

Upper Mountain Counties Water Needs

Assessment

APPLICANTS: Clear Creek County on Behalf of the
Upper Mountain Counties Water Needs
Consortium

APPROVED: May 2008

STATUS: In Progress

WSRA FUNDS: \$174,350—**joint application:**
\$43,587—Metro Basin Account
\$130,763—South Platte Basin Account

MATCHING FUNDS: \$8,070

DESCRIPTION:

In March 2008 the four upper mountain counties in the South Platte headwaters (Park, Jefferson, Clear Creek, and Gilpin) formed the Upper Mountain Counties Water Needs Consortium. The purpose of the Consortium is to “perform a study to accurately identify water needs, available water supplies and any shortages that may exist in the Upper Mountain Counties and identify projects and or actions that may be needed to address any shortages.” The needs assessment seeks to determine the long term availability of ground water in the fractured and faulted bedrock aquifers of the study area and evaluate if the use of ground water at build-out can be sustained. The study will use historical precipitation data (1950 to present), recharge related to this precipitation, and data on increased ground water use to analyze hydrologic variation over the period during wet, average, and dry years. The project will provide a more accurate assessment of the water demands in the study area which are highly dependent upon ground water in fractured and faulted bedrock aquifers.

Solicitation of Stakeholder Input Through a South Platte Edition of Headwaters

APPLICANT: Colorado Foundation for Water
Education

APPROVED: July 2008

STATUS: Complete

WSRA FUNDS: \$32,038—**joint application:**
\$16,019—Metro Basin Account
\$16,019—South Platte Basin Account

MATCHING FUNDS: \$10,900

DESCRIPTION:

This project entails the creation of a special South Platte Edition of CFWE’s Headwaters Magazine to provide a tool for Metro and South Platte Basin Roundtable members to actively solicit input from affected local governments and stakeholders on their needs assessment and proposed projects and methods for meeting those needs. Headwaters magazine is CFWE’s most widely available and well-known educational resource, distributed to over 6,000 residents of Colorado and the West. The project is intended to educate Basin Roundtable stakeholders about the basin’s geography, water supply, environmental challenges, water management agencies (including the IBCC and Roundta-

bles), and water needs. CFWE will provide support to Basin Roundtable members in their outreach efforts by providing materials and assisting in their distribution, and attending a limited number of speaking engagements on behalf of the Basin Roundtable to discuss the contents of the issue.

Demonstration of Membrane Zero Liquid Discharge Process for Drinking Water Systems

APPLICANT: Colorado Department of Public Health
and Environment, Water Quality Control
Division

APPROVED: September 2008

STATUS: Contracting

WSRA FUNDS: \$800,000—**joint application:**
\$25,000—Arkansas Basin Account;
\$25,000—South Platte Basin Account;
\$50,000—Metro Basin Account;
\$700,000—Statewide Account

MATCHING FUNDS: \$325,000

DESCRIPTION:

See description under Arkansas Basin section.

Lost Creek Aquifer Recharge and Storage Study

APPLICANT: Lost Creek Groundwater Management
District

APPROVED: January 2009

STATUS: In Progress

WSRA FUNDS: \$160,000—**joint application:**
\$80,000—Metro Basin Account
\$80,000—South Platte Basin Account

MATCHING FUNDS: \$13,000

DESCRIPTION:

This study seeks to compile, collect, and analyze hydrologic, aquifer property, and water quality data to characterize the ground water resources in the Lost Creek alluvial aquifer. The study will also evaluate geographic, infrastructure, and land ownership/use information for the purposes of assessing the potential for aquifer recharge and storage implementation. To address the needs of in-basin water rights holders and assist the management district in their decision-making processes, the study will: 1. Characterize the configuration and extent of the alluvial aquifer within the Lost Creek basin; 2. Compile and present current and historic ground-water levels and water level trends; 3. Characterize the amount of natural recharge and estimate the available storage capacity in the alluvial aquifer; 4. Determine hydraulic and storage properties of the alluvial aquifer; 5. Present the spatial relationship with the underlying Denver Basin bedrock aquifers; 6. Characterize the land use and ownership; and 7. Identify the existing water delivery infrastructure.

South Platte River Recreation and Habitat Feasibility Study

APPLICANT: Greenway Foundation
 APPROVED: September 2008
 STATUS: Complete
 WSRA FUNDS: \$150,000 (Basin Account)
 MATCHING FUNDS: None

DESCRIPTION:

The Greenway Foundation will perform a feasibility study identifying habitat and recreation improvement alternatives associated with future instream flow expectations. The objective of the habitat improvements would be to increase native riparian vegetation and increase the abundance of aquatic life habitat. The location type and quality of existing habitat and riparian vegetation will be identified through field reconnaissance. Proposed improvement options would be developed to complement the existing habitat and vegetation. Biological physical and hydrological characteristics will be examined and improvement options will be identified based on stakeholder input. The feasibility study will also identify required permits to implement the proposed improvements. The study consists of 3 tasks: 1) data acquisition and site reconnaissance; 2) assessment of opportunities & challenges; 3) conceptual design for the study area.

South Metro Water Supply Authority Regional Aquifer Supply Assessment

APPLICANT: South Metro Water Supply Authority
 APPROVED: July 2008
 STATUS: Complete
 WSRA FUNDS: \$100,540 (Basin Account)
 MATCHING FUNDS: Unspecified In-kind

DESCRIPTION:

The purpose for the South Metro Water Supply Authority Regional Aquifer Supply Assessment study is to more accurately evaluate the likely impacts of continued reliance on the non-renewable groundwater supplies in the south Metro Denver area and to explore more coordinated regional management of this precious resource. This project intends to develop a better understanding of the aquifer characteristics relevant to well production artificial recharge and conjunctive use within the south Metro area through the collection of additional data from SMWSA providers. This study will also undertake a detailed assessment of aquifer drawdown due to pumping in the south Metro area by evaluating information from previous studies and updating with additional information collected from SMWSA providers. The project will also characterize the unit cost of producing potable groundwater in the south Metro area including costs for pumping water treatment annual operations and maintenance, evaluate whether the unit costs vary geographically, and/or over time through the year, and use this information to assess ways of optimizing operations to increase aquifer

sustainability. Finally this project will identify potential locations to conduct a regional ASR demonstration project within the south Metro area.

Parker Water & Sanitation District and Colorado State University Joint Project on the Rural/Farm Model

APPLICANT: Parker Water & Sanitation District
 APPROVED: September 2007
 STATUS: Complete
 WSRA FUNDS: \$150,000 (Basin Account)
 MATCHING FUNDS: \$882,353

DESCRIPTION:

The study is designed to provide additional renewable water supplies to the PWSD service area in Douglas County, which is dependent on non-renewable Denver Basin water. This 3-year study includes a controlled research by CSU on a farm in Loan County that is owned by PWSD (Hurst Farm). Various crops will be planted by CSU and these plots will be irrigated in different patterns to assess the crop's ability to thrive under varying irrigation practices, e.g., irrigating alfalfa prior to its first cutting, letting it grow without irrigation through the second cutting, and then irrigating it again prior to the third cutting. In this way, CSU will develop a database on the most efficient irrigation practices for various crops where the crop can still thrive under a lower irrigation volume. The difference between the reduced irrigation volume and the historic irrigation volume related to consumptive use could then be made available for transfer to PWSD for municipal use. Additionally, three to five on-farm demonstrations will be conducted, along with economic studies to assess the potential trickle-down effect from changes in the farm economy.

Zero Liquid Discharge Pilot Study

APPLICANT: East Cherry Creek Valley Water & Sanitation District
 APPROVED: September 2007
 STATUS: Complete
 WSRA FUNDS: \$400,000 (\$200,000—Basin Account; \$200,000—Statewide Account)

MATCHING FUNDS: \$150,000

DESCRIPTION:

The ZLD pilot plant study will evaluate two RO membrane based technologies to concentrate the residual stream from a typical municipal brackish water RO system. The first technology, called VSEP, uses vibrations at the face of the RO membrane to prevent mineral scales from forming on the membrane, and subsequently preventing the flow of water through the membrane. The second technology uses high pressure seawater RO membranes to reduce the volume of the concentrate, and uses ion exchange to remove ions that would form mineral scales on the membrane face. The study includes disposal options if a water stream is still

present. This study will provide information on the technical feasibility, costs, operational consideration, and energy consumption of these two zero liquid discharge processes.

Chatfield Reservoir Reallocation Environmental Impact Statement and Feasibility Report

APPLICANT: The Greenway Foundation
APPROVED: March 2007
STATUS: Complete
WSRA FUNDS: \$130,000—**joint application:**
\$103,000—Metro Basin Account
\$27,000—South Platte Basin Account

MATCHING FUNDS: \$206,000

DESCRIPTION:

The purpose of the Chatfield Reallocation Feasibility Study is to investigate the potential for the reallocation of storage from the flood control to multi-purpose use, to formulate plans of improvement, and to obtain approval of higher Corps authority. The Feasibility Study, which will consist of an environmental impact statement (EIS) and a feasibility report (FR), will include an analysis of existing and alternative operations of Chatfield Reservoir individually, and to the extent necessary for the hydrologic studies, systemically with Cherry Creek and Bear Creek reservoirs. The Feasibility Study will estimate potential changes to downstream flows and to reservoir pool elevations as well as the potential consequences to water supplies, flood damages, recreation opportunities, water quality and fish and wildlife habitat. Historical streamflow records will be utilized to test effects of different flood control and water supply regulation scenarios. The EIS/FR is equally cost shared with the local non-federal sponsor (CWBC) through a feasibility study cost share agreement (FCSA).

Aquifer Recharge Pilot Study

APPLICANT: South Metro Water Supply Authority
APPROVED: September 2009 (\$425,000) and
September 2010 (\$125,000)
STATUS: Contracting
WSRA FUNDS: \$550,000 (Statewide Account)
MATCHING FUNDS: \$85,000

DESCRIPTION:

This project will determine if aquifer recharge is a viable strategy to help meet municipal and industrial water needs in the South Metro area. Much of the municipal and industrial uses for the South Metro area comes from non-tributary groundwater supplies found in the Denver Basin bedrock aquifers. Due to population growth demand on groundwater has led to aquifer water level declines of as much as 30 feet. The applicant will test several aquifer locations by artificially recharging water of varying water quality into the aquifers. The applicant will retrofit existing wells to determine the suitability of that location for aquifer storage and recovery (ASR). The pilot will help understand the effects differing aquifer attributes and source waters

have on ASR. Pilot-scale testing is being requested because aquifers vary significantly in their hydraulic characteristics to accept recharge water and to react chemically with injected water. Such unknowns and costs of pilot-scale field studies have inhibited local water providers from embarking on this activity.

Feasibility Study for Bureau of Reclamation Funding from the National Rural Water Supply Act

APPLICANT: Douglas County Water Resource
Authority
APPROVED: September 2009
STATUS: Contracting
WSRA FUNDS: \$600,000 (\$100,000—Basin Account;
\$500,000—Statewide Account)

MATCHING FUNDS: Up to \$1,125,000 (potential 1:1 federal match and \$450,000 in local match)

DESCRIPTION:

The proposed project will develop a feasibility study to connect existing water infrastructure of the Douglas County Water Resource Authority members to help with the delivery of surface water to the region. Examples of existing infrastructure include ECCV Barr Lake and other pipelines, and the infrastructure of Parker, Castle Rock, Castle Pines, Castle Pines North, Centennial, Roxborough, and others. The purpose of the study is to examine alternatives to meet the goals of reducing the region's reliance on Denver Basin Groundwater and to meet their growing municipal and industrial needs and to finalize the alignments and specifications of this shared infrastructure project. The feasibility study will include detailed engineering, public participation, alternatives, and environmental consequences.

Flaming Gorge Project Task Force Assessment

APPLICANT: El Paso County Water Authority
APPROVED: May 2010
STATUS: In Progress
WSRA FUNDS: \$40,000—joint application:
\$20,000—Arkansas Basin Account
\$20,000—Metro Basin Account

MATCHING FUNDS: NONE

DESCRIPTION:

See description under Arkansas Basin section.

Rotary Sprinkler Nozzle Retrofit

APPLICANT: Douglas County Water Resource
Authority
APPROVED: September 2010
STATUS: Contracting
WSRA FUNDS: \$250,000 (Statewide Account)
MATCHING FUNDS: \$87,500

DESCRIPTION:

Rotary Sprinkler Nozzles are thirty percent more efficient in outdoor irrigation activities than traditional spray nozzles commonly in use in the project area. This project proposes to retrofit 1,000 homes with existing spray heads with rotary sprinkler nozzles to reduce water used by the project participants. Accompanying public outreach will create interest in the retrofit project, and this interest can be used to encourage more widespread adoption over time of retrofits as effective, comfortable water resource conservation practices in the project area. High school students will be hired to perform the 1,000 retrofits as part of a summer jobs program in the Memorial Day to Labor Day timeframe over the summer of 2011. Their work will be supervised by adults experienced in this type of work. Not only will the rotary sprinkler nozzles be retrofitted, but they will also be aimed to avoid over-spraying and watering sidewalks. Irrigation controllers will be reset to reflect the proper application rates of the rotary sprinkler nozzles. Impact metrics will be collected to assure proper installation of the rotary sprinkler nozzles. Members of DCWRA are water providers who can read the meters of the yards receiving the retrofits, and measure and confirm actual water saved through this retrofit program.

Rural Douglas County Groundwater Level Monitoring Network

APPLICANT: Rural Water Authority of Douglas County
 APPROVED: September 2010
 STATUS: Contracting
 WSRA FUNDS: \$113,055 (\$28,263—Basin Account and \$84,792—Statewide Account)

MATCHING FUNDS: \$60,880

DESCRIPTION:

The primary objective of this study is to establish a county wide groundwater-level monitoring network for the long-term monitoring of the water resources of Douglas County, Colorado. The network will consist of approximately 30 existing wells throughout the county. Water levels will be measured monthly in all wells and five sites will be equipped with pressure transducers for continuous monitoring. Water levels measured from wells in the network will provide an assessment of the current water resource and provide the basis from which to monitor long-term changes of the hydrologic system.