

**\*Project Name**

Inaugural Airborne Snow Observatories Surveys in the Upper South Platte Basin

**\*Grant Recipient**

Denver Water

**\*Primary Contact**

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**\*MRT WSRF Grant Type**

Conservation and Reuse  
Environmental & Recreation  
Implementation of IP&Ps

**Eligible Water Activities (Check All That Apply)**

Nonconsumptive (Environmental)  
Nonconsumptive (Recreational)  
Agricultural  
Municipal/Industrial  
If other, please explain.

(No response)

**Total Project Cost**

\$ 282,817.76

**\*MRT WSRF Grant Amount Request**

\$ 40,000.00

**Colorado Water Plan Grant Amount Request (if any)**

\$ 0.00

**Other Basin Roundtable WSRF Funding Being Requested (if any)**

\$ 0.00

**If Other Roundtable Requests, which roundtable(s)**

(No response)

**\*Project Description**

This project would conduct two Airborne Snow Observatories (ASO) surveys in the Upper South Platte Basin in late winter/spring 2023 to measure the amount of water contained in the snowpack and provide water managers and water stakeholders with decision-making insight that has never before existed in the South Platte Basin. ASO uses paired airborne lidar and imaging spectrometer sensors coupled with a snow dynamics model to measure snow depth and albedo and retrieve Snow Water Equivalent (SWE, the water volume stored as snow) across large river basins at a high spatial resolution. The resulting data provides high elevation snow depth and SWE measurements with detail, accuracy, and decision-support value unprecedented in water management. Critically, ASO provides a spatially complete, accurate measurement of the volume and spatial distribution of SWE in the snowpack for a given watershed at the time of flight, which is then used to forecast streamflow. In early 2021, the Colorado Airborne Snow Measurement (CASM) workgroup formed to help build out a statewide ASO program in Colorado and expand ASO flight coverage throughout the State. A 2022 Water Plan Grant received by the CASM

program allowed for snow-free lidar coverage throughout much of Colorado, including in the Upper South Platte Basin (the snow-free lidar is the reference baseline enabling snow depth calculation from snow-on ASO flights). This provides the opportunity to conduct the first ever snow-on ASO surveys in the Upper South Platte Basin and provide water managers with an unparalleled decision-making support tool. In addition to the direct benefit for 2023 water operations, these surveys will contribute to the continued development of the CASM program and thus play a key role in uniting water partners throughout Colorado to develop a sustainable ASO program that aligns with Colorado's tradition of being an internationally recognized leader in water management.

**\*Which MRT priorities does the project address? How?**

Conducting ASO snowpack data collection in the Upper South Platte Basin would apply a proven value-added method to maximizing use of basin water supplies. Having accurate knowledge of the volume of the water stored in the snowpack provides water managers the information needed to remove much of the "guesswork" from operations decisions. This allows reservoir storage to be maximized, optimizes flood control preparations, and provides environmental and recreation managers and agricultural producers more accurate information on the quantity and timing of water that will flow downstream. It will also allow operations managers to make more informed decisions regarding their management of transbasin diversions. The provision of detailed and accurate ASO snowpack data in the years to come will form the foundation for a future that optimizes the use of native basin supplies for the benefit of multiple parties in the basin. Further, these data will be invaluable in the planning and operation of future water infrastructure projects in the Basin.

**\*Project Timeline and Tasks**

April 10, 2021 – July 15, 2021 (two ASO flights surveys would be conducted in this period)

**Attach Budget (not required)**

(No response)

**Attach a map, graphic, etc. (not required)**

(No response)

**Attach a File (not required)**

(No response)