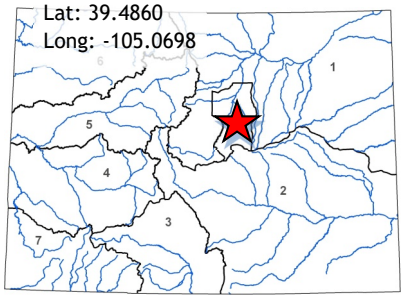
COLORADO
Colorado Water Conservation Board

Water Plan Grant Application

Design and Construction of Regional Rainwater
Dominion Water and Sanitation District

September 2022 Board Meeting

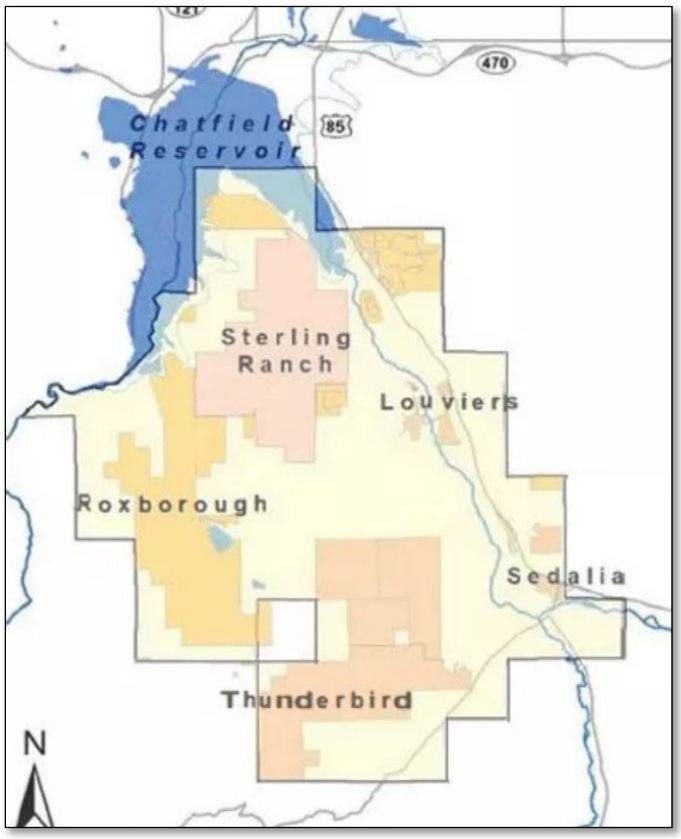


LOCATION	
County/Counties:	Douglas
Drainage Basin:	Metro

DETAILS	
Total Project Cost:	$1,333,336
Water Plan Grant Request:	$200,000
Other CWCB Funding:	$0
Other Funding Amount:	$0
Applicant Match:	$1,133,336
Project Type(s):	Construction
Project Category:	Water Storage and Supply
Measurable Result:	6.7 AF created

After over a decade of data collection supporting the legal right to harvest rainwater as a water supply, Dominion Water & Sanitation District (District) is moving forward with the implementation of the state's first regional rainwater harvesting collection system at Sterling Ranch. The District recognized that these systems must be developed on a regional scale to be cost effective, and this project is expected to be the initial phase of a regional pilot project that will demonstrate the feasibility and importance of rainwater to new developments with the region and state. This project builds on a recently completed feasibility study and operations plan, which identified design criteria, an operations and administration plan, and project costs. That study concluded the project is technically and operationally feasible, and most importantly, financially viable.

The grant will support the design and construction of a rainwater harvesting system that will demonstrate rainwater as a viable and legal water supply. CWCB staff is working with the applicant to refine the scope of work and the location of the system to maximize storage and beneficial use in accordance with Colorado water law.



Funding Recommendation: Staff recommends approval of the full request in the amount of $200,000 from the Water Storage and Supply Category. This is approximately 15% of total costs. This project aligns with the Water Plan's measureable goal of creating 400,000 AF of water storage by 2050 by providing new storage in the Metro basin.

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Plan

Water Project Summary

Name of Applicant	Dominion Water & Sanitation District
Name of Water Project	Design and Construction of Regional Rainwater Harvesting Infrastructure at Sterling Ranch
Grant Request Amount	**$200,000.00**
Primary Category	$200,000.00
Water Storage & Supply	
Total Applicant Match	**$1,133,336.00**
Applicant Cash Match	$1,133,336.00
Applicant In-Kind Match	$0.00
Total Other Sources of Funding	**$0.00**
Total Project Cost	**$1,333,336.00**

Applicant & Grantee Information

Name of Grantee: Dominion Water & Sanitation District
Mailing Address: 9250 E Costilla Ave, Ste 315 Greenwood Village CO 80112
FEIN: 731,729,122

Organization Contact: Andrea Cole
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Organization Contact - Alternate: Josh Baile
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Grant Management Contact: Andrea Cole
Position/Title:
Phone: (720) 531-4210
Email: andrea.cole@dominionwsd.com

Description of Grantee/Applicant

Dominion Water & Sanitation District, Sterling Ranch Community Authority Board, and Sterling Ranch Development Company are excited for the opportunity to implement the state's first rainwater harvesting project at Sterling Ranch. After collecting data for over a decade associated with the Sterling Ranch Rainwater Harvesting Pilot Program, it is time to move forward with the implementation of an actual project to harvest rainwater on a regional scale. Dominion and its partners are seeking a Water Plan grant for the initial feasibility study, operational plan defining the legally allowable harvest, and design and construction of the rainwater collection and distribution system to be retrofitted into the existing stormwater system.

Type of Eligible Entity

☐

- [ ] Public (Government)
- [x] Public (District)
- [ ] Public (Municipality)
- [ ] Ditch Company
- [ ] Private Incorporated
- [ ] Private Individual, Partnership, or Sole Proprietor
- [ ] Non-governmental Organization
- [ ] Covered Entity
- [ ] Other

Category of Water Project

- [ ] Agricultural Projects
  Developing communications materials that specifically work with and educate the agricultural community on headwater restoration, identifying the state of the science of this type of work to assist agricultural users among others.
- [ ] Conservation & Land Use Planning
  Activities and projects that implement long-term strategies for conservation, land use, and drought planning.
- [ ] Engagement & Innovation Activities
  Activities and projects that support water education, outreach, and innovation efforts. Please fill out the Supplemental Application on the website.
- [ ] Watershed Restoration & Recreation
  Projects that promote watershed health, environmental health, and recreation.
- [x] Water Storage & Supply
  Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity and Multi-beneficial projects and those projects identified in basin implementation plans to address the water supply and demand gap.

Location of Water Project

Latitude	39.485993
Longitude	-105.069815
Lat Long Flag	Precise coordinates: Project coordinates are readily definable and precisely define the location of the project
Water Source	Rainwater
Basins	Metro; South Platte
Counties	Douglas; Jefferson
Districts	8-South Platte Cheesman to Denver Gage

Water Project Overview

Major Water Use Type	Municipal
Type of Water Project	Construction
Scheduled Start Date - Design	11/1/2022
Scheduled Start Date - Construction	5/1/2023

Description

After over a decade of data collection supporting the legal right to harvest rainwater as a water supply, Dominion Water & Sanitation District (Dominion) is moving forward with the implementation of the state’s first regional rainwater harvesting (RWH) collection system at Sterling Ranch. Recognizing that RWH must be developed on a regional scale to be cost-effective, Dominion has selected Prospect Village at Sterling Ranch as the initial phase

of this regional project. Prospect Village includes existing stormwater infrastructure, a central park with non-potable demand, existing infrastructure and easements for the distribution of rainwater harvested, and available augmentation supply for the legal harvest of rainwater.

To advance the implementation of this project, Dominion recently completed a Feasibility Study and Operations Plan for Prospect Village identifying the project configuration, design criteria and requirements, operations and administration plan, project costs, and overall feasibility and permissibility of this initial phase of the project.

The Feasibility Study concluded that the project is technically and operationally feasible, and financially viable. Therefore, Dominion is seeking a Colorado Water Plan Grant for this initial phase of the project supporting the design and construction of a rainwater harvesting system at Prospect Village to demonstrate that rainwater is a viable legal water supply.

Measurable Results

7	New Storage Created (acre-feet)
37	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive
	Existing Storage Preserved or Enhanced (acre-feet)
7	New Storage Created (acre-feet)
	Length of Stream Restored or Protected (linear feet)
	Efficiency Savings (dollars/year)
	Efficiency Savings (acre-feet/year)
	Area of Restored or Preserved Habitat (acres)
	Quantity of Water Shared through Alternative Transfer Mechanisms or water sharing agreement (acre-feet)
30,000	Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning
5,700,000	Number of Coloradans Impacted by Engagement Activity

Other

1. New Storage: 1.3 acre-feet of new storage (Filing 3A only) developed is based on the physical yield and is approximately set equal to the Water Quality Capture Volume (WQCV) allowing for 80% capture efficiency.
2. New Water Supply: Project configurations support between 5 to 15 acre-feet/project or 25 to 75 acre-feet total of new storage created 400 acre-feet/year was the original estimated yield identified in the South Platte BIP as an IPP for Sterling Ranch for harvesting the entire site. Five regional sites have been selected at Sterling Ranch, supporting between 200 to 250 acre-feet total or 40 to 50 acre-feet/year/project, depending on the final project configurations. Filing 3A is the first proposed project resulting in an average of 37 acre-feet/yr.
3. Efficiency: Understanding the Efficiency Savings of rainwater harvesting is dependent on project configuration, demands, and site/system constraints.
4. Coloradans Impacted by Savings: ~30,000 Coloradoans at Sterling Ranch would be directly impacted (~12,050 SFE X 2.5 residents/SFE), all new
residential developments statewide would benefit from this project.
5. Coloradans Impacted by Engagement: This project is the first implementation of legally harvest rainwater on a regional scale, benefitting all Coloradans and the future of rainwater as a viable water supply.

Water Project Justification

This Grant will directly support Precipitation Harvesting Pilot Program's goals to measure functional RWH yield and test operation, based on the development and capture of precipitation from new real estate developments as a viable water supply without harming existing water rights owners. Below is a summary of the justification for the project and a description of how the project supports the goals and identified water values of the Colorado Water Plan and South Platte Basin Implementation Plan (BIP).

South Platte & Metro BIP DRAFT Update

Goal 1: Maximize development of native South Platte supplies

Strategy 2.A – storage solutions, efficient usage, enhanced supply reliability in compliance with prior appropriation

- This RWH Pilot Project would enhance renewable supplies, locally, increase the reliability of other conjunctive water sources, and legally be confirmed using
DWR's memo on the steps to take pilot projects through water court. This will be the first project of this kind.

Strategy 2.C – sharing data/info on best practices, effective methods, tech advancements to maximize use in the basin

- Past Sterling Ranch data and methods have been shared via Water Plan grant deliverables. The pilot project design and construction will give us the opportunity to
work closely with high-tech stormwater management experts to determine how we can use forecasting, automated control, and live online control of operations.

Goal 3: Maintain/promote municipal conservation/efficiency

Strategy 3.A – challenges/tradeoffs of different options

- The RWH Pilot Project program's intent is to develop data on the challenges and opportunities of RWH for outdoor use in new developments.

Strategy 3.C – encourage innovation & efficiency improvements

- This pilot project is an opportunity to further the state's understanding of alternative supply options and how system-level management, with on-site resources,
may lead to reduced demand stress.

Strategy 3.E – implementation of wise land use planning strategies while minimizing the demand for water for existing and new development.
Sterling Ranch has included water conservation in planning throughout its history.

Goal 12: Improve efficiency and effectiveness of water project permitting

Strategy 12.B Sharing strategies and lessons learned from water project permitting process

- This pilot project will be the first water court application for an augmentation plan, and first SWSP, for RWH in the State of Colorado.

Colorado Water Plan (CWP)

Chapter 5 of the Water Plan update finds that 'projected decreases in outdoor demand resulting from implementation of conservation measures in some scenarios was offset by increases in outdoor demand due to climate change.' Due to these effects, as well as continued development, outdoor demand will not disappear from

the municipal category. Precipitation harvesting is important to Colorado's future as it provides a renewable and sustainable water resource that meets the following water conservation goals outlined in Chapter 6.3 of the Water Plan.

Does the project reduce overall future water needs through cost-effective water efficiency measures?

Yes, precipitation harvesting is a cost-effective solution for developing new renewable water supplies if developed regionally, integrated into the non-potable system, and paired with water demand management and water conservation practices. The use of rainwater for meeting non-potable demands reduces the need to pump non-renewable groundwater supplies, and/or the need for acquisition of other downstream irrigation water rights and the associated infrastructure and operations costs. While precipitation harvesting is currently not part of Dominion's firm supply planning, precipitation harvesting provides opportunities to be less reliant on groundwater and its infrastructure as the full water supply system is developed, while also potentially reducing future renewable water supply needs.

Does the project integrate water efficiency planning and projects into overall water resource management?

Yes, regional precipitation harvesting combined with a conjunctive use water supply system requires comprehensive integrated water resource planning. The yield resulting from precipitation harvesting is directly related to the effectiveness of the system design and operations. Due to its direct link to regional hydrology, regional precipitation harvesting needs to be combined with a robust system of other water supplies. In addition, water efficiency planning and demand management allow for the most effective implementation, especially when combined with the technological advances in both the water supply and storm drainage management approaches. The combination of both the supply and stormwater resources will be critical to the success of this project and the overall future management of water resources statewide.

Does the project promote a water efficiency ethic throughout Colorado?

Yes, the implementation of RWH factors and promotion of precipitation harvesting supports water conservation, water quality enhancement, and efficient energy management by using local renewable water, providing for opportunities of direct use of raw water, and potentially reducing treatment needs and non-point source loadings. In addition, combined with direct user feedback, precipitation harvesting provides hands-on education to, and partnership with, the residents in the community, influencing not just water providers, but the users of our water resource.

Does the project explore additional water reuse options?

Yes, Dominion is committed to advancing water reuse projects to include advancing precipitation harvesting, capture, and reuse of wholly consumable return flows, and aquifer storage and recovery projects. Sterling Ranch as Dominion's retail customer continues to advance technology to use water efficiently.

Does the project integrate land use and water planning?

Yes, the development of a regional precipitation harvesting system is reliant on the integration of land use and water planning. This supply relies on the precipitation runoff from hardscape land uses, is captured from stormwater facilities, and combined with other water sources to meet irrigation demands of parks and open spaces.

Does the project advance conservation planning efforts?

Yes, the development of a regional precipitation harvesting system requires more data collection and detailed water supply planning for the efficient use of precipitation. Taking advantage of water supplies onsite reduces transit losses and energy consumption to bring other water sources to the site for non-potable use. In basins where precipitation harvesting occurs, the basin's beneficial uses may be considered as a whole, monitored, and prioritized. This combined with demand management and traditional water conservation efforts advances conservation planning efforts forward.

Does the project advance drought mitigation planning efforts?

Yes, in preliminary studies for Sterling Ranch, some level of precipitation has occurred every year, which results in some reliable firm supply. The potential for average water supply is much greater. In Douglas County, the use of precipitation capture to meet demands, especially when combined with local reservoir and potential aquifer storage, allows for the valuable groundwater resource to be reserved as a backup supply for renewable supplies in dry periods.

Does the project reduce impacts and prepare for the impacts of climate change?

As an average yield water supply impacted directly by climate change the project would benefit both from a wetter climate resulting in a higher average yield, and a warmer climate resulting in more rain than snow events, potentially resulting in a higher average yield. As well as the increase in extreme precipitation events. To the extent that a community is dependent on imported renewable water supplies, local precipitation harvesting may provide robustness to their water supply by expanding their potential for more positive hydrologic conditions. Finally, precipitation harvesting may allow for the storage of this water supply in wetter years for use in extreme drought conditions, especially when combined with aquifer storage and recovery where deep wells are already available.

Page 6-61 of the CWP describes the benefits of water conservation. Precipitation harvesting has the same or similar benefits:

• Water savings resulting from water efficiency activities can reduce water demands and thereby assist providers in avoiding, downsizing, or postponing the
construction and operation of water supply facilities and wastewater facilities. —as well as eliminating, reducing, or postponing water purchases.

To be cost-effective, regional precipitation harvesting relies on the efficient use of infrastructure to meet e non-potable demands, reducing the reliance on the potable system. Postponing the acquisition and development of new renewable water supplies, non-renewable groundwater, and construction of new facilities/infrastructure.

• In addition to these water supply benefits, Colorado can achieve other societal, political, and environmental benefits, including:

• Reduced wastewater discharges through indoor water savings, which can improve water quality and aquatic habitat.

Precipitation harvesting will reduce non-point discharge associated with stormwater systems, which can improve water quality and aquatic habitat.

• Demonstration of a commitment to sustainability.

As a renewable water resource precipitation harvesting is a sustainable solution by offsetting non-potable demands. Operationally the integration, planning, and implementation of a precipitation harvesting system reaffirm Dominion's commitment to sustainability, conservation, and effective demand management.

• The meeting of political and regulatory requirements necessary to obtain permits for local and regional water supply projects.

Regional precipitation harvesting functions within the existing regulatory requirements defined by local and state agencies.

• Delay of capital costs for new projects.

A reduction in non-potable demands resulting from precipitation harvesting will delay the need for new water projects and capital improvements.

Pages 6-65 and 6-66 of the Colorado Water Plan summarizes the Conservation Actions and Goals identified by the IBCC for the State of Colorado

"Reduce Colorado's 2050 municipal water demands by 400,000 acre-feet statewide"

The IBCC has a water conservation goal to reduce Colorado's municipal demands by 400,000 acre-feet statewide. Precipitation harvesting is water conservation aimed at specifically reducing new real estate development non-potable demands. The Sterling Ranch Pilot program is only one of the authorized ten Statewide with the project estimated to yield nearly 400 acre-feet/year firm and potentially more. Assuming all Pilot Programs are developed in the future, that is nearly 4,000 acre-feet or potentially 1% of the identified goal. This project supports the development of precipitation as a viable water supply and incentivizes additional Pilot Programs by paving the way forward through feasibility and water court toward infrastructure and operational permission.

"For the goal to be successful, water providers will be encouraged to do comprehensive, integrated water resource planning, geared toward implementing the best practices at the high customer participation levels, as defined in SWSI."

Regional precipitation harvesting combined with a conjunctive use water supply system requires comprehensive integrated water resource planning. Dominion is committed to continuing to advance the best practices established by Sterling Ranch, a retail customer of Dominion, to include effective water conservation goals, commitment to demand management, metering infrastructure support best practices, and high customer participation through the use of technology.

Pages 9-43 and 9-44 describe the criteria for project alignment with the Colorado Water values defined in Chapter 1. The following questions were asked:
Does the project proponent demonstrate a commitment to collaboration?

Through the development and implementation of the precipitation harvesting pilot project monitoring, Dominion has relied on its partners and collaborators to enhance the approach and move the project forward. Furthermore, Dominion is a member of the South Metro Water Supply Authority and a participant in the WISE Project.

Does the project proponent address an identified water gap?

The Sterling Ranch Pilot Program is a Consumptive Identified Project and Process (IPP) in the South Platte BIP and is included in the basin projects matrix (BIP update Appendix C) under Project ID MET-2020-21 in the 2022 BIP update. The project will reduce non-potable demands in the basin through conservation at Sterling Ranch and the use of on-site raw-water supply. Precipitation harvesting statewide is an important water supply, meeting the municipal demand gaps in SWSI. Sterling Ranch is one example of precipitation harvesting. The development of regional factors and the legal framework will incentivize additional pilot programs supporting precipitation harvesting as a viable water supply.

Does the project proponent demonstrate sustainability?

As a renewable water resource precipitation harvesting is a sustainable solution to offset non-potable demands. The project maximizes the use of the existing water supply while mitigating or avoiding impacts on water quality and the environment. As a development, the innovative planning and landscaping practices of Sterling Ranch have demonstrably reduced residential indoor use to 0.14 acre-feet per year (AFY), and outdoor use to 0.12 AFY.

Does the project proponent establish the fiscal and technical feasibility of the project?

The Feasibility Study evaluating the project concluded it was technically and operationally feasible. The high initial cost of the system will be reduced as the system is connected and expanded regionally resulting in increased yield, making the project fiscally feasible and comparable to the cost of other renewable water sources.

Related Studies

The RWH Pilot Program has been ongoing in Colorado since 2009, and the Sterling Ranch project has been active for that full period. DWSD and LRE Water have been engaged with the CWCB and DWR to further the pilot project program through development of generalized RWH factors that can be used across the state for SWSPs in lieu of extensive on-site data requirements. The design and construction of the first active RWH Pilot Project infrastructure will assist the state in achieving the ultimate goal of the pilot project legislation—extensive data pre- and post-development to understand both the challenge and promise of RWH as a renewable supply in Colorado.

Related studies/reports include the generalized RWH Factors approved by CWCB in Sept. 2019 (DWR report), methodology for site-specific accounting, and a memo outlining the legal framework of RWH pilot project SWSP/augmentation plans.

Holistic Approach to Sustainable Water Management in Northwest Douglas County (Leonard Rice, Inc., Meurer and Associates, January 2007)

Grant deliverables for 2018 Colorado Water Plan Grant – Regional Factor Development for Precipitation Harvesting (LRE Water, July 2020).

HB15-1016 Rainwater Harvesting Pilot Project Regional Factors (Division of Water Resources, September 2019)

Grant deliverables for 2021 Colorado Water Plan Grant – Sterling Ranch Rainwater Harvesting Feasibility Study and Operations Plan (LRE Water, et al, June 2021)

Taxpayer Bill of Rights

N/A