**NASA DEVELOP National Program**

****NASA Langley Research Center

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**Colorado Water Resources**

*Utilizing NASA Earth Observations to Identify Water Quality Sampling Sites*

*in Denver, Colorado*

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**Abstract**

The state of Colorado is rich in its water resources due to its location in the Rocky Mountains region of the United States. The water supply for the Denver watershed largely originates from snow runoff that eventually feeds rivers, streams, reservoirs, and lakes. More than 1 million people in the city of Denver, Colorado and the surrounding suburbs are supplied high quality water provided by the Denver Water system. After major events such as the Hayman and Buffalo Creek wildfires, re-evaluation of water sampling sites and identification of possible source contaminants in the water is essential. Through a partnership with Denver Water, the collection system was analyzed to determine future locations for water quality sampling sites. Data were extracted using the National Land Cover Database (NLCD 2011) and Cropland Data Layer (CDL 2011), which is comprised of images taken from Landsat 7 Enhanced Thematic Mapper Plus (ETM+). Using the Revised Universal Soil Loss Equation (RUSLE), a classification of risk areas due to source contaminants was completed. This analysis resulted in the creation of a water sampling suitability map, which identified optimal locations for water quality sampling sites, and a land cover classification map, which identified the current infrastructure and potential contaminant sources. Identifying these location sites will improve the efficiency of watershed monitoring for Denver Water. This, in turn, will allow for high-quality water to be distributed to the population served by the Denver Water system.