STATE OF COLORADO

Colorado Water Conservation Board
Department of Natural Resources
1313 Sherman Street, Room 721
Denver, Colorado 80203
Phone: (303) 866-3441
Fax: (303) 866-4474
www.cwcb.state.co.us

June 20, 2012

Ducks Unlimited, Inc.
Attn: Greg Kernohan, Project Manager
2525 River Road
Bismark, ND 98503

RE: Development of a Decision Support Model for Identifying South Platte River and Ranking Waterfowl and Wildlife Related Recharge Projects along the South Plate River

Dear Greg:

This letter is to inform you that the purchase order WSRA grant request to assist in the Development of a Decision Support Model for Identifying South Platte River and Ranking Waterfowl and Wildlife Related Recharge Projects along the South Plate River project was signed on June 18, 2012.

With the executed purchase order, you are now able to proceed with the project and begin invoicing the State of Colorado for costs incurred through June 30, 2013. Upon receipt of your invoice(s), the State of Colorado will provide payment no later than 45 days. I wish you much success in your project.

Sincerely,

/s/

Todd Doherty
Colorado Water Conservation Board
Water Supply Planning Section
1580 Logan Street, Suite 200
Denver, CO 80203
Phone: 303-866-3441 x3210
Mobile: 720-214-3262
Todd.doherty@state.co.us
www.cwcb.state.co.us and www.ibcc.state.co.us

WATER CONSERVATION BOARD
1313 SHERMAN STREET, ROOM 721
DENVER, CO 80203

Buyer: ALLAN SMITH
Phone Number: 303-866-3292
Agency Contact: DORI VIGIL
Phone Number: 303 866 3441

DATE: 06-18-12

IMPORTANT
The PO# and Line # must appear on all invoices, packing slips, cartons and correspondence

ACC: 06-15-12

PURCHASE ORDER
STATE OF COLORADO

P.O. # OE PDA 12IBC000023 Page# 01

State Award #

BID #

FEIN 135643799 A **Phone:** 701-355-3500
Vendor Contact:
Purchase Requisition #:

VENDOR
DUCKS UNLIMITED INC
2525 RIVER ROAD
BISMARCK ND 58503-9011

Invoice in Triplicate
To: DIVISION OF WATER CONSERVATION
1313 SHERMAN STREET, ROOM 721
DENVER, CO 80203

Payment will be made by this agency

Ship To: DIVISION OF WATER CONSERVATION
1313 SHERMAN STREET, ROOM 721
DENVER, CO 80203

Delivery/Installation Date: 06-30-13
F.O.B. DESTINATION STATE PAYS NO FREIGHT

INSTRUCTIONS TO VENDOR:

1. If for any reason, delivery of this order is delayed beyond the delivery/installation date shown, please notify the agency contact named at the top left. (Right of cancellation is reserved in instances in which timely delivery is not made.)
2. All chemicals, equipment and materials must conform to the standards required by OSHA.
3. NOTE: Additional terms and conditions on reverse side.

SPECIAL INSTRUCTIONS:

LINE ITEM	COMMODITY/ITEM CODE	UNIT OF MEASUREMENT	QUANTITY	UNIT COST	TOTAL ITEM COST
001	91843000000				$85,421.00

CMS# WSRA GRANT - DEVELOP DSS MODEL FOR IDENTIFYING & RANKING WATERFOWL & WILDLIFE RELATED RECHARGE ALONG SP

DOCUMENT TOTAL $85,421.00

THIS PO IS ISSUED IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS
This PO is effective on the date signed by the authorized individual.
EPSPO PAA

FOR THE STATE OF COLORADO

Authorized Signature

6/18/12
Date

DP-01 (R-02/06)

May 21, 2012

Exhibit A
Statement of Work

WATER ACTIVITY NAME - Development of a Decision Support Model for Identifying and Ranking Waterfowl and Wildlife Related Recharge Projects along the South Platte River.

GRANT RECIPIENT – Ducks Unlimited

FUNDING SOURCE - Statewide Water Supply Initiative (CWCB)

*****Total Grant Funds: $85,421 (Since the project was awarded, the costs have been lowered from $99,821 to $85,421).**

INTRODUCTION AND BACKGROUND

Provide a brief description of the project. (Please limit to no more than 200 words; this will be used to inform reviewers and the public about your proposal)

Ducks Unlimited, with the help of the Colorado Water Conservation Board, has been very successful in constructing multi-purpose water conservation wetlands in Colorado – especially in the South Platte basin between Denver and the Colorado-Nebraska stateline. The water conservation wetlands have served environmental and recreational interests by enhancing waterfowl habitat and by providing new bird watching and hunting opportunities. In addition, these wetlands have proven to be valuable alluvial aquifer recharge facilities.

While this program for constructing water conservation wetlands has been successful, it has also been somewhat opportunistic in its application. Now that the success of the program has been proven, there is a desire to take a more strategic approach to its application. This project seeks to develop this strategic approach. It is anticipated that this approach will serve as a model that can be applied to other river basins or geographic areas in Colorado.

OBJECTIVES

The overall objective of this project is to develop a process and tool (or decision support model) that will be used in locating future water conservation wetland projects in the South Platte basin between Denver and the Colorado-Nebraska stateline.

There are many factors that will influence decisions regarding the most favorable locations for future wetlands. Some of these factors are more important than others and they vary geographically. These are factors that DU has considered in previous projects and will consider in the context of the decision support model. Examples of these factors include the following:

- Amount of waterfowl habitat in the vicinity of a proposed project
- Available water supply
- Ability to recharge the alluvial aquifer
- Characteristics of the alluvial aquifer and lag times
- The need for additional alluvial aquifer recharge
- Funding partners
- Potential permitting issues
- Need for recreational opportunities
- Cost/value of water and land
- Comparative economic returns to water
- Suitability of land

The specific objectives of this project are described below.

- Assess important factors to consider in locating future water conservation wetlands.
- Develop a process and a supporting tool that can be used to identify potential areas where water conservation wetlands could be constructed considering a number of important factors.
- Using the tool, produce a map showing areas in the South Platte basin targeted for future water conservation wetlands.
- Lay the foundation for a program to provide financial and technical assistance to agricultural producers who are interested in constructing water conservation wetlands.

TASKS
Provide a detailed description of each task using the following format

TASK 1 – Project Meetings and Development

Description of Task

Activities associated with this task included holding meetings and conference calls to discuss the need for this project and to develop a vision for the final project deliverable. Work also included the development of a project approach and grant application to the CWCB. This work occurred prior to the submittal of the grant application to the CWCB but within the last 9 months.

Method/Procedure

Meetings and conference calls were held to collaborate on the project concept and approach.

Deliverable

- Grant application to the CWCB.

TASK 2 – Kickoff and Data Collection

Description of Task

Activities associated with this task will include holding a kickoff meeting to discuss the project scope, schedule, and objectives and to develop a list of characteristics and criteria that should be included in the targeting of future water conservation wetland projects. For example, the presence or absence of adequate habitat, aquifer characteristics, available water supplies, potential funding partners, etc. are factors that would be considered in the strategic siting of future wetlands. In addition, information will be gathered at this meeting regarding the relative importance of various factors. For example, the presence of potential funding partners may be important in a particular region, but not as important as a relative lack of waterfowl habitat in that region. In addition, some factors, such as permitting complexity may be a consideration in constructing wetlands, but it may not be a factor that is included in the strategic assessment of areas for future water conservation wetlands. Information on whether or not factors should be considered strategic will be discussed at the kickoff meeting as well.

Following the meeting, data and information describing the characteristics and criteria will be assembled and organized. It should be noted that several of the necessary data sets were developed as a part of the Colorado Corn Growers Association's Alternative Transfer Methods (ATM) grant project in which DU was a co-sponsor. Spatial and other data developed for ATM grant project will be used to the maximum extent possible for this project.

Method/Procedure

There are several sources of spatial data that will be accessed. Many of which are described in the Objectives section above. As stated previously, several data products were developed pursuant to the ATM grant. In addition, several spatial and tabular data sets have been developed as a part of the South Platte Decision Support System (SPDSS). Depending on data needs, county, state, and federal agencies will be contacted to provide additional data.

The collected spatial data will be organized into a geodatabase that will form the foundation of a GIS-based analysis tool that will be used to identify favorable locations for water conservation wetland projects.

This task will also include, to the extent necessary, the conversion of certain tabular or informational data sets into spatial data sets. For example, permitting complexity may vary from county to county. A GIS coverage of permitting complexity (i.e. number of permits necessary, approval waiting times, etc.) will be developed based on informational data collected on a county-by-county basis.

Note that the project team will use existing data sets for this project. The scope of work and costs will not permit extensive development of new data sets. If certain data sets are incomplete, the project team will work to fill data gaps to the extent that the project budget and schedule allow.

It should also be noted that the project team will include an economist to assist in the development of GIS coverages showing generalized land and water values. These coverages will help provide information regarding areas where it may be cost prohibitive to construct new wetlands or where it may be relatively inexpensive to develop wetlands. Used in combination with other data sets, the economic information will help provide a more complete understanding of the pros and cons of wetland development in various areas of the South Platte basin.

Deliverable

- Meeting notes
- A preliminary list and weighting of important factors for locating wetlands
- Spatial and other data sets that will be used for the GIS analysis tool

TASK 3 – Development of GIS Analysis Tool

Description of Task

A GIS analysis tool will be built that will consider the factors and relative importance of factors identified in Task 1. The tool will be used to develop draft and final maps of desirable locations or regions in which to develop water conservation wetlands.

Method/Procedure

Layers of spatial information describing important factors for water conservation wetland locations and the relative importance of factors will be input into the GIS analysis tool. It is likely that some degree of normalization of the GIS layers will need to occur in order to readily compare them. For example, it is difficult to directly compare the presence or absence of waterfowl habitat with aquifer characteristics. However, if the presence of waterfowl habitat and aquifer characteristics were both classified as "4, 3, 2, and 1" corresponding to "favorable, moderately favorable, moderately unfavorable, and unfavorable" conditions, then direct comparisons can be made. Classifications will be developed and will be applied to all of the data sets that describe important factors in locating wetlands.

In addition, the relative importance of each layer will be assigned a value. For example, if the presence or absence of waterfowl habitat is extremely important to targeting future wetland locations, it might be assigned a weighting of 4. Conversely, if "available funding partners" as a parameter is only moderately important, it might be assigned a weighting of 2.

Once the classifications and weightings are developed for each layer of information describing important factors, the GIS analysis tool will be used to multiply the classification by the weighting for each layer. The result of this will be a map showing the spatial distribution throughout the South Platte basin of each factor in terms of favorability and unfavorability. In addition, the spatial distribution will tempered by the importance of that factor.

The final piece of the GIS analysis tool is a summation grid layer. The summation grid layer will be input into the GIS analysis tool and will be overlaid on the layers of information describing important

factors. The GIS analysis tool will be used to calculate a value for each cell in the summation grid that reflects the aggregation of all of the classifications and weightings of important factors for the layers underlying each cell. The equation below illustrates how the value for each cell in the summation grid may be calculated.

$$Cell\ value = Class_1 * Weight_1 + Class_2 * Weight_2 + \ldots. + Class_n * Weight_n$$

The values $Class_1$ and $Weight_1$ are the classification and weighting for one layer of spatial information (for example, aquifer characteristics) in the area directly below a particular cell on the summation grid. Classifications and weighting for a second layer of information (for example, availability of water supply) is represented by $Class_2$ and $Weight_2$. The resulting cell value will show the favorability or unfavorability of locating a wetland in that particular cell considering all of the key factors and the relative importance of those key factors.

Using the GIS analysis tool, cell values in the summation grid will be mapped to show, on a regional basis, where favorable and unfavorable locations are for constructing water conservation wetlands considering all of the important factors and their relative importance.

Deliverable

- GIS analysis tool
- Map layers and maps showing important factors and their spatial distribution in the South Platte basin
- A summary map showing the spatial favorability and unfavorability of developing water conservation wetlands considering all of the important factors for locating these wetlands.

TASK 4 – Implementation plan

Description of Task

An important function of water conservation wetlands has been for alluvial aquifer recharge. This function will gain more importance into the future as DU continues working with water suppliers and water users to provide facilities for retiming of excess augmentation credits, provision of historical return flows, retiming of transferrable consumptive use from alternative agricultural water transfers, etc. DU is currently developing a program to use EQIP funding to assist agricultural producers in constructing water conservation wetlands. This task will include activities for the initiation of this program.

Method/Procedure

Work associated with this task will include the following activities:

- Develop a conceptual plan for the program. Document the conceptual plan in a draft white paper.
- Meet with water users who have shown interest in the program and obtain comments on the program.

- Meet with local Natural Resources Conservation Service staff to discuss the program concept and to obtain their comments and buy-in.
- Finalize the white paper.

Deliverable

- White paper describing the water conservation wetland construction program.

TASK 5 – Report

Description of Task

Draft and final project reports and maps will be developed under this task.

Method/Procedure

Activities associated with this task include the following:

- A draft report and set of maps will be developed. The draft report will document the process used to complete the project, significant assumptions made during the course of the project, findings, and recommendations. A draft set of maps and a draft of the white paper associated with Task 3 will also be included.
- The draft report will be reviewed by the project participants. A copy of the draft report will be provided to the CWCB for review if so desired.
- The report will be finalized.

Deliverable

- Draft and final report including maps and white paper.

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 Basin Roundtables and the general public and help promote the development of a common technical platform.