# COLORADO WATER CONSERVATION BOARD

## WATER SUPPLY RESERVE ACCOUNT
## GRANT APPLICATION FORM

| Name of Water Activity/Project | Approving Basin Roundtable |
|---|---|
| Development of a Decision Support Model for Identifying and Ranking Waterfowl and Wildlife Related Recharge Projects along the South Platte River | South Platte River |

| | | | |
|---|---|---|---|
| $99,821 | **Total Amount of Funds Requested** | **Amount from Statewide Account** | $99,821 |
| | | **Amount from Basin Account** | |

## Application Content



Attachments

1. Reference Information
2. Detailed Budget
3. W-9 Form (Required for All Projects)

**Part A. - Description of the Applicant** (Project Sponsor or Owner);

1. Applicant Name(s): Ducks Unlimited, Inc.

Mailing address: Great Plains Regional Office
2525 River Road
Bismarck, North Dakota 98503

Taxpayer ID#: FIN 13-5643799 Email address: gkernohan@ducks.org

Phone Numbers: Business: 970-339-5719
Home: 970-481-7793
Fax: 303-484-5543

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

Name: Greg Kernohan

Position/Title Program Manager, CO/WY

3. Eligible entities that may apply for grants from the WSRA include the following. What type of entity is the Applicant?

| | |
|---|---|
| | Public (Government) – municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities and the local entity should be the grant recipient. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient. |
| | Public (Districts) – special, water and sanitation, conservancy, conservation, irrigation, or water activity enterprises. |
| | Private Incorporated – mutual ditch companies, homeowners associations, corporations. |
| | Private individuals, partnerships, and sole proprietors are eligible for funding from the Basin Accounts but not for funding from the Statewide Account. |
| X | Non-governmental organizations – broadly defined as any organization that is not part of the government. |

4. Provide a brief description of your organization

Ducks Unlimited, Inc. (DU) is a private not for profit (501(c)3) organization whose mission is to "conserve, restore and manage wetlands and associated habitats for North America's waterfowl. These habitats also benefit other wildlife and people." Established in 1937, DU was founded by a group of men who realized the climatic impact of the "Dust Bowl" was having a devastating effect on waterfowl populations. They set about to form an organization which has become the preeminent conservator of North American wetland habitats. Wetlands are one of the most dynamic natural systems on earth, providing flood irrigation, recharge of aquifers, contaminant removal, wildlife habitat, and they provide the basis for the livelihoods and recreation of millions of people. Over our 70 year history, DU has conserved more than 11 million acres of wetlands and associated habitats. DU is a science-based organization and it pursues its mission continent-wide, focusing on priority areas with the biggest impact on North American waterfowl populations.

In Colorado, DU has worked with several organizations focused on both wildlife conservation and water resources conservation. Since 1997, we have conserved, restored and managed nearly 71,000 acres of wetlands and associated habitats in Colorado, including 16,000 acres in the South Platte River watershed. To deliver wetland conservation projects in the state, DU maintains a staff including a full-time program manager, a regional biologist, a certified engineer, a construction manager and a regional director of grassroots membership. We also maintain a registered membership of over 10,000 members in the state of Colorado.

The South Platte River is DU's priority watershed in Colorado. Diverse habitats and geographic isolation from other large western rivers attracts millions of waterfowl and migratory birds each

year. The Rocky Mountain Bird Observatory (RMBO) estimates that 74% of all bird species in Colorado are found on the South Platte River sometime during each year. However, growth and development along the river and increasing demands for water resources have resulted in reducing the number of seasonal wetlands, warm water sloughs, and sandbars necessary to support wildlife habitat.

To address this issue, Ducks Unlimited has worked cooperatively with agricultural producers to restore wildlife habitat by constructing recharge wetlands and ponds along the South Platte River. The benefits of these projects include recreational hunting, bird watching and water quality improvements through contamination filtering. In addition, these projects have for many years provided recharge credits to agricultural producers or to wildlife agencies through various agreements and contracts. Most recently, the operation of wetlands has been considered (and demonstration projects have been successfully conducted) for the enhancement and promotion of alternative transfers of agricultural water to municipalities and industry.

5. If the Contracting Entity is different then the Applicant (Project Sponsor or Owner) please describe the Contracting Entity here.

Contracting Entity and Applicant are the same.

6. Successful applicants will have to execute a contract with the CWCB prior to beginning work on the portion of the project funded by the WSRA grant. In order to expedite the contracting process the CWCB has established a standard contract with provisions the applicant must adhere to. A copy of this standard contract is included in Attachment 3. Please review this contract and check the appropriate box.

[X] The Applicant will be able to contract with the CWCB using the Standard Contract

[ ] The Applicant has reviewed the standard contract and has some questions/issues/concerns. Please be aware that any deviation from the standard contract could result in a significant delay between grant approval and the funds being available.

7. The Tax Payer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect the applicant.

There are no TABOR issues.

**Part B. - Description of the Water Activity**

1. Name of the Water Activity/Project:

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

2. What is the purpose of this grant application? (Please check all that apply.)

[ ] Environmental compliance and feasibility study

[ ] Technical Assistance regarding permitting, feasibility studies, and environmental compliance

[X] Studies or analysis of structural, nonstructural, consumptive, nonconsumptive water needs, projects

Study or Analysis of:

- [X] Structural project or activity
- [ ] Nonstructural project or activity
- [X] Consumptive project or activity
- [X] Nonconsumptive project or activity

[ ] Structural and/ or nonstructural water project or activity

3. Please provide an overview/summary of the proposed water activity (no more than one page). Include a description of the overall water activity and specifically what the WSRA funding will be used for.

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 from 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 the 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.

Funding provided by the Water Supply Reserve Account will be used 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. The specific objectives of this project are to:

- 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.

**Part C. – Threshold and Evaluation Criteria**

1. Describe how the water activity meets these **Threshold Criteria.** (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines.)

a) The water activity is consistent with Section 37-75-102 Colorado Revised Statutes.[1]

This project shall conform to the requirements/language of the above Statute. The 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 based on various physical, environmental and economic factors. The decision support model does not include an assessment of water rights and such assessment would need to be undertaken by entitities using the model to identify wetlands projects for implementation, which is outside of this scope of work. No recharge projects will be designed, constructed or operated under this Scope of Work. Therefore, the activity for which Water Supply Reserve Account funding is requested is consistent with Section 37-75-102 Colorado Revised Statutes.

[1] 37-75-102. Water rights - protections. (1) It is the policy of the General Assembly that the current system of allocating water within Colorado shall not be superseded, abrogated, or otherwise impaired by this article. Nothing in this article shall be interpreted to repeal or in any manner amend the existing water rights adjudication system. The General Assembly affirms the state constitution's recognition of water rights as a private usufructuary property right, and this article is not intended to restrict the ability of the holder of a water right to use or to dispose of that water right in any manner permitted under Colorado law. (2) The General Assembly affirms the protections for contractual and property rights recognized by the contract and takings protections under the state constitution and related statutes. This article shall not be implemented in any way that would diminish, impair, or cause injury to any property or contractual right created by intergovernmental agreements, contracts, stipulations among parties to water cases, terms and conditions in water decrees, or any other similar document related to the allocation or use of water. This article shall not be construed to supersede, abrogate, or cause injury to vested water rights or decreed conditional water rights. The General Assembly affirms that this article does not impair, limit, or otherwise affect the rights of persons or entities to enter into agreements, contracts, or memoranda of understanding with other persons or entities relating to the appropriation, movement, or use of water under other provisions of law.

b) The water activity underwent an evaluation and approval process and was approved by the Basin Roundtable (BRT) and the application includes a description of the results of the BRTs evaluation and approval of the activity. At a minimum, the description must include the level of agreement reached by the roundtable, including any minority opinion(s) if there was not general agreement for the activity. The description must also include reasons why general agreement was not reached (if it was not), including who opposed the activity and why they opposed it. Note- If this information is included in the letter from the roundtable chair simply reference that letter.

This application will be submtited to the South Platte Basin Roundtable for their review and approval at their July 13, 2010 meeting. Upon receipt of approval, notification and supporting documentation will be provided to the Colorado Water Conservation Board.

It should be noted that this project is developed as a follow-up to the Alternative Agricultural Water Transfer Methods grant project where it was demonstrated that the use of recharge wetlands as an alternative method for water transfers is a feasible approach to supporting municipal interests while sustaining agriculture. It is the objective of this project to take a more structured approach to identifying locations for recharge projects along the South Platte by developing decision making processes and tools. Due to the merits of this project, we believe it will be accepted and approved by the Roundtable.

c) The water activity meets the provisions of Section 37-75-104(2), Colorado Revised Statutes.[2] The Basin Roundtable Chairs shall include in their approval letters for particular WSRA grant applications a description of how the water activity will assist in meeting the water supply needs identified in the basin roundtable's consumptive and/or non-consumptive needs assessments.

Both the Statewide Water Supply Initiative (SWSI) Phase I and SWSI Phase II reports highlight the threat posed by a paucity of water supplies in the South Platte River Basin as populations along the Front Range increase in the coming decades. Increased frequency and duration of river calls as well as the transfer of water from agricultural and environmental beneficial uses will impact the ecology and the economy of the basin. Recharge wetlands are demonstrated to be an effective solution for narrowing the water shortage gap.

Agricultural water transfers that allow for sustainable farming practices can be supported by strategically placed wetland recharge sites that optimize both consumptive and non-

[2] 37-75-104 (2)(c). Using data and information from the Statewide Water Supply Initiative and other appropriate sources and in cooperation with the on-going Statewide Water Supply Initiative, develop a basin-wide consumptive and nonconsumptive water supply needs assessment, conduct an analysis of available unappropriated waters within the basin, and propose projects or methods, both structural and nonstructural, for meeting those needs and utilizing those unappropriated waters where appropriate. Basin Roundtables shall actively seek the input and advice of affected local governments, water providers, and other interested stakeholders and persons in establishing its needs assessment, and shall propose projects or methods for meeting those needs. Recommendations from this assessment shall be forwarded to the Interbasin Compact Committee and other basin roundtables for analysis and consideration after the General Assembly has approved the Interbasin Compact Charter.

consumptive benefits. Demonstration projects conducted under the Alternative Agricultural Water Transfer Methods grant program have been successful and the various stakeholders (agricultural community, South Platte Basin Roundtable, Colorado Water Conservation Board) are looking to take a more strategic approach to identifying potential recharge sites that can meet the needs of agricultural, municipal and industrial water users.

d) Matching Requirement: <u>For requests from the Statewide Fund</u>, the applicants is required to demonstrate a 20 percent (or greater) match of the request from the Statewide Account. Sources of matching funds include but are not limited to Basin Funds, in-kind services, funding from other sources, and/or direct cash match. Past expenditures directly related to the project may be considered as matching funds if the expenditures occurred within 9 months of the date the application was submitted to the CWCB. Please describe the source(s) of matching funds. (NOTE: These matching funds should also be reflected in your Detailed Budget in Part D of this application)

The total costs for this project, as detailed in Part D are $125,090. The required 20 percent match has been slightly exceeded and provided through in-kind and cash contributions from Ducks Unlimted and Brown and Caldwell.

2. For Applications that include a request for funds from the Statewide Account, describe how the water activity meets the **Evaluation Criteria.** (Detailed in Part 3 of the Water Supply Reserve Account Criteria and Guidelines.)

Tier 1: Promoting Collaboration/Cooperation and Meeting Water Management Goals and Identified Water Needs

The objective of this project is to develop a strategic approach to locating future wetlands conservation projects in the South Platte Basin. Ducks Unlimited has worked cooperatively with agricultural producers for over 10 years to restore wildlife habitat by constructing recharge wetlands and ponds along the South Platte River. The benefits of these projects include recreational hunting, bird watching and water quality and quantity improvements. In addition, these projects have provided recharge credits to agricultural producers, municipalities, and wildlife agencies through various agreements and contracts. Recent demonstration projects have also been successful in supporting the concept of alternative transfers of agricultural water to municipalities and industry where growing communities' water needs are met without devastating loss of agriculture. To date, the wetland recharge projects have been opportunistic. However, development of a structured model approach to identifying potential wetlands based on physical, environmental and economic factors will allow for broader participation by agricultural, municipal and industrial water users in projects that will support meeting their water needs into the future.

The model that will be developed under this project will be presented in a standard format that can be applied in any river basin or geographic area in the State of Colorado. The project also includes working closely with the Natural Resource Conservation Service (NRCS) to develop tools that can be used by the agricultural community in obtaining Environmental Quality Incentives Program (EQIP) funding for constructing the wetlands. We believe that the NRCS has programs in place that could benefit agricultural producers while meeting the needs of the State. Our tool will allow us to better communicate such programs to landowners and increase the effieciency of available funds.

The ability for wetlands recharge projects to support various water resource demands including agricultural, municipal, industrial, environmental, and recreational has been demonstrated over the years and more recently through various projects funded by the CWCB. Implementing a strategic approach to selecting wetland recharge sites will allow for all stakeholders to more efficiently implement these projects to meet Colorado's future water needs in a manner that integrates all users interests. Additionally the financial ability of agricultural water users to address their existing and future water needs is a finding identified in SWSI. Therefore, collaboration with the NRCS is critical in assisting agricultural producers and ensuring that projects are funded and implemented in the future.

Tier 2: Facilitating Water Activity Implementation

The project is in jeopardy without funding from the CWCB. We believe that this project is a perfect

fit for the HB-1177 process. Ducks Unlimited has partnered with Brown and Caldwell Engineering and Harvey Economics to perform the engineering and economic evaluations associated with this project. Both Brown and Caldwell and Harvey Economics have worked in the South Platte Basin on various projects associated with wetland recharge and have the knowledge and expertise to successfully implement the project. Ducks Unlimited has also successfully implemented prior grants issued by the CWCB in the South Platte Basin in accordance with the budgets and schedules proposed and has extensive experience working cooperatively with stakeholders in the Basin. The partnership has committed to raising the required match through in-kind contributions that will be provided in the form of labor and expenses. Without the balance of the funding from CWCB, this critical project would not be possible.

There is an urgency associated with implementing this project as agricultural communities are under pressure to sell their water, resulting in permanent "dry-up" of irrigated lands. This situation has escalated over the past several years and has become a critical focus of the South Platte Basin Roundtable and the CWCB. Implementation of agricultural alternative transfer projects needs to occur and this project will support identification of feasible wetland recharge projects along the South Platte between Denver and the Colorado/Nebraska border. Furthermore, the transferability of the decision support model that will be developed by Ducks Unlimited, Brown and Caldwell and Harvey Economics under this grant will benefit other river basins and geographic areas across the entire State of Colorado.

**Part D. – Required Supporting Material**

1. Water Rights, Availability, and Sustainability

This information is needed to assess the viability of the water project or activity. Please provide a description of the water supply source to be utilized, or the water body to be affected by, the water activity. This should include a description of applicable water rights and the name/location of water bodies affected by the water activity.

This project involves development of a decision support model for locating potential wetland recharge projects based on physical, environmental and economic factors along the South Platte River between Denver and the Colorado/Nebraska border. The deliverable will also include a map indicating feasible locations for wetland recharge along the study area. No wetland recharge projects will be designed, constructed, or operated under this project. Water rights issues associated with particular projects would be evaluated in subsequent studies. As described in the Statement of Work, the project will involve taking into consideration the availability and sustainability of water supplies in ranking the feasibility of an area for future wetland recharge.

2. Please provide a brief narrative of any related or relevant previous studies.

Ducks Unlimited has participated in various studies evaluating the benefits of constructed recharge wetlands to meet environmental, recreational, and consumptive water use needs. Most recently, Ducks Unlimited was a co-sponsor in the Colorado Corn Growers Association's Alternative Transfer Methods grant project. Ducks Unlimited was responsible for conducting two demonstration projects in the South Platte watershed for the purpose of evaluating wetland recharge as an alternative means of transferring a portion of agricultural water to other uses while maintaining sustainable farming practices. The success of these demonstration projects has led to the desire by various stakeholders and the CWCB to develop a more proactive/strategic and structured approach to identifying potential locations for future wetland recharge projects and a process for more efficient implementation.

3. Statement of Work, Detailed Budget, and Project Schedule

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 -** 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)**

**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.

**BUDGET**

| Total Costs | | | | | |
|---|---|---|---|---|---|
| | Labor | Other Direct Costs | Subtotal | Matching Costs<br>Cash / in-kind | Total Grant Funds |
| Task 1 - Project Concept and Development | $5,177 | $0 | $5,177 | $5,177 | $0 |
| Task 2 - Kickoff and Data Collection | $32,110 | $234 | $32,344 | $9,450 | $22,894 |
| Task 3 - Development of GIS analysis tool | $38,214 | $318 | $38,532 | $5,500 | $33,032 |
| Task 4 - Implementation plan | $23,819 | $1,922 | $25,741 | $3,908 | $21,833 |
| Task 5 - Report | $22,062 | $1,234 | $23,296 | $1,234 | $22,062 |
| | | | | | |
| **Total Costs:** | $121,382 | $3,707 | $125,090 | $25,269 | **$99,821** |

Task 1 Match provided Brown-Caldwell Project Development

All other match provided from Ducks Personnel and Direct Costs

Total Match Provided

| | |
|---|---|
| Total Project Cost | $125,090 |
| Required Match (20%) | $25,018 |
| Total Match Provided | $25,269 |
| Match Requirement Met? | Yes |

Detailed budgets for labor and direct project costs are provided in Appendix A.

## SCHEDULE

| Task | Start Date | Finish Date |
|---|---|---|
| 1 | Upon NTP | NTP + 60 days |
| 2 | Upon NTP | NTP + 90days |
| 3 | Upon NTP | NTP + 180 days |
| 4 | Upon NTP | 12/31/11 |
| 5 | Upon NTP | 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 Basin Roundtables and the general public and help promote the development of a common technical platform.

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

**Signature of Applicant**:

Digitally signed by Greg Kernohan
DN: cn=Greg Kernohan, c=US, o=Ducks Unlimited, Inc., email=gkernohan@ducks.org
Reason: I am the author of this document
Date: 2010.07.06 12:44:33 -06'00'

**Print Applicant's Name**: Greg Kernohan, Conservation Program Manager, CO/WY

**Project Title**: Development of a Decision Support Model for Identifying and Ranking Waterfowl and Wildlife Related Projects along the South Platte River

**Date**: July 6, 2010

**Return this application to**:

Mr. Todd Doherty
Intrastate Water Management and Development Section
COLORADO WATER CONSERVATION BOARD
1580 Logan Street, Suite 200
Denver, CO 80203

To submit applications by Email, send to: todd.doherty@state.co.us
To submit applications by Fax, send to: (303) 894-2578
For questions, call Telephone No.: (303) 866-3426

## Attachment 1
## Reference Information

The following information is available via the internet. The reference information provides additional detail and background information.

Colorado Water Conservation Board (http://cwcb.state.co.us/)

Loan and Grant policies and information are available at – http://cwcb.state.co.us/Finance/

Interbasin Compact Committee and Basin Roundtables (http://ibcc.state.co.us/)

Interbasin Compact Committee By-laws and Charter (under Helpful Links section) –

http://ibcc.state.co.us/Basins/IBCC/

Legislation

House Bill 05-1177 - Also known as the Water for the 21st Century Act –

http://cwcbweblink.state.co.us/DocView.aspx?id=105662&searchhandle=28318

House Bill 06-1400 – Adopted the Interbasin Compact Committee Charter –

http://cwcbweblink.state.co.us/DocView.aspx?id=21291&searchhandle=12911

Senate Bill 06-179 – Created the Water Supply Reserve Account –

http://cwcbweblink.state.co.us/DocView.aspx?id=21379&searchhandle=12911

Statewide Water Supply Initiative

General Information – http://cwcb.state.co.us/IWMD/

Phase 1 Report – http://cwcb.state.co.us/IWMD/SWSITechnicalResources/SWSIPhaseIReport/

# Attachment 2
# Detailed Budget

Personnel Matrix of Hours by Task

| | Ducks Unlimited | | Brown-Caldwell | | | | | | Harvey Ec. | Task Sum |
|---|---|---|---|---|---|---|---|---|---|---|
| Task Description | Manager | Biologist | Project Engineer | Admin. Asst. | Staff Engineer | Review (GIS Tool) | GIS Analyst | Review Grant Write | Economist | |
| Task 1: Project Meetings and Development | | | | | | | | | | |
| Meet with BC to develop project and grant | | | | | | | | | | |
| BC Grant Writing | | | | | | | | | | |
| Total Hours | 0 | 0 | 16.5 | 0 | 0 | 0 | 0 | 12.25 | 0 | |
| Total Cash | | 0 | | | | | | 5176.75 | 0 | 5176.75 |
| *Task 2: Kickoff and data collection* | | | | | | | | | | |
| Prepare for and conduct kickoff workshop | | | | | | | | | | |
| BC project setup | | | | | | | | | | |
| DU project setup | | | | | | | | | | |
| Collect and organize existing GIS data | | | | | | | | | | |
| Collect informational and tabular data | | | | | | | | | | |
| Convert informational and tabular data to GIS | | | | | | | | | | |
| Develop Economic Evaluation Strategy | | | | | | | | | | |
| Total Hours | 26 | 28 | 16 | 1 | 32 | 5 | 44 | 0 | 24 | |
| Total Cash | | 9450 | | | | | | 18100 | 4560 | 32110 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Task 3: Development of GIS analysis tool* | | | | | | | | | | | |
| Make sure that all GIS data is in the same projection | | | | | | | | | | | |
| Develop specific classifications for different layers | | | | | | | | | | | |
| Add classification fields and data to GIS layers | | | | | | | | | | | |
| Add weighting fields and data to GIS layers | | | | | | | | | | | |
| Data processing of classifications and weightings | | | | | | | | | | | |
| Develop summation grid | | | | | | | | | | | |
| Make initial run of location map | | | | | | | | | | | |
| Create draft location map and maps of factors | | | | | | | | | | | |
| Review maps | | | | | | | | | | | |
| Redo maps based on team comments | | | | | | | | | | | |
| 2nd review | | | | | | | | | | | |
| BC project management activites | | | | | | | | | | | |
| Total Hours | | 26 | 38 | 18 | 6 | 4 | 6 | 96 | 0 | 24 | |
| Total Cash | | | 11200 | | | | | | 22454 | 4560 | 38214 |
| *Task 4: Implementation plan* | | | | | | | | | | | |
| Develop white paper describing plan | | | | | | | | | | | |
| Meet with water users | | | | | | | | | | | |
| Edit white paper based on water user meetings | | | | | | | | | | | |
| Meet with NRCS | | | | | | | | | | | |
| Finalize program description | | | | | | | | | | | |
| Total Hours | | 26 | 80 | 21 | 0 | 4 | 0 | 0 | 6 | 0 | |
| Total Cost | | | 18550 | | | | | | 5269 | 0 | 23819 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Task 5: Report* | | | | | | | | | | | |
| Write draft report | | | | | | | | | | | |
| Review report | | | | | | | | | | | |
| Address comments | | | | | | | | | | | |
| Finalize report | | | | | | | | | | | |
| | Total Hours | 14 | 50 | 29 | 2 | 20 | 2 | 24 | 0 | 0 | |
| | Total Cost | | 11200 | | | | | | 10862 | 0 | 22062 |

| | |
|---|---|
| DU Total Personnel Cost ($175/hour) | $50,400 |
| Brown-Caldwell Total Cost (Average $168.68/hour) | $61,862 |
| Harvey Economics Personnel Cost ($190/hour) | $9,120 |
| Project Total Direct Personnel Costs | $121,382 |
| **TOTAL PERSONNEL COST** | **$121,382** |

## Direct Project Costs

| Other Direct Costs | | | | | |
|---|---|---|---|---|---|
| Item: | Copies | Materials | Equipment / Supplies | Mileage | Task Subtotal |
| Units: | $ | $ | $ | $ | $ |
| Unit Cost: | L.S. | L.S. | L.S. | L.S. | |
| Task 1 - Project Concept and Development | | | | | $0 |
| Task 2 - Kickoff and Data Collection | | | | $234 | $234 |
| Task 3 - Development of GIS analysis tool | $225 | | | $93 | $318 |
| Task 4 - Implementation plan | $1,000 | | | $922 | $1,922 |
| Task 5 - Report | $1,000 | | | $234 | $1,234 |
| Subtotal Units: | $2,225 | $0 | $0 | $1,482 | $3,707 |
| **Total Cost:** | **$2,225** | **$0** | **$0** | **$1,482** | **$3,707** |

| Total Costs | | | | | |
|---|---|---|---|---|---|
| | Labor | Other Direct Costs | Subtotal | Matching Costs: Cash / in-kind | Total Grant Funds |
| Task 1 - Project Concept and Development | $5,177 | $0 | $5,177 | $5,177 | $0 |
| Task 2 - Kickoff and Data Collection | $32,110 | $234 | $32,344 | $9,450 | $22,894 |
| Task 3 - Development of GIS analysis tool | $38,214 | $318 | $38,532 | $5,500 | $33,032 |
| Task 4 - Implementation plan | $23,819 | $1,922 | $25,741 | $3,908 | $21,833 |
| Task 5 - Report | $22,062 | $1,234 | $23,296 | $1,234 | $22,062 |
| **Total Costs:** | $121,382 | $3,707 | $125,090 | $25,269 | **$99,821** |

Task 1 Match provided Brown-Caldwell Project Development