Statement of Work

South Platte Basin Roundtable Account

Monitoring Weather Conditions and their effects on Evaporation Rates in Northeastern Colorado with the Colorado Agricultural Meteorological Network (CoAgMet)

Colorado State University

Colorado Climate Center

Nolan Doesken, PI

INTRODUCTION AND BACKGROUND:

A set of ten high quality weather stations located from the base of the Rocky Mountain foothills of the South Platte Basin eastward to the Nebraska border will be selected, serviced, calibrated and upgraded. This network of weather stations will be used to routinely compute and track evapotranspiration/crop water use providing a quantitative assessment of consumptive use at these locations across the basin. Together, with the existing top-quality observing network operated by Northern Colorado Water Conservancy District, it will be possible to examine spatial variations in consumptive use across the basin as a function of location and crop. These data will then become the basis for field-specific estimates of crop water use from satellite remote sensing.

OBJECTIVES:

Maintain a high quality weather observing network collecting the necessary meteorological information for using the ASCE Standard Equation (Penman-Monteith ET model) for computing reference and crop evapotranspiration.

Provide current and historic weather and computed ET data in easily accessible forms for planners, decision makers and the public.

TASK 1 –Weather Station Site selection

Description of Task

There are currently already more than a dozen full and operational agricultural weather stations from Larimer County eastward to northeast and east central Colorado. These stations will be evaluated, and the ten most representative sites will be selected to complement the existing NCWCD weather station network.

Method/Procedure

Data from recent years will be examined. Metadata showing weather station siting and exposure will be investigated. Locations of NCWCD will be overlaid with existing CoAgMet stations. The ten CoAgMet stations that will provide the best spatial coverage as well as the most representative irrigated environments will be selected.

Deliverable

Station lists, historic data inventory, station photos and location maps will be provided including site hosts and weather station equipment inventories.

TASK 2-CoAgMet weather station maintenance and network operations

Description of Task

Each of the ten selected weather stations will be visited a minimum of once during the year for complete maintenance. Temperature, humidity, solar radiation, wind speed, wind direction, precipitation and soil moisture sensors will all be cleaned, serviced and, if necessary, replaced or recalibrated. Instrumentation and siting will be reviewed to make sure each station is providing data representative of irrigated cropland in the vicinity of each station.

Method/Procedure

Standard methods for weather station management and oversight will be employed. Weather data will be checked and compared with other nearby stations and with calibrated standards.

Deliverable

Accurate, quality controlled weather data, automatically gathered and available online updated daily. From these data, daily, weekly and other accumulation periods of alfalfa reference and crop ET will be computed and made available on the CoAgMet website. On request, data can be e-mailed automatically each day to interested parties and organizations.

TASK 3-Long-term sustainability of CoAgMet

Description of Task

Identify stakeholders and build partnerships with users of weather and ET data to build a support community to help sustain the Colorado Agricultural Meteorological Network into the future.

Method/Procedure

Begin with members of the Roundtable and extend to agricultural and municipal entities with interests in climate variability, climate change and water use.

Deliverable

A set of potential or committed sponsors to help raise ongoing support for CoAgMet beyond the one-year term of this contract.

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Monitoring weather conditions and their effects on evaporation rates in northeastearn Colorado with the Colorado Agricultural Meteorological Network (CoAgMet)
CWCB Water Supply Reserve Account Budget

Salaries		**mm/yr**	**salary**	**Total**
Ryan, Wendy		1	$3,918	$3,918
Newman, Noah		0.8	$3,750	$3,000
Total Salaries		1.8		$6,918
Fringe	26.00%			$1,799
Total				$8,717
Travel				$2,000
Materials& Supplies				$5,887
Other Direct Costs				
Network Charges				$63
Total Direct Costs				$16,667
Indirect Costs @ 20% TDC				$3,333
Total				$20,000

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Water Supply Reserve Account
Title: Monitoring weather conditions and their effects on evaporation rates in northeastern Colorado with the Colorado Agricultural Meteorological Network (CoAgMet)

Budget Justification

DIRECT LABOR (PERSONNEL) $6,918:

Salaries: Base salaries included in this proposal reflect the actual salaries approved by the Governing Board of Colorado State University for the period July 1, 2010 through June 30, 2011. All individuals budgeted are employees of Colorado State University.

Nolan Doesken, PI, (0mm) State Climatologist for Colorado will provide oversight and manage the overall project.

Wendy Ryan, Research Associate, (1MM)- weather station technician. She will travel to the CoAgMet stations to perform annual maintenance including: sensor and wind bearing replacement as well as ensure the station is functioning properly. She will also be responsible for Quality Control of station data.

Noah Newman, Research Associate, (.8MM)- weather station technician. He will travel to the CoAgMet stations to perform annual maintenance including: sensor and wind bearing replacement as well as ensure the station is functioning properly.

Fringe Benefits $1,799:

The federally approved Administrative Professional fringe rate for CSU is 26% for FY11.

Travel $2,000:

As required by Task 2, each of the ten selected weather stations will be visited a minimum of once during the year for complete maintenance. The weather stations to be serviced through this project have not yet been selected. (see Task 1).

Lodging ($100 * 4 nights * 2PP)	$800
Per diem ($71 * 4 days *2PP)	$750
Mileage	$450

Materials and Supplies $5,887

Materials needed to perform maintenance include temperature-humidity probes @$110 each/station and pyranometers (solar) @ $120 each/station for a total of $230/station * 10 stations =$2300. In addition, it is expected that several sensors will not be able to be repaired and will have to be replaced at an estimated cost of $2000. Also, $1087 is requested for new wind speed and direction bearings, batteries, and other miscellaneous hardware (screws, bolts, etc) which are all required to complete the tasks of the project.

Other Direct Costs-$63:

Department Network Charges

ATS Computer charges are for department Ethernet connections. This charge is $35/man month.
The computer service charge is a rate developed using Section J-47 (Specialized Service Facility) of OMB Circular A-21 and Colorado State University's internal policy for computing, charging and auditing such Service Facilities.

FACILITIES AND ADMINISTRATIVE COSTS (INDIRECT COSTS) – $3,333:

The CSU indirect cost rate will be 20% TDC. These rates are the negotiated rates with the Colorado Water Conservation Board.

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Project Schedule

Task	Description	Completion Date
1	Select the 10 most representative sites in the South Platte	4/30/2011
2	Weather Station operations and maintenance	10/31/2011
3	Long-term sustanability, identify stakeholders and sponsors	3/31/2012