Exhibit A

Scope of Work

WATER ACTIVITY NAME -
Upper Black Squirrel Aquifer Recharge Study and Demonstration Project

GRANT RECIPIENT –
El Paso County Water Authority

FUNDING SOURCE(S) -
Basin Account Water Supply Reserve Account - $45,200
Severance Tax Operational Account - $40,000

BACKGROUND
The alluvium of Black Squirrel Creek and its tributaries in central El Paso County are within the Upper Black Squirrel Creek Designated Ground-Water Basin, and as such administered by that Management District. Colorado Water Resources Circular #32, published by the Colorado Water Conservation Board (1976), provides an overview of water resources in El Paso County. The Circular documents 400,000 acre-feet of water in storage in the Black Squirrel alluvial aquifer in 1964 declining to 350,000 acre-feet by 1974, a loss of 50,000 acre-feet. That trend has continued to the present, perhaps affording an opportunity to recharge that portion of the alluvium that once stored water.

The alluvium within the Upper Black Squirrel Creek Basin was identified as a favorable recharge site in a mid-1970's U.S. Geological Survey study (1977). Cherokee Metropolitan District is well along in its effort to investigate recharging treated effluent into the lower Black Squirrel alluvial aquifer. Pilot studies (Southern Well Field Replacement Water Infiltration Basin) indicate the concept is feasible, recharge rates are good and water quality may actually improve. However, sources of water for recharge are mostly limited to wastewater return flow from non-tributary aquifers of the Denver Basin. If other water districts/utilities are involved there is the potential to use wastewater return flows from other exhaustible sources, such as transbasin diversions, for recharge. Storage of water in the Black Squirrel Creek alluvial aquifer could foster more efficient use of non-renewable resources from the Denver Basin aquifers and enhance reliability and sustainability of ground water supplies. In addition, water storage in this aquifer can serve as a sub-regional water supply management tool. Beneficiaries include agricultural users, existing and future municipal supplies, and individual well users.

Approach:
Anticipated activities are described below and consist of historical data collection, field work to acquire new data, technical analyses, mapping, assessment of evaluation criteria, and reporting. This information and data will be formatted and entered into a geodatabase to accommodate analysis and display in Geographic Information System (GIS) compatible software.

SUMMARY OF TASKS

Task 1 - Historical Data Compilation and Site Characterization

- Conduct Literature Review
  An initial step will be to obtain and review existing literature and data that will be used to better characterize the aquifer configuration, hydrologic properties, and water level data. This will include studies from federal agencies, state agencies, universities, consultants, and local water management districts. Information provided by the members of the Water Authority will also be key resources.

- Involve Local Experts
  Local experts will be identified and interviewed to obtain additional background information and insight into the areas of geology, hydrology, local land use issues, utility infrastructure, previous recharge studies and pilot operations. It is anticipated that local knowledge will provide valuable information for potential recharge sites, local water rights/use issues, land ownership, existing infrastructure, water supply options, environmental issues, and technical and regulatory impediments to implementation of artificial recharge projects.

- Obtain Water Well Records from the Office of the State Engineer
  The well permit files and records managed by the Office of the State Engineer/Division of Water Resources will be obtained in digital form to conduct analysis and mapping of number of active water supply wells, decreed amounts of withdrawal, and types of water use for wells completed within the alluvial aquifer.

- Characterize the Alluvial Aquifer
  Using the information compiled from literature, data sources, and local experts, technical analyses will be undertaken to identify:

  - Configuration of the alluvial aquifer (aerial extent and depth)
  - Spatial relationship with underlying Denver Basin bedrock aquifers
  - Historic and current water levels, water level trends
  - Spatial distribution of aquifer property data
  - Estimate of amount of water in storage
  - Estimate of amount of available storage capacity
  - Annual amount of natural recharge
  - Annual amount of ground water withdrawal
  - Ground water flow pathways

- Characterize the Land Use and Ownership
  Using information compiled from the Department of Local Affairs, El Paso County, study participants and local experts, the current land use designations and land ownership categories will be compiled and mapped as a GIS layer.

- Identify the Existing Water Delivery Infrastructure
  The existing water delivery infrastructure will be compiled and mapped as a GIS layer using information from applicable state agencies, El Paso County, water districts, study participants, and local experts.

Spatial characterization of the aquifer, land use/ownership, water use, and infrastructure will be addressed by the following tasks:

- Determine a database structure for data entry, formatting, and display in GIS-compatible format.
- Obtain existing electronic databases, GIS shapefiles, maps, tables, and figures.
- Digitize pertinent analog maps for incorporation into GIS project files.
- Prepare digital contour and/or point plot maps to portray characteristics of interest, incorporating historic and newly acquired data.

It should be noted that the availability of specific sources of water will not be investigated as part of this study, but if this type of information becomes available during the course of this study it will be presented.

Task 2 – Field Data Collection

A field study workplan will be developed to fill some of the data gaps identified in Task 1. The fieldwork will consist of drilling and constructing observation wells, geological and geophysical logging, sediment sample collection, conducting aquifer pump tests, and monitoring seasonal water levels. It is anticipated that existing wells would be accessible for conducting aquifer pump tests and monitoring water levels.

- Installing New Wells
  CGS will develop a data collection program to include installation of new monitoring wells taking into consideration site access, well drilling, well construction and surface completion, soil and water sample collection, soil and water sample testing, water level measurements, field QA/QC protocols, and field documentation requirements.
  - It is anticipated that a maximum of six new observation wells will be installed. All boreholes will be drilled to bedrock, with an estimated maximum depth of 180 feet.
  - Each boring will be visually logged and described by a qualified geologist. Geophysical logs including natural gamma ray and inductance will be run in each boring to characterize the heterogeneity of the aquifer. Select samples will be retained for geotechnical and possible geochemical analysis.

- Aquifer Testing
  If feasible, aquifer pump tests will be conducted to evaluate the hydrologic characteristics of the alluvial aquifer. Aquifer pump tests will require access to

existing wells equipped with suitable pumps and power, where discharging water can be conveyed so as not to influence the test.

- It is anticipated that up to two pump tests may be conducted. Pump tests will be conducted at a sustainable constant flow rate for a period not greater than eight hours. Water levels will be measured with an in-well pressure transducer and datalogger.
- Appropriate aquifer testing and discharge permits will be acquired from State regulatory agencies.

- Water Quality

  Water quality considerations and water chemistry equilibrium are critical aspects of a potential recharge program. Potential source waters will not be evaluated as part of this project, but ambient water quality conditions will be quantified.
  - Major ion water chemistry and total dissolved solids are the primary parameters to be analyzed.
  - Water quality samples will be collected and submitted for laboratory analysis at each of the aquifer test locations.

- Water Level Monitoring

  Water storage capacity is dependent upon the thickness and configuration of the unsaturated zone in the aquifer. As referenced in the grant application, the Black Squirrel alluvial aquifer has experienced declining head for decades. In addition to long-term trends, seasonal variations in water levels need to be understood.
  - A monitoring well network will be established that provides spatially representative water level data throughout the alluvial aquifer. Where available, existing monitoring wells from the USGS, Division of Water Resources, or district monitoring networks will be incorporated to tie into historic water levels.
  - Water levels in monitoring wells will be measured on a monthly basis for six months from June through December to assess seasonal variations.
  - Hydrographs from representative water wells will be prepared based on historic and field collected data.

Task 2 (2) – Phase 2 Field Data Collection

Phase 2 will focus in on one of the final candidate sites or sub-basins identified in the initial phase of work. Additional field data will be collected to refine our understanding of the hydrogeology of a select site in anticipation of pilot project implementation. This phase of work, if funded, will be conducted after completion of the initial fieldwork plan outlined in Task 2. The fieldwork will consist of drilling and constructing observation wells, geophysical logging, conducting aquifer pump tests, and monitoring seasonal water levels. It is anticipated that existing wells would be accessible for conducting aquifer pump tests and monitoring water levels.

- Installing New Wells

CGS will develop a data collection program to include installation of new monitoring wells taking into consideration the results and recommendations from the initial fieldwork plan.

- It is anticipated that a maximum of four new observation wells will be installed. All boreholes will be drilled to bedrock, with an estimated maximum depth of 180 feet.
- Each boring will be visually logged and described by a qualified geologist. Geophysical logs including natural gamma ray and inductance will be run in each boring to characterize the heterogeneity of the aquifer. Select samples will be retained for geotechnical and possible geochemical analysis.

- Aquifer Testing
  If feasible, aquifer pump tests will be conducted to evaluate the site-specific hydrologic characteristics of the alluvial aquifer. Aquifer pump test will require access to existing wells equipped with suitable pumps and power, where discharging water can be conveyed so as not to influence the test.
  - It is anticipated that up to two additional pump tests may be conducted. Pump tests will be conducted at a sustainable constant flow rate for a period not greater than eight hours. Water levels will be measured with an in-well pressure transducer and datalogger.
  - Appropriate aquifer testing and discharge permits will be acquired from State regulatory agencies.

- Water Quality
  Water quality considerations and water chemistry equilibrium are critical aspects of a potential recharge program. Potential source waters will not be evaluated as part of this project, but ambient water quality conditions will be quantified.
  - Major ion water chemistry and total dissolved solids are the primary parameters to be analyzed.
  - Water quality samples will be collected and submitted for laboratory analysis at each of the aquifer test locations.

- Water Level Monitoring
  The new monitoring wells will be incorporated into the established monitoring well network and measured on a monthly basis through the end of the funding period.

Task 3 – Data Analysis, Evaluation, and Mapping

The objective of this task is to characterize the hydrogeology of the Black Squirrel Creek alluvial aquifer, compute available storage capacities, and recharge potential based on evaluation criteria that will incorporate physical, environmental, and economic considerations. The study will also identify appropriate recharge technologies based on hydrogeologic conditions such as vertical heterogeneity of the aquifer. A preliminary list of evaluation criteria includes:

- Physical considerations, including
  - Overall hydrogeologic characteristics
  - Vertical stratigraphic characteristics (variability) of the aquifer
  - available storage capacity
  - infiltration rates
  - groundwater recharge and discharge areas
- Environmental considerations, including
  - water quality
  - land use categories
- Economic considerations, including:
  - land ownership and site access
  - existing infrastructure

It should be noted that this study will not investigate or address costs related to the design, construction, or operation of potential recharge project implementation, the availability of specific sources of water, engineering considerations, or legal issues. If this type of information becomes available during the course of this study it will be incorporated.

Data analysis and evaluation of the aquifer for recharge suitability will be achieved through completion of the following tasks:

- Compilation of a database in GIS-compatible format.
- Creation of GIS shapefiles and layers, maps, tables, and figures.
- Prepare digital contour and/or point plot maps to portray features or characteristics of interest, incorporating both historic and newly acquired data.

Task 3 (2) – Phase 2 Data Analysis, Evaluation, and Mapping

The site-specific data collected in Task 2 (2) will be incorporated into the database and GIS layers generated in Task 3 to better characterize the hydrogeology of the select site. Additional maps, tables, and figures will be prepared to portray the hydrologic features of the site.

Task 4 - Reporting

Stakeholder Meetings

- A series of meetings will be conducted with the El Paso County Water Authority representatives and contributing stakeholders as determined by the Authority's project manager. The purpose of these meetings will be to present draft products and

solicit feedback, to communicate progress on this project, and to obtain addition technical input.

- Additionally, CGS staff will be available to meet with funding partners, legislative committees, special commissions, roundtables, etc. for the purpose of promoting the project, soliciting additional funds, or educational outreach.
- The proposed budget accommodates up to four (4) full-day and eight (8) half-day meetings. The exact number and duration of meetings will be identified in coordination with the Authority's project manager based on schedule and remaining available budget.

Project Report

- A comprehensive report will be prepared that includes figures, maps, tables, and appendices. The report will be technical in nature and supplemented by appendices that contain data and technical analyses that are summarized in the report.
- Six (6) copies of the draft version of the report will be submitted in electronic (MS Word or Adobe PDF) format to the Authority's project manager for review, with a two-week turnaround anticipated. CGS will address comments, in consultation with the Authority's project manager, and will submit the Final Report in electronic and hard-copy formats.
- It is anticipated that twenty-five (25) final copies of the report will be delivered to the El Paso County Water Authority for distribution to contributing stakeholders and sponsoring agencies.
- GIS files and databases generated as part of this project will be transmitted on CD-ROM following submittal of the Final Report.

Task 4 (2) – Reporting (Phase 2)

The Phase 2 work plan and associated budget accommodates up to four (4) additional stakeholder meetings and a supplemental final project report. The distribution, timing, and number of copies of both draft and final reports are anticipated to be consistent with the deliverables of Task 4.

Task 5 - Project Management

This task includes coordination of staff responsibilities and duties, coordination of stakeholder meetings, tracking work accomplished, budget and schedule management, and reporting the status of work activities.

- CGS will provide up to six (6) bi-monthly progress reports
- The progress reports will include a summary description of work accomplished during the previous two months and will describe the percent of task completion, budget spent by task, and total budget remaining. The progress report also will

describe any technical, budget and schedule concerns and proposed corrective actions.

- CGS will submit monthly invoices based on staff billing rates and hours, third-party expenses, and other direct costs.

Task 5 (2) - Project Management (Phase 2)

This task extends the project management activities outlined in Task 5 through the Phase 2 performance period. Invoices for work performed and other direct costs will continue to be submitted on a monthly basis. It is anticipated that two (2) additional bi-monthly reports will be generated.

SCHEDULE

Initial Task	Phase 2 Task	Description	Timeline	Budget Amount	Phase 2 Budget
1		Historical Data Compilation and Site Characterization	Apr07 – Jul07	$ 35,360	
2		Field Data Collection	Jul07 - Dec07	$ 54,500	
	2 (2)	Phase 2 – Field Data Collection	Jul08 – Dec08		$ 21,550
3		Data Analysis, Evaluation, and Mapping	Nov07 – Apr08	$ 14,100	
	3 (2)	Phase 2 - Data Analysis, Evaluation, and Mapping	Sep08 – Dec08		$ 6,720
4		Reporting	May07 – Jun08	$ 28,400	
	4 (2)	Phase 2 – Reporting	Jul08 – Dec08		$ 10,165
5		Project Management	Apr07 – Jun08	$ 4,660	
	5 (2)	Phase 2 – Project Management	Jul08 – Dec08		$ 1,615
Project Task Total Costs				**$ 137,020**	**$ 40,050**
Initial and Phase 2 Cost				**$ 177,070**	

BUDGET AND FUNDING SOURCES

Upper Black Squirrel Recharge Study

			SOURCES OF FUNDING			
	USES OF FUNDING		CWCB Jan, '06 Grant	EPCWA Members	EPCWA Non-Members	Arkansas RT WSRA
	Upper Black Squirrel Recharge Study Program		***$40,000***	***$35,000***	***$35,000***	***$70,000***
Task #	**Colorado Geological Survey Scope of Work**	***$137,020***				
1.0	Historical Data Compilation and Site Characterization	$35,360		$2,680	$2,680	$30,000
2.0	Field Data Collection	$54,500	$29,000	$12,750	$12,750	$0
3.0	Data analysis, Evaluation, and Mapping	$14,100	$5,000	$4,550	$4,550	$0
4.0	Reporting	$28,400	$2,000	$8,200	$8,200	$10,000
5.0	Project Management	$4,660	$2,000	$330	$330	$2,000
	EPCWA Project Management					
	Project Manager, Bookkeeping and Admin Support	***$13,000***				
	Upper Black Squirrel Recharge Study	$13,000	$2,000	$5,500	$3,500	$2,000
	Contingency	$5,180		$990	$2,990	$1,200
	TOTAL ALL INITIATIVES:	**$155,200**	**$40,000**	**$35,000**	**$35,000**	**$45,200**

By: Gary Barber (719) 598-0230

Upper Black Squirrel Creek Basin
- Aquifer Recharge and Storage Evaluation

PHASE 1 BUDGET WORKSHEET

Task 1 Historical Data Compilation and Site Characterization
Total Budget = $35,360.

	Literature Review	Interview Local Experts (2 trips)	Water Well Records	Characterize Aquifer (GIS project, field check - 2 people)	Characterize Land	ID Water/wastewater Infrastructure
Travel expenses	$549	$732		$849	$366	$732
Staff labor expenses	$6,200	$3,000	$3,000	$13,500	$3,100	$3,100
Total	$6,749	$3,732	$3,000	$14,349	$3,466	$3,832

Timeline May07-Jul07 (concurrant activities)

Task 2 Field Data Collection
Total Budget = $54,500.

	Install New Wells- 6 (geologging, samples)	Aquifer Testing (2 wells)	Water Quality (8 wells)	Water Level Monitoring
Travel expenses	$2,382	$1,044		$5,967
Staff labor expenses	$1,450	$1,200	$1,200	$10,500
Analytical/intrument costs	$390	$100	$1,960	$300
Drilling costs	$20,800			
Geophysical logging	$3,500			
Aquifer testing		$3,700		
Total	$28,522	$6,044	$3,160	$16,767

Timeline Jul07-Sep07 Jul07-Dec07 Jul07-Sep07 Jul07-Dec07

Task 3 Data analysis, Evaluation, and Mapping
Total Budget = $14,100.

	Data analysis, evaluation, & mapping
Travel expenses	$777
Staff labor expenses	$13,325
Total	$14,102
Timeline	Nov07-Apr08

Task 4 Reporting
Total Budget = $28,400.

	Stakeholder meetings (12)	Project Report
Travel expenses	$4,632	
Staff labor expenses	$7,500	$16,250.00
Total	$12,132	$16,250
Timeline	May07-Jun08	Jun08

Task 5 Project Management
Total Budget = $4,660.

	Project management
Travel expenses	864
Staff labor expenses	3,800
Total	4,664
Timeline	May07-Jun08

Rate Sheet Colorado Geologic Survey

COLORADO GEOLOGICAL SURVEY
FY 2008 PRELIMINARY HOURLY INVOICE RATES

EFFECTIVE: MAY 1, 2007 THROUGH JUNE 30, 2008

Position#	Name	Classification	FY2008 Modified Hourly Invoice Rates
97	BARKMANN P	PSR/S II	**$73.40**
87	BURNELL	PSR/S II	**78.02**
64	CARLSON	PSR/S I	**60.24**
81	CARROLL	PSR/S III	**84.86**
110	GAFFNEY	PSR/S I	**59.63**
78	MORGAN K	PSR/S II	**68.50**
113	NICKLESS	ADMN ASST III	**41.20**
111	OERTER	PSR/S I	**59.63**
94	SARES	PSR/S V	**104.65**
2	SCHINDLER	BUD ANAL IV	**88.38**
98	SCOTT	E/PS TECH III	**51.44**
13	TOPPER	PSR/S III	**78.91**
6	VIGIL	ACCT TECH III	**46.12**
108	WAIT	PSR/S II	**70.42**
112	WATTERSON	PSR/S II	**59.63**
Temp	TBD	Temp	**TBD**

Upper Black Squirrel Recharge Study Project Management			
	Gary Barber	**Elise Bergsten**	**Totals**
Labor Costs	**Project Mgr**	**Admin/bookeeper**	
Upper Black Squirrel Study by Tasks			
Bi-monthly Study Group Meetings: 7 meetings @ 1 hours prep, 2 hours meeting time, 1 hour minutes/followup	28	28	**4200**
Invoice study participants, collate billing, process invoices from Contractor, report to El Paso County Water Authority,4 hours/month x 12 months		48	**2400**
Task 2 Field Collection, One field trip, 8 hours	8	8	**1200**
Task 3, Telephone & Coordination of data analysis between study members, 6 hours per month for two months plus 2 hours per month Admin support	12	4	**1400**
Task 4 Five meetings @ 1 hour prep, 2 hours meeitng time, (This set of meeting with bi-monthly meetings above equals "12 stakeholder" meetings by Colo. Geo. Survey	15	15	**2250**
Final Study Results Presentation to CWCB, UBSGMD, EPCWA & Arkansas Roundtable, 4 presentations @ 2 hours plus 1hours each admin	8	4	**1000**
Total Labor Hours	**71**	**107**	**178**
Total Labor Cost	**$7,100**	**$5,350**	**$12,450**
Prinicpal labor cost is $100/hour			
Admin support cost is $50/hour			
Other Direct Costs			
Mileage			
Four trips avg. 100 miles @ $.41/mile for presentations to CWCB, etc.	$164	$0	
Photocopies			
300 copies per month x 12 month; $0.11/copy)	$396		
Total Other Direct Costs	**$560**	**$0**	**$560**
TOTAL COSTS (Labor + Other Direct)	**$7,660**	**$5,350**	**$13,010**

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.