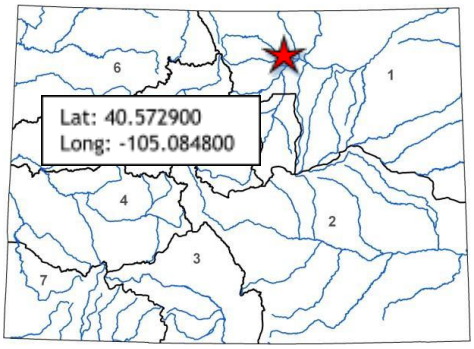
COLORADO
Colorado Water Conservation Board
Department of Natural Resources

# Polaris Land Use & Water Planning Tool Phase II
# Colorado State University
**September 2023 Board Meeting**

## Water Plan Grant Program Application

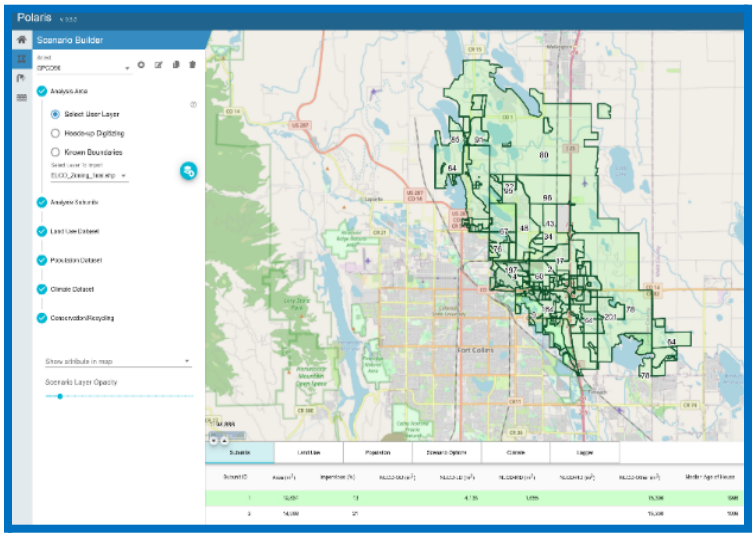



| LOCATION | |
|---|---|
| *Counties:* | Statewide |
| *Drainage Basin:* | Statewide |

| DETAILS | |
|---|---|
| *Total Project Cost:* | $359,385.59 |
| *Water Plan Grant Request:* | $269,534.19 |
| *Recommended amount:* | $269,534.19 |
| *Other CWCB Funding:* | $0 |
| *Other Funding Amount:* | $0 |
| *Applicant Match:* | $89,851.40 |
| *Project Type:* | Capacity Building |
| *Project Category:* | Conservation & Land Use |
| *Measurable Result:* | 2 million Coloradans impacted by incorporating water-saving actions into land use planning; 500 Coloradans impacted by engagement |

Colorado Water Plan funding will support Phase II in Colorado State University's development of the Polaris Land Use and Water Planning Tool. Using data from participating utilities, the Polaris software can estimate future water demand based on land use patterns by incorporating zoning declarations.

From 2020-2022, Phase I of this effort was supported by a CWCB Water Plan Grant and helped Polaris launch with cooperation from six Front Range utilities. Phase II would expand the use of this software in 25 additional communities across Colorado's eight river basins, assisting them to develop community specific plans. CSU would also expand the Polaris tool to examine the effects of changes in land use codes and zoning policy, climate change, and the regulatory environment. Phase II would also include community engagement and training workshops to enable widespread use of Polaris in Colorado.




The Polaris software is integral to the current and future iterations of the CWCB's Technical Update to the Colorado Water Plan, specifically in quantifying municipal water use and conservation trends in partnering communities to project municipal water demands for land use and water scenarios encompassing the range of conditions characterized in the five future scenarios in the Plan.

This project advances the Colorado Water Plan by providing data and analysis to support Agency Action 1.1, to "Define, benchmark, and institutionalize water-saving communities" and requires broad based involvement from communities across Colorado for its success.

**Funding Recommendation:**
Staff recommends full funding of $269,534.19 to Colorado State University for Polaris Land Use & Water Planning Tool Phase II.

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# Water Plan

## Water Project Summary

| | |
|---|---|
| Name of Applicant | Colorado State University |
| Name of Water Project | Polaris Land Use & Water Planning Tool, Phase II |
| Grant Request Amount | **$269,534.19** |
| Primary Category | $269,534.19 |
| *Conservation & Land Use Planning* | |
| Total Applicant Match | **$89,851.40** |
| *Applicant Cash Match* | $44,924.40 |
| *Applicant In-Kind Match* | $44,927.00 |
| Total Other Sources of Funding | **$0.00** |
| Total Project Cost | **$359,385.59** |

## Applicant & Grantee Information

Name of Grantee: Colorado State University
Mailing Address: 2002 Campus Delivery Fort Collins CO 80523
FEIN: 846,000,545

Organization Contact: Mazdak Arabi
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Phone: 970-491-6586

## Description of Grantee/Applicant

No description provided

## Type of Eligible Entity

- [x] Public (Government)
- [ ] 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.*
- ☐ 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 | 40.572900 |
| Longitude | 105.084800 |
| Lat Long Flag | Default/Proponent headquarters: If the location cannot be defined with flags above, use location of project proponent headquarters |
| Water Source | |
| Basins | Arkansas; Colorado; Gunnison; Metro; Yampa/White/Green; Rio Grande; South Platte; Southwest; Nort... |
| Counties | |
| Districts | |

## Water Project Overview

| | |
|---|---|
| Major Water Use Type | Municipal |
| Type of Water Project | Capacity Building |
| Scheduled Start Date - Design | 1/1/2024 |
| Scheduled Start Date - Construction | |

Description

The study develops a software called Polaris with data analysis and modeling capacities for integrated land use planning and water supply management in communities across Colorado. The tool streamlines a mechanism to quickly assess, understand, and report water use for comprehensive plans, master plans, and other planning activities within a city or utility service area. The project activities examine the influence of projected land development plans, land use policy, and zoning regulations on municipal water use. Through extensive stakeholder engagement, co-design scenario planning workshops, and training, the project facilitates collaborative and aligned planning and decision making among water and land use planners in up to 50 Colorado

communities.

This effort leverages more than a decade of research and software development by the project team to reveal connections between land use and water planning, integrated assessments, and decision making with considerations about population, weather, behavior, and technology adoption. Specifically, an existing tool called Polaris funded by CWCB was developed for integrated land use planning and water management in partnership with six utilities in the Front Range of Colorado. This project expands the Polaris tool and provides engagement and training opportunities for its widespread applications in all communities across Colorado.

## Measurable Results

| | |
|---|---|
| | New Storage Created (acre-feet) |
| | New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive |
| | Existing Storage Preserved or Enhanced (acre-feet) |
| | New Storage Created (acre-feet) |
| | Length of Stream Restored or Protected (linear feet) |
| | Length of Pipe, Canal Built or Improved (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) |
| 2,000,000 | Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning |
| 500 | Number of Coloradans Impacted by Engagement Activity |
| Other | |

No additional measurable results provided

## Water Project Justification

This project will enable cities and communities across Colorado to assess the linkage between land use planning and water supply-demands over a range of current and future population, land use, and climatic conditions. The planning scenarios are developed based on the Colorado's Water Plan scenarios using extensive participatory co-design approaches. A Tool entitled Polaris is developed and disseminated among communities to conduct integrated land use and water planning. Workshops will be conducted to train up to 50 municipalities/cities/utilities to use the tool for their specific land use and water supply planning purposes.

## Related Studies

CWP: A System and Process for Assessing Water Use of Land Use Decisions (02/15/2020 – 06/30/2022). POGG1, PDAA, 202000002808, CMS#149093. Budget: $149,249 (CWCB); $69,500 (Partner Utilities), $79,800 (CSU Match), Total Project Value: $298,549.

## Taxpayer Bill of Rights

None