Exhibit A
Scope of Work

Task 1 – Creation of a web accessible Common Data Repository: $121,000

This task includes a thorough search of available water quality information in the basin. This will include surface and ground water data from local, State and Federal agencies, consulting firms, water and sanitation districts water conservancy districts, and other industrial users as available.

- Description of task: Two primary components to this task: **Creation of a water-quality database** and then **development of the publicly-accessible interactive website that will provide query and retrieval access to the database**. Contact water-quality data sources to obtain electronically available water-quality data for compilation and incorporation into the planned relational database and interactive website. At least 15 public, private, and non-profit entities are expected to be contacted for submittal of data for the project. After the relational water-quality database is constructed and quality assured, a website interface will be developed using existing methods that have been successful for other watersheds. (for an example of the web site interface that will be copied see http://co.water.usgs.gov/cf/eaglecf/dataretriever.cfm)

- Methods: USGS personnel will complete the task following systematic methods developed for similar projects. Methods include a variety of data manipulation tasks to reformat provided data into a common format. Data will be screened and merged from widely variable formats into a single reporting format. Routines to streamline future data updates will be developed and shared with the various data sources to simplify updates to the common data repository on a semi-annual or annual basis as needed. Monitoring sites and water-quality parameters will be redefined and recomputed to reduce the database content to the minimum required number of sampling locations and water-quality parameters, minimize duplication. This reduction will yield a concise database that will provide users with data that is immediately useable with a minimum of required data synthesis tasks.

- Major deliverable: A web-accessible water-quality data repository. Users will be able to view and select and download monitoring locations and historical water-quality monitoring data through interactive selection and filtering criteria that are fully customizable by individual users. (for an example of the website interface that will be used as the template for this deliverable please see http://co.water.usgs.gov/cf/eaglecf/dataretriever.cfm)

Task 2 Baseline assessment report on water quality and water quantity: $86,000

Using the data collected in task one this assessment report will describe natural and human factors related to the quality of the surface and groundwater systems.

- Description of task: Using the water-quality database that will be compiled in addition to a review of results from previous studies, a detailed assessment of baseline conditions and water-quality trends in the Upper Yampa River basin will be conducted. The objective will be to describe natural and human factors related to surface- and ground-water systems. A comprehensive assessment of the quality of waters in the watershed should provide valuable information that can be used to predict the effect of and plan for future changes in the allocation and use of waters of the upper Yampa River watershed. In an effort to inform stakeholders regarding the utility of past and current monitoring efforts for addressing important questions regarding the condition and key factors affecting water resources, gaps in historical data and current monitoring efforts will be identified so that strategic adjustments can be made to existing or proposed monitoring plans.
- Method: Standard statistical techniques will be utilized to provide interpretations of the water-quality conditions and factors affecting conditions. USGS personnel will complete the task. Comparisons to applicable water-quality standards will be made. Trend analyses and other methods to define spatial and temporal changes in water-quality will be completed. Major topics that will be addressed include assessment of nutrient, major ion, trace metal, sediment concentrations and loads, in addition to assessment of streamflow characteristics and trends, basin water yield and basin water budget. Water resource data will be assessed for correlation to various natural and human factors such as geology, climate, land use and water-use patterns and trends.
- Deliverable: A comprehensive report of results will be published by the USGS.

Task 3 Water-quality and water-quantity monitoring plan development: $4,700

This will be tailored to fill identified needs within the upper Yampa Basin. The proposed plan will be established based upon the assessment, input from the Roundtable, City and County representatives, and other interested parties.

- Description of task: Completion of tasks 1-2 will yield extensive information about the utility and limitations of past and current monitoring efforts. Based this new knowledge, stakeholders will be engaged in a process to identify and prioritize the water-resource-related questions that are important for existing or future monitoring efforts to address. Sensible monitoring plans and schema will be developed and shared with stakeholders so that future monitoring efforts can avoid excessive duplication and to ensure that the scope and quality of data collection efforts will meet data-quality objectives while effectively balancing and addressing short- and long-term needs.
- Method: USGS personnel will complete this task in consultation and collaboration with a wide variety of stakeholders including the Roundtable, water and land managers, and representatives from major industries within the watershed. As part of its core mission, the USGS regularly develops and provides technical assistance to stakeholders to develop water-resource monitoring plans. The proposed monitoring plan development will be informed by a comprehensive understanding of the utility and limitations of past and existing monitoring efforts in the upper Yampa River watershed in the context of key short and long-term water-resource questions that the various water and land managers identify as priorities to address. Specific sites, sampling frequencies, and water-quality and water-quantity constituents will be defined.

- Deliverable: A written monitoring plan that will identify the purpose and short- and long-term questions and objectives to be addressed by each plan component. The plan will be written in collaboration with selected stakeholders to ensure it correctly addresses key water resource topics and issues. The plan will be provided electronically and in hard-copy to facilitate future updates as new information becomes available.

Task 4 Public Outreach: $1,500

To inform the public of the results, future monitoring plans, and obtain additional feedback. A series of public meetings will be held in conjunction with the U.S.G.S team to solicit comments from interested parties regarding specific parameters and areas of interest. A more complete description can be found in the USGS proposal enclosed with this application which may be modified to include comments and recommendations of the Roundtable.

- Description of task: This task is actually, in part, a component of all preceding tasks, in addition to being the final tasks wherein all project results and products will be shared and demonstrated for the public and interested stakeholders and project participants. Throughout the project, numerous meetings will be conducted in order to provide and to obtain input. At the completion of the project 1-2 public outreach meetings will be planned and conducted to demonstrate how to access and use the website product as well as to summarize key findings that are documented in the final project report.

- Method: Plan and conduct meetings with stakeholders, project participants, and the general public. PowerPoint presentations and live demonstrations of to develop and complete user-customized data query and retrievals form the web-accessible database. USGS staff will conduct outreach in collaboration with Mike Zopf (Routt County) and representatives from the City of Steamboat Springs. Note: the attached project budget only includes the final project outreach activities, but significant additional outreach tasks have been planned and budgeted for within the other project tasks as well.

- Deliverable: Outreach meetings at the completion of the project are the budgeted deliverable for this task. During the early and mid-stages of the project, deliverables will include prioritized listings of available data sets and water–resource issues that should be incorporated into the project scope and approach.

II. Personnel

Project Director: Kirby Wynn, Supervisory Hydrologist, U.S. Geological Survey:
Qualifications: Since 1997 Mr. Wynn has personally completed and also supervised completion of essentially the same size, scope, and approach for projects with nearly identical objectives for the Gore Creek, Blue River, Eagle River, Roaring Fork River, and San Juan, Animas, Dolores/San Miguel watersheds. These previous and ongoing projects have been completed while achieving the full proposed scope of work on time and within budget. Since 2001, Mr. Wynn has supervised and provides technical and budget oversight to hydrologists, students, and contractors who are engaged in water resource projects with cumulative budgets exceeding $1,500,000 annually.

Project Database and Web Development Lead: David Litke, Database and GIS Specialist, U.S. Geological Survey:
Qualifications: Mr. Litke has personally designed and compiled as well as supervised the compilation of large scale (larger and more complex than the currently proposed database)

water-resource databases since 1994. Mr. Litke is regularly tasked by the USGS to travel to foreign countries for detail assignments to design, teach, mentor, and complete large scale database construction and maintenance tasks. Mr. Litke has completed and supervised completion of website interfaces identical to the interface proposed for this project.

Additional staff: as listed in budget tables:
A small team of experienced USGS hydrologists, database specialists, and support staff will be utilized under the direction of Kirby Wynn and David Litke. The USGS has extensive experience completing similar work throughout Colorado and has a proven track record for successfully compiling data form disparate sources, creating relational databases with web-accessible interfaces in addition to completing comprehensive assessments of water resources. Staff utilized during the project will be an effective and economical mix of topical experts plus personnel that will be trained and supervised to complete each task.

Contract Administrator: Mike Zopf, Director, Routt County Environmental Health Department:
Mr. Zopf has been a department director for Routt County for more than 20 years. During that tenure he has administered numerous grants and has supervised and directed the activities of numerous contractors.

III. Budget

Total Budget $213,200
Grant Request: $106,600 This is 50% of the proposed cost with match funds from County and City.
Grant Match: $106,600 committed from Routt County and the City of Steamboat Springs
See attached table for detail budget.

IV. Schedule

Project completion in 2009 pending date of funding authorization received prior to June 2008. Later funding authorization dates will slide completion date accordingly: Database and website construction in 2008 and early 2009. Data analysis, final report preparation, and monitoring plan development will mostly occur in 2009, with project completion in 2010.

Timeline for major tasks	2008				2009				2010			
Task 1 Creation of web-accessible Common Data Repository	1	2	3	4	1	2	3	4	1	2	3	4
Public Outreach, identify available data sets, and compile for further processing												
Process, screen, and merge raw data into relational database												
Quality-assure and standardize data elements												
Create web-accessible common data repository												
Update common data repository with recent data, dependant on available funding support												
Task 2 Baseline assessment report on water quality and water quantity												
Initial characterization of utility and scope of existing water-resources data												
Compile and review existing literature, outreach to stakeholders and others knowledgeable of study area water resource conditions and issues												
Summarize environmental factors affecting water resources												
Outreach to project partners and stakeholders to prioritize approach and scope of data analysis												
Data interpretation and report writing												
Draft USGS report submitted for review												
Address review comments, publish final report												
Task 3 Water-quality and water-quantity monitoring plan development (based on assessment results)												
Design a water-quality sampling scheme based on stakeholder input and newly developed knowledge of data gaps, resource conditions, and threats												
Task 4 Public Outreach to inform assessment and share products and results												
Provide interim or final project results to project partners												

Payment

Payment will be made based on actual expenditures and invoicing by the water activity sponsor. 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 CWCB in hard copy and electronic format as part of the project documentation.