = $1500.
12. Tuition for the GRA on the project is budgeted for one semester each year, based on the current rate of $4538/semester and a 5% projected increase.

Indirect Costs

13. Indirect Costs are calculated at the CWCB limitation of 15% of Total Direct Costs.

Budget Justification – CSU Match

Personnel

1. Faculty Time: CSU faculty will contribute an additional 1.35 months in year 1 (0.45 mo each for Manning @ $9203/mo, Suter @ $9918/mo, and Goemans @ $9660/mo) and 1.35 months in year 2 (0.45 mo each for Manning @ $9571/mo, Suter @ $10315/mo, and Goemans @ $10046/mo) for activities related to Tasks 1-4. This includes modelling (e.g., development, runs, and analysis), outreach (e.g., meetings in Wray, presentation of results, etc.), and survey (e.g.,

design, implementation and analysis) related activities, in addition to time for completing the final report.

Fringe Benefits

2. Fringe benefits are calculated at estimates for each category and fiscal year:

   Faculty and Professional Staff – 23.12% Y1 and 23.44% Y2

Indirect Costs

3. Indirect Costs are calculated on the CSU contribution at CSU's federally negotiated rate for on campus research, 48.7% of Modified Total Direct Costs.

Timeline (assuming January 2015 start)

1. **NTP-Feb 2015:** Outreach seminars to inform public of water deficit
2. **Summer 2015**: Economic modeling complete
3. **August 2015**: Summary report for agricultural and economy-wide impacts of reductions in pumping
4. **Summer/Fall 2015**: Policy design and impact estimates
5. **Fall 2015**: Policy survey design
6. **Winter 2016**: Survey implementation and data analysis
7. **Fall/Late Winter March 2017**: Preparation of final report

Exhibit B
Colorado State University on behalf of the Water Preservation Partnership
Water Supply Reserve Account Grant
Performance Monitoring Provisions

Statutory Requirements

For each personal services contract with a value over $100,000, the individual selected by the state agency or institution of higher education (IHE), pursuant to CRS§ 24-103.5-101(3), shall monitor the contractor's work under the contract and shall certify as to whether the contractor is complying with the terms of the contract pursuant to CRS§ 24-103.5-101(5).

(a) Performance measures and standards developed specifically for the contract by the governmental body administering the contract. The performance measures and standards shall be negotiated by the governmental body and the vendor prior to execution of the contract and shall be incorporated into the contract. The measures and standards shall be used by the governmental body to evaluate the performance of the governmental body and the vendor under the contract.

(b) An accountability section that requires the vendor to report regularly on achievement of the performance measures and standards specified in the contract and that allows the governmental body to withhold payment until successful completion of all or part of the contract and the achievement of established performance standards. The accountability section shall include a requirement that payment by the governmental body to the vendor shall be made without delay upon successful completion of all or any part of the contract in accordance with the payment schedule specified in the contract or as otherwise agreed upon by the parties.

(c) Monitoring requirements that specify how the governmental body and the vendor will evaluate each others' performance, including progress reports, site visits, inspections, and reviews of performance data. The governmental body shall use one or more monitoring processes to ensure that the results, objectives, and obligations of the contract are met.

(d) Methods and mechanisms to resolve any situation in which the governmental body's monitoring assessment determines noncompliance, including termination of the contract.

Performance Monitoring Standards

Performance monitoring for this contract shall include the following:

(a) Performance measures and standards: Grantee shall maintain receipts for all projects expenses and documentation of the minimum in-kind contributions per the budget in Exhibit A. Per WSRA Criteria and Guidelines, retainage of 10% of the grant funds shall be withheld until receipt of the final report and all other deliverables

Design & Construction Reporting: The applicant shall provide CWCB copes of: Permits, Design & Construction Documents; Construction Documentation (periodic construction progress reports, change orders, meeting notes, schedule summaries), and As-Build Drawings.

General Reporting: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of the executed contract until the construction begins. The progress report shall describe the completion or partial completion of the statement of work leading up to the advertisement for bid and including a description of any major issues that have occurred and any corrective action taken to address these issues.

Final Deliverable: At completion of the project, the applicant shall provide the CWCB a final report that summarizes the project and documents the project. This report may contain photographs, summaries of meetings and reports/studies. Grantee shall maintain receipts for all project expenses and documentation of the minimum in-kind contributions per the budget in Exhibit A. Per WSRA Criteria and Guidelines, retainage of the grant funds shall be withheld until receipt of the final report and all other deliverables.

(b) Accountability: Per WSRA Criteria and Guidelines full documentation of project progress must be submitted with each invoice for reimbursement. Grantee must certify that all grant conditions have been complied with on each invoice. In addition, per WSRA Criteria and Guidelines progress reports must be submitted at least once every 6 months. A final project report must be submitted and approved before final project payment and release of retainage.

(c) Monitoring Requirements: Grantee is responsible for ongoing monitoring of project progress per Exhibit A and Paragraphs 9 & 19 of the contract. Progress shall be detailed in the required invoice documentation and progress reports as detailed above. Additional inspections or field consultations will be arranged as may be necessary.

(d) Noncompliance Resolution: Per paragraphs 9, 14, 15, and 19 of the contract: payment will be withheld until grantee is current on all grant conditions. Flagrant disregard for grant conditions will result in a stop work order and cancellation of the purchase order.