



Revitalizing the South Platte River from the Source to the City: Transformation through Collaboration Accomplishment Report December 2023

Website

<https://www.urbanwaters.gov/splatte/index.html>

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South Platte River with a view of REI, Photo Credit: [Devonshire](#) on [Unsplash](#)

Overall Assessment of the Partnership Since the Beginning (2011-2023)

The South Platte River Urban Waters Partnership (SPRUWP) is one of the original seven Urban Waters Federal Partnership pilot locations created in 2011. It encompasses over 6,600 square miles, including the Colorado mountains, Denver-metro urban and suburban areas, and the plains up to Barr Lake and Milton Reservoir. SPRUWP aims to protect Denver's primary sources of drinking water, recreation, and economic development by supporting projects, education, research, and fostering the connection of the growing population to urban waterways.

Clean water is vital to the Colorado way of life and integral to Coloradans' day-to-day activities, from our fly-fishing and whitewater rafting to our famous hot springs. Water is such a scarce resource in our region; it makes the contributions of our forested watersheds and waterways even more valuable. When people understand that their drinking water and beloved recreation areas are tied directly to the health of the river and watershed, those concepts and places become more meaningful to them. Visitors from across the country come to enjoy these resources, and businesses and families relocate here for our quality of life, highlighting the economic reliance on clean water.

Nature of the Partnership-The Process of Collaboration, Collective Impact, and Adaptive Management

The SPRUWP is a collaboration of organizations and diverse stakeholders, working across governmental and disciplinary boundaries. It includes federal and state entities, local municipalities and water providers, nonprofits, advocacy organizations, academic institutions, and research entities, all coming together to benefit the silent partner, the South Platte River. We aim to protect and restore lands and waters in the South Platte River watershed. The partnership emphasizes stewardship and community connection, linking urban areas with forested watersheds and people with nature. Local or federal government action can only handle parts of the complex challenges surrounding water, resource protection, and people's connection with nature. This partnership's diversity is its strength and includes a role for everyone.

The Rewards of Partnership

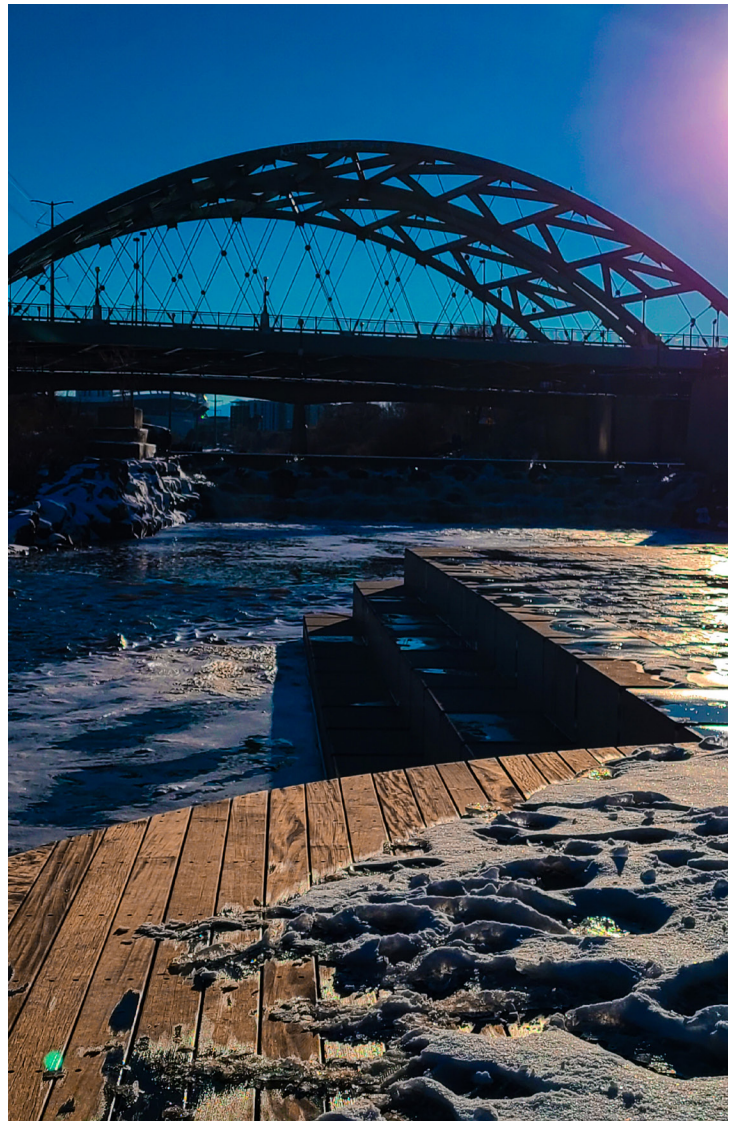
The bottom line? Partnerships yield integrated solutions, greater impact, and leverage efforts to protect water resources and enhance communities' economic and social benefits. SPRUWP serves as a platform to network, discover funding opportunities, explore project ideas in a broader context, and build capacity for large-scale projects.

Benefits to Partners

- Technical resources and expertise access
- Enhanced capabilities through networking and partnerships
- Competitive advantage through funding partnerships
- Diverse perspectives for shared learning
- Sharing project outcomes and research findings
- Monthly newsletter for funding opportunities and partner communication

The SPRUWP has quarterly meetings and sends monthly e-newsletters to over 100 organizations and 270 individuals. Partners have created maps, a logo, a brochure, and a website, and established a mission, vision, goals, strategies, work plans, and organizational structure. Funding has been secured for priority and member projects. Meeting spaces have been generously donated by partners and other organizations.

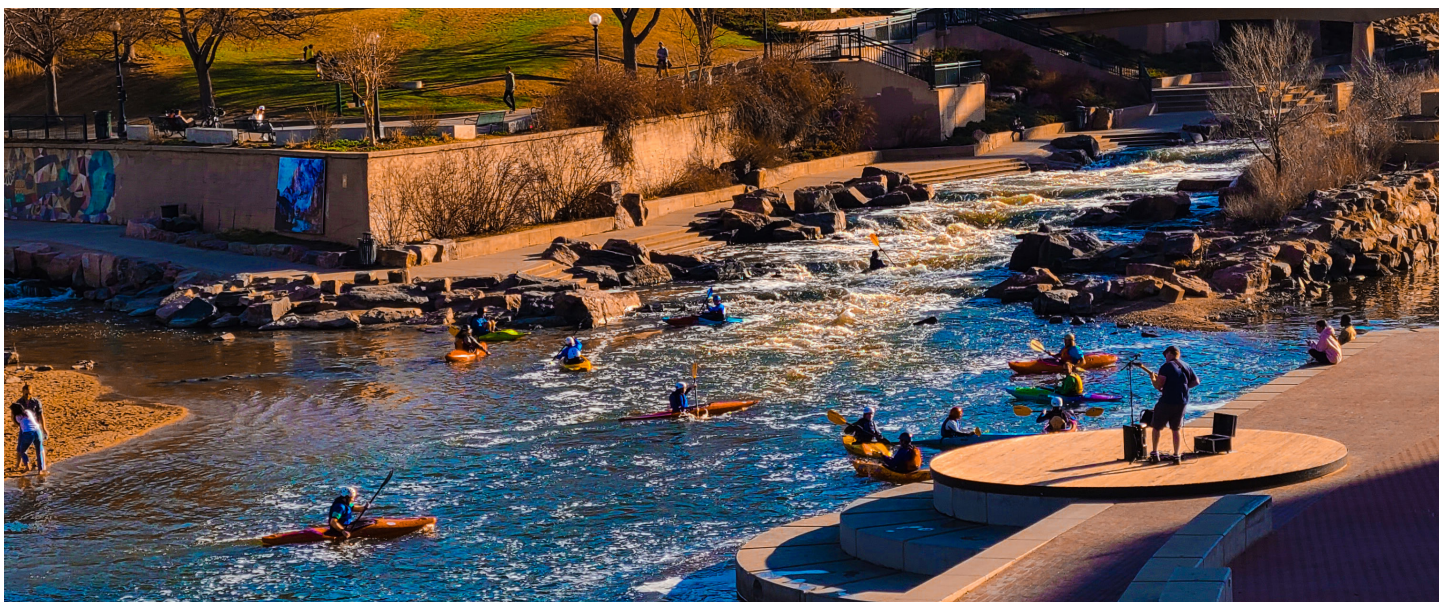
See Appendix A for the full list of partners.



*South Platte River at Shoemaker Plaza
Photo Credit: Stacey Eriksen*

The SPRUWP is all about resource efficiency – leveraging human capital and financial resources to maximize river restoration, community education, and watershed health improvement through collective impact strategies, early wins, and adaptive management. It has gone through multiple phases, with the first phase (1.0) co-led by the Environmental Protection Agency (EPA) and US Forest Service (USFS) from June 2011 to December 2012. The second phase of SPRUWP (2.0) occurred from January 2013 through June 2016 with the assistance of an Ambassador/Coordinator, an Advisory Committee (USFS, EPA, CSFS), and a multi-stakeholder Leadership Team. In its third phase (3.0), SPRUWP was co-led by EPA and USFS in close collaboration with Colorado State Forest Service (CSFS) and with contract facilitation from July 2016 to October 2017. SPRUWP entered its fourth phase (4.0) in October 2017 with Peak Facilitation as the part-time contract Ambassador/Coordinator through January 2021.

In 2021, the USFS and EPA extended their interagency agreement to fund the ambassador. Samuel Wallace with Peak Facilitation has served as the part-time contract Ambassador from January 2021 to the present. The Agency for Toxic Substances and Disease Registry (ATSDR), US Geological Survey (USGS), and National Park Service (NPS) have also been federal agency technical contributors over the years.



South Platte River at Shoemaker Plaza Photo Credit: Stacey Eriksen

The full partnership still meets quarterly and sends out monthly e-newsletters. There are additional meetings of the Advisory Committee (EPA, USFS, CSFS), various workgroups (currently Science and Data and Education and Outreach Committees), and an occasional Federal-only meeting.

In 2021, the Federal Urban Waters Program and SPRUWP marked their 10th anniversary. Numerous SPRUWP partners offered their perspectives on the partnership's decade-long journey, highlighting the multitude of successes and accomplishments achieved through collaboration in the South Platte River Watershed.

Impacts thus far include:

- Enhanced communication, collaboration, and joint planning
- Sharing of knowledge
- Increased partnership collaboration on projects
- Acquisition of project funding
- Prioritization of Federal Funds to support partnership priorities and projects
- Conducting a Wildfire Readiness and Response Workshop
- Implementing a stormwater messaging campaign adopted within the watershed and across Colorado
- Sharing of data
- Development of two key tools: the Natural Capital Resource Assessment and Prioritization Tool, and the Water Quality Assessment Tool (currently working on Phase III)
- Providing public access to water quality data for pesticides, pharmaceuticals, and personal care products analyzed by EPA's laboratory for the first time.

Subcommittees

South Platte River/Denver (CO) Sub-Committee Highlights

1. The Science and Data Committee was formed to work together to develop projects devoted to improving and expanding access to data and scientific findings related to water quality and restoration.

Active partners in the Committee include:

- | | | | |
|--|----------------------------|---------------------------------|----------|
| • Denver Department of Public Health and Environment | • Metro Water Recovery | • Colorado State University | • USFS |
| • Denver Water | • Groundwork Denver | • Denver Urban Field Station | • USGS |
| | • Mile High Flood District | • University of Colorado Denver | • US EPA |
| | • Trout Unlimited | | |

The Science and Data Committee has been responsible for creating and updating the Water Quality Assessment Tool. The tool intends to make water quality data and information easily accessible to the general public, including teachers who use this data for classroom learning, and provide storylines that assist the public in taking action to improve water quality. During Phase I of the Water Quality Assessment Tool, which started in 2015, partners worked together to develop the tool to track E. coli data in the watershed. During Phase II, partners provided both context and direct access to cross-jurisdictional water quality data for the Denver metro area. Phase II of the tool provided a snapshot of conditions for the metro area for a variety of water quality parameters, including E. coli, contaminants of emerging concern, total dissolved solids, total suspended solids, and nutrients.

Since 2019, the group has worked together on a critical update to the tool to shift data from a static platform to one that will continually update and integrate new data. The Phase III update provides improved functionality and increased accuracy. The committee found funding to work with Leonard Rice Engineers, a water engineering firm (now called LRE Water), to determine the best route for updates and secured funding for the priority updates to the tool. Updates were completed by the end of 2023. Phase III will ultimately give the tool the capabilities to continuously pull live data from the Water Quality Portal and the Colorado Data Sharing Network.

In 2021, the Science and Data Committee also developed two proposals for the USGS Urban Waters Federal Partnership Funds. The first proposal focused on installing a USGS super gauge on the South Platte River. Super gauges can continuously collect data on standard water quality metrics, like pH and turbidity, as well as less standard parameters, like nitrates, phycocyanin, and chlorophyll-a. The goal of the super gauge project was to better understand water-quality conditions in a watershed that can often exhibit flashy hydrographs coupled with anthropogenic contributions. The second proposal focused on monitoring changes in habitat and ecological function that result from the South Platte ecosystem restoration project by the US Army Corps of Engineers (USACE) in Denver. In response to declining ecological habitat and water quality, USACE, in cooperation with the City and County of Denver, is planning a major restoration project on the South Platte River between 6th Avenue and 58th Avenue. The goal of the study is to characterize geomorphic conditions that control ecological habitat in project waterways before, during, and after restoration efforts. Denver Department of Public Health and Environment, USFS, and USGS provided the funding for the study. Although neither project was funded with USGS Urban Waters Federal Partnership Funds, Science and Data Committee partners secured funding to conduct the geomorphological study on the South Platte River. Bathymetric and floodplain data collection efforts occurred in 2022 and 2024. The data are being post-processed and analyzed to quantify the pre-construction conditions.



South Platte River at Shoemaker Plaza Photo Credit: Stacey Eriksen

2. The Education and Outreach Committee was formed to provide opportunities for educators to collaborate on projects and share best practices related to expanding awareness and education of urban water issues and developing future water stewards and practitioners.

Active partners in the Committee include:

- | | | |
|--|-------------------------------|----------------|
| • Denver Public Works | • Water Education Colorado | • USFS |
| • Metropolitan State University of Denver,
One World One Water Center | • Lincoln Hills Cares | • US EPA |
| • Bluff Lake Nature Center | • Red Rocks Community College | • Denver Water |

During 2019-2020, the group worked together to develop a professional development unit (PDU) focused on water education; the first group of teachers went through the PDU in 2021. PDUs are action learning courses designed for Denver Public School teachers for topics of student need. The water education PDU includes a package with a choice of tours, training, etc., that could improve teachers' practice when it comes to teaching students about water and engaging students on locally relevant water issues. Implementation of this course will empower students to take on critical water challenges and contribute to community discourse and decision-making regarding solutions to water issues.

From 2021 to 2022, the Education and Outreach Committee has met to learn more about and discuss ongoing education and outreach initiatives occurring in the South Platte River Watershed, including:

- Water Education Colorado's Water 2022 Campaign
- Barr Milton Watershed Association's Phosphorus-Free Fertilizer Campaign
- Lincoln Hills Cares South Platte River Youth Advisory Council
- Educational opportunities on Colorado State University's (CSU) new Denver Campus, CSU Spur

Significant Actions Taken Since the Beginning of the Partnership

Signature Projects

1. South Platte Watershed Natural Capital

From Mountains to Plains Resource Assessment: The South Platte Natural Capital Project was a collaborative watershed-wide green infrastructure assessment led by the CSFS with funding from the USDA Forest Service as part of the SPRUWP. The project was funded with a State and Private Forestry competitive grant. The project directors were CSFS, USFS, and EPA. The purpose of the South Platte Natural Capital Project was to build on existing studies in the South Platte River corridor and watershed to:

- Create an assessment that maps and evaluates the regional network of green infrastructure (interconnected network of critical watershed forests, riparian corridors, wetlands, streams, lakes, and the river). Project maps are included in Appendix C.
- Prioritize critical areas for conservation and restoration based on the economic value of the benefits people obtain from those natural systems or "ecosystem services".
- Sustain and enhance the sharing of ideas, data, and resources across organizations and landownerships toward the accomplishment of common goals.
- Explore the websites here: <https://www.epa.gov/urbanwaterspartners/south-platte-natural-capital-project> & <https://pg-cloud.com/NaturalCapital/>



*Sand Creek near Central Park Redevelopment
Photo Credit: Stacey Eriksen*

2. Water Quality Assessment Tool

SPRUWP partners collaboratively completed a water quality assessment that presents a cross-jurisdictional view of water quality in the Denver metro area. This was done by the SPRUWP Science and Data Committee, which has participation from EPA, USGS, USFS, Urban Drainage and Flood Control District, University of Colorado Denver, Mile High Flood District, Metro Water Recovery, Groundwork Denver, Denver Urban Field Station, Colorado State University, Trout Unlimited, Denver Water, and City of Denver's Department of Public Health and Environment. The interactive tool went live in January 2016 and had five years of E. coli data available for the Denver metro area. The Committee worked together in 2019-2020 to compile the information and funding to update the tool that they had created in 2015-2016.

Phase II was completed in November 2017 which created a mobile platform and expanded the contaminants from E. coli to also include Total Dissolved Solids; Total Suspended Solids; Nutrients; and select pesticides, pharmaceuticals, and personal care products. Phase II was created and hosted by Leonard Rice Engineers, a water consultation company (now called LRE Water). The new Phase III began in 2019, when the workgroup agreed that, while the WQAT is accurate and comprehensive, it is also static, and they wanted to update the tool and improve functionality. They brought on Leonard Rice Engineers to integrate the web services from the National Water Quality Portal and Colorado Data Sharing Network into the WQAT so that data is updated monthly through an import process. Leonard Rice Engineers began work on phase III of the WQAT in the spring of 2022 and was completed in mid-2023. *Explore the website here:* <http://www.exploremetrodenverwaterquality.org/>

Priority Projects

- 1. Full-Time Coordinator:** Hiring a coordinator was identified as one of the top three priorities at the first full SPRUWP meeting. Funding from USFS and EPA supported a Coordinator from January 2013-June 2016. Contract facilitation and a part-time coordinator were used after that due to funding.
- 2. Geomapping:** Partners identified geo-mapping as one of the top three priorities at the first full SPRUWP meeting. EPA provided funding through a contract with SAIC to create a publicly-accessible geo-mapping platform to display partner activities spatially. Webinars, questionnaires, and data-gathering activities were completed. Partner addition of projects to the map continued and additional partnership locations were exploring the use of the platform. The platform is no longer supported
- 3. Systems Thinking (Mapping):** Partners identified systems thinking mapping as one of the top three priorities at the first full SPRUWP meeting. Trust for Public Land and the Jefferson Conservation District championed this project. CDPHE and its Environment Water Quality Control Division requested the development of a systems network diagram and systems thinking process, focused on partnership projects and activities. CDPHE contracted the Logistics Management Institute (LMI) and Shadowcliff Associates to perform the work in 2013. The work was funded with \$25,000 expiring 604b funding from the EPA. The project provided opportunities for leveraging and identifying partnership priority areas. EPA Region 8's Sustainability Coordinator provided technical assistance for the project. *Explore the website here:* <https://www.epa.gov/urbanwaterspartners/south-platte-urban-waters-partnership-systems-thinking>
- 4. Urban Forestry:** CSFS awarded a total of \$100,000 of USFS funds to four projects to restore and protect Denver area waterways while reconnecting local populations with their water resources in 2012. All of the projects are complete. Projects funded involved the removal of invasive species and the planting of native trees in riparian and wetland areas. The four projects in Colorado that received funding were: the City and County of Denver Parks and Recreation, the Institute for Environmental Solutions, South Suburban Parks and Recreation, and Bluff Lake Nature Center.



*South Platte at Sun Valley during Jetty Construction
Photo Credit: Stacey Eriksen*

5. **Wildfire Readiness and Response Workshop: – Is Your Utility Prepared?** In conjunction with the Water Research Foundation, SWRUWP hosted a Wildfire Readiness workshop for utility managers in 2013. This addressed the impacts of wildfire on water quality as well as mitigation strategies and solutions. Explore the websites here: <http://www.waterrf.org/resources/expertsymposiums/Pages/wildfiresymposium2013.aspx> & <https://www.stormwater.com/home/news/33048571/waterrf-helps-water-utilities-prepare-for-wildfires>
6. **Green Infrastructure Virtual Tour:** This project was completed by an EPA intern and incorporated the first phase of Green Infrastructure Case Studies <https://www.youtube.com/watch?v=s5urHW5O01E>
7. **Metro Denver Nature Alliance:** The Metro Denver Nature Alliance (MDNA) is a network of environmental, scientific, and cultural organizations committed to making Denver a “thriving place for both people and nature.” Other organizations/individuals are part of the SPRUWP and MDNA. This partnership evolved out of the work with the Trust for Public Land and The Nature Conservancy on the South Platte Natural Capital Project. Data from both the Natural Capital Project and Water Quality Assessment are incorporated into a decision support tool developed by MDNA and TPL at <https://www.metrodna.co/>. Metro Denver Nature Alliance continues to work on developing a Regional Vision for People and Nature, which developed a novel scientific analysis and a suite of decision-making tools to identify high-priority places in the Metro Denver region to protect, connect, restore, and enhance land and water for people and nature and recently completed a Regional Equity Assessment. Metro Denver Nature Alliance also engaged in a collective storytelling project, called Nature Narratives. Nature Narratives provides opportunities for partner organizations to elevate their work and ways to promote healthier people, communities, and natural places in Metro Denver.
8. **Denver Urban Field Station:** The Denver Urban Field Station (DUFs) is a collaborative venture of the USFS Rocky Mountain Region, Rocky Mountain Research Station, CU Denver, City of Denver, USGS, and other partners looking to establish Denver as a center of excellence for applied urban ecological research. Several SPRUWP partners are involved with DUFs, including EPA, CSFS, and Denver Water. One early project idea involved mapping the metro area’s environmental stewardship organizations using the USFS-developed STEW-MAP process and tool, which built off the SPRUWP’s geo-mapping and systems mapping efforts and fed into MDNA strategic planning efforts. In 2020, the SPRUWP coordinator was brought in to facilitate the DUFs five-year strategic planning process to prioritize goals and actions. Explore the website here: <https://www.fs.usda.gov/rmrs/Denver>
9. **Denver Climate-Smart Cities:** This project is a collaborative venture led by Trust for Public Land to create climate strategies. Building off of the insight gleaned from partners in the Discovery phase, they convened a diverse set of Technical Advisory Team (TAT) members around the priorities, criteria, and data in developing the GIS-based Decision-Support Tool, as well as to begin to identify some applications of the tool to help support work in making Denver climate-smart. Explore the website here: https://web.tplgis.org/denver_csc/



South Platte River at Shoemaker Plaza, Photo Credit: Stacey Eriksen

10. Longitudinal Study of the South Platte for Orthophosphate and other nutrients: EPA Urban Waters/total maximum daily load (TMDL) funding was leveraged with other funding provided by USGS, Denver Water, Metro Water Recovery, City and County of Denver, CDPHE, Englewood S. Platte Water Renewal Partners, and Farmers Reservoir and Irrigation District to purchase a SOND unit and conduct a study. In October 2019 and September 2020, the USGS conducted longitudinal Lagrangian studies of nutrient concentrations and loads in the South Platte River and Cherry Creek in Denver. The studies involved the timed collection of water samples that were analyzed for orthophosphate (OP), total phosphorus (TP), total nitrogen (TN), and filtered nitrite plus nitrate (nitrate) at approximately 50 sites on the South Platte River, Cherry Creek, and their tributaries in the Denver area. The study article was published in River Research and Applications in 2022. There were difficulties with the installation of the continuous OP sensor. After initially installing the unit in October 2019, they made 4 site visits to the unit including 3 visits with a YSI technician to attempt to get the unit to work. In March 2020 it was decided to remove the unit and return it to YSI for repairs. The unit was returned to the USGS in Late August 2020. After 6 more site visits including 4 more with the YSI technician the unit was still not operational. YSI has sent USGS a new unit and it was scheduled for installation on July 16, 2021. Access the Longitudinal study article here: <http://doi.org/10.1002/rra.4060>

11. SPRUWP webpage: The SPRUWP webpage is regularly updated with regional information and resources (an inventory of best management practices, water quality data, and public health data related to the South Platte River). A significant expansion of the SPRUWP webpage was accomplished in 2020-2021 to achieve these objectives. The SPRUWP website is also regularly updated to include the most recent meeting summaries and partner information. Explore the website here: <https://www.urbanwaters.gov/splatte/index.html>

Environmental Justice Grants

- 2020. *Groundwork Denver. Constructed rain gardens and installed rain barrels in Sheridan along Lower Bear Creek*
- 2020. *Lincoln Hills Cares. Partnered with El Laboratorio for culturally sensitive citizen science and environmental learning*
- 2020. *Environmental Learning for Kids. Worked with youth in Denver (Green Valley Ranch, Montbello) and Commerce City to educate and address water pollution, climate change, and environmental and public health issues.*

Urban Waters Small Grants

- 2016. *Groundwork Denver. Lower Bear Creek: Youth Leadership to Solve the Pollution Problem. Blue team youth engagement around water quality monitoring and a TMDL.* <https://groundworkcolorado.org/programs/water/>
- 2016. *City and County of Denver. Heron Pond Regional Open Space Master Plan along the South Platte River.* <http://www.denvergov.org/content/denvergov/en/denver-parks-and-recreation/planning/park-facility-projects/heron-pond-master-plan.html>
- 2014. *Denver Department of Public Works, Wastewater Management in conjunction with Earth Force. Keep It Clean-Neighborhood Environmental Trios (KIC-NET) outdoor classroom. Water quality and stormwater education. KIC-NET won a National Association of Counties Achievement Award in 2016.* <https://www.denvergov.org/content/denvergov/en/wastewater-management/keep-it-clean/case-study-keep-it-clean-denver-and-earth-force.html>
- 2014. *Groundwork Denver Community Stewardship Network for Lower Bear Creek. Blue team youth engagement around water quality monitoring and creating a watershed plan.*



- 2012. *Barr Lake and Milton Reservoir Watershed Association. H2Only stormwater messaging campaign.* <https://barr-milton.org/resources/messages/>. See messages in Appendix E. (Follow-up funding expanded the use of the messaging through radio, billboards, and social media platforms.)
- 2012. *Earth Force. Keep It Clean: Neighborhood Trios (KIC-NET).* Included teacher training workshops and the development of an educational toolkit for outdoor classrooms. This work was selected to receive the Colorado Alliance for Environmental Education's 2014 Environmental Education Award for Excellence in the Best New Program category.

Other Federal funding and support that benefited SPRUWP are listed in Appendix B.

Planning for Action

Creation of Short-Term, Mid-Term, and Long-Term Priority Programs and Projects: SPRUWP underwent a comprehensive strategic planning process in 2018 to identify short-term goals, mid-term objectives, and long-term ambitions, as well as key actions and timelines. The partnership recently conducted a strategic follow-up process in 2021 to refresh and revise the plan.

Approach

Our interdisciplinary partnership focuses on our common desired outcomes while advancing our missions. The result? A holistic approach that benefits local water resources and improves and strengthens the community.

Focus

Regional Water Quality, Water Protection, and Water Awareness

Mission

The South Platte River Urban Waters Partnership collaborates across jurisdictions and disciplines to engage communities and protect and restore the South Platte River from the headwaters to the Denver metropolitan area and watershed.

Goals

1. Collaborate, educate, and engage
2. Connect people with water
3. Protect and restore through leveraging resources
4. Communicate achievements and share technical information



Confluence of the South Platte River and Cherry Creek

Photo Credit: [Colin Lloyd](#) on [Unsplash](#)

Strategies for Each Goal:

Collaborate, Educate, and Engage	Connect People with Water	Protect and Restore Through Leveraging Resources	Communicate Achievements and Share Technical Information
• Advertise and host educational training for SPRUWP members • Recruit new partners to promote outreach and education efforts • Host a one-day conference/tour (annually or bi-annually) • Update partners about events and resources via email	• Promote educational efforts that help the public understand the source of their water supply • Identify, consolidate, and compile existing public opinion survey data to create a comprehensive picture of public opinion in the South Platte Watershed • Identify and amplify partners' programs and initiatives based on their needs • Develop tools to help people access water quality data • Create and distribute resources to help partners plan and organize events	• Track partner projects and initiatives across the watershed in an inventory • Connect groups that are applying for funding to better leverage grant opportunities • Connect groups that are creating models to try to align modeling efforts and promote tools	• Update the Water Quality Assessment Tool • Take time to celebrate partner's accomplishments • Develop a communications plan for shared social media to celebrate wins and spread information on successes • Promote and improve the SPRUWP website

Significant Challenges in the Future

The South Platte River watershed is complex. Many organizations are actively working within the Watershed, so it can be challenging to avoid duplicating others' efforts. Since there is limited funding and resources available to a large variety of organizations, collaborative efforts can sometimes foster an environment of competition rather than collaboration. The South Platte River Urban Waters Partnership has been addressing this challenge by keeping open lines of communication with all members regarding their needs. This focus allows the Urban Waters Partnership to clearly show that it exists to benefit the existing collaborative environment, not to hinder it.

Funding has been a challenge and will likely continue to be a challenge, requiring creative problem-solving. Funding the coordinator position has shown to be difficult, and the Partnership also struggles with accepting funding. In addition to funding, personnel turnover within partner organizations has sometimes hindered momentum and cohesion, and support from some parts of the federal government has been inconsistent. The long-term sustainability of the Partnership may be a challenge due to inconsistent engagement, often limited by personnel, time, and resources.

Significant Actions Planned in the Future

1. Promote and conduct education around Phase III of the Water Quality Assessment Tool and guide to different partners and collaborative groups.
2. Co-develop research questions and products with other collaborative research groups, including the USGS, Denver Urban Field Station and South Platte Coalition for Urban River Evaluation (SP CURE).
3. Host a funding workshop to connect partners working on grant proposals to better leverage grant opportunities.
4. Host a workshop on water equity to promote principles of environmental justice.
5. Continue to cultivate relationships, agreements, and projects with Denver Water, Aurora Water, and other water utilities in the watershed.
6. Broaden the use of the SPRUWP and partner tools (WQAT and guide, Natural Capital Tools, H2Only) by engaging audiences, such as schools, educators, consultants, neighborhood groups, and decision-makers.
7. Continue to identify and amplify partners' programs and initiatives across the watershed.
8. Engage with the US Army Corps of Engineers and City and County of Denver's South Platte Restoration Projects to keep partners informed of the effort.
9. Coordinate with the Metro Denver Nature Alliance: Engaging on a strategic plan and regional map/vision and Denver Climate Smart Cities.



Appendix A

Members of the Partnership Over Time

Federal Government

U.S. Environmental Protection Agency
U.S. Forest Service
Agency for Toxic Substances & Disease Registry (CDC)
U.S. Geological Survey
National Parks Service, Rivers, Trails & Conservation Assistance Program
Army Corps of Engineers, Omaha District
Natural Resources Conservation Service
U.S. Fish and Wildlife Service
Housing and Urban Development
Economic Development Administration
Senator Michael Bennett's staff

State Government

Colorado Department of Public Health & Environment
Colorado Department of Transportation
Colorado Outdoor Recreation Industry Office
Colorado Parks and Wildlife
Colorado State Forest Service
Colorado Water Conservation Board

Local Government

Adams County
Jefferson County
Denver Health
Tri-County Health Department
City of Aurora
City of Aurora, Water Department
City of Brighton

City and County of Denver, Department of Environmental Health
City and County of Denver, Parks and Recreation
City and County of Denver, Public Works
City of Englewood
City of Lakewood
City of Sheridan
City of Commerce City
City of Westminster
Greenwood Village
Chatfield Watershed Authority
Cherry Creek Basin Water Quality Authority Authority/Upper Clear Creek Watershed Association
Dominion Water and Sanitation District/Sterling Ranch
Littleton/Englewood Wastewater

South Platte Renew
Metro Water Recovery
Mile High Flood District
Aurora Water
Denver Water

NGOs

Audubon Society of Greater Denver
Bluff Lake Nature Center
Barr Lake and Milton Reservoir Watershed Association
Chatfield Area Network for Outreach and Education (CANOE)
Cherry Creek Stewardship Partners
Cherry Creek Watershed Foundation
Clear Creek Watershed Foundation
Coalition for the Upper South Platte (CUSP)

Water Education Colorado
Colorado Stormwater Center
Colorado Watershed Assembly
Denver Botanic Gardens
Dinosaur Ridge
Earth Force
EcoAgriculture Partners
Environmental Learning for Kids
Front Range Wild Ones
Green Latinos
Groundwork Denver
Institute for Environmental Solutions
Jefferson Conservation District
Lincoln Hills Cares
Metro Denver Nature Alliance
Metro One World Water Center
Middle South Platte River Alliance
National Forest Foundation
Research, Education & Development for Health, Recreation & Land Agencies (GP RED)
Rocky Mountain Land Library
Sand Creek Regional Greenway Partnership
Sierra Club
South Platte Enhancement Board
South Platte Coalition for Urban River Evaluation (SP CURE)
South Platte River Waterkeeper
The Greenway Foundation
The Park People
The Nature Conservancy
Trout Unlimited

Trust for Public Land
WalkDenver
WaterNow Alliance
Walton Family Foundation
Westerly Connection
Volunteers for Outdoors Colorado
Business
Biohabitats
CDM Smith
CH2M
The Consensus Building Institute
Earth Economics
Davey Tree Expert Company
Keystone Concepts
Ecosystem Sciences Foundation
Leonard Rice Engineers
LLG International LLC
Plan-It Geo
REI
RenewWest LLC
Summit Economics
Westervelt Ecological Services
Zeppelin Development
University/College
Colorado School of Mines
Colorado State University
Front Range Community College
Metro State University One World One Water Center
Red Rocks Community College
The University of Colorado at Denver
University of Denver

Appendix B

Other Federal funding and support that benefited the South Platte River Urban Waters Partnership

National Fish and Wildlife Foundation (NFWF) Grants (partially funded by EPA, USFS, and USFWS)

- 2023. Resident-Driven Solutions to Lower Bear Creek Water Quality Impairment. Groundwork Denver received \$50,000 to lead water quality education and monitoring activities in Colorado's Lower Bear Creek Watershed, leveraging the support of youth employees and community residents. The project will positively impact 1,000 local residents, plans to engage at least 75 volunteers, create or sustain 20 seasonal positions for local youth, monitor 12 sites and restore 50 acres of watershed and four miles of riparian area.
- 2022. Urban Greenway Wildlife Habitat and Water Quality Community Stewardship. Sand Creek Regional Greenway Partnership received \$37,100 for the Urban Greenway Wildlife Habitat and Water Quality Community Stewardship. They planned to monitor 13 miles of an urban creek and greenway to obtain baseline water quality and wildlife habitat data to be better able to conserve the habitat and engage the community of the Sand Creek Regional Greenway. The project engaged 40 local high school students, 250 volunteers, one graduate fellow, and 75 undergraduate students.
- 2021. Youth Engagement in Lower Bear Creek Watershed. Groundwork Denver received \$49,649.83 to lead water quality education, activities, and monitoring, leveraging the support of youth employees and community residents in the Lower Bear Creek Watershed, focusing its efforts on the last eight miles of Bear Creek before it feeds the South Platte River.
- 2018. Improve the water quality and riparian habitat of Bear Creek in Denver CO-Groundwork Denver. Project partners included Home Depot, River Network, Colorado State University Stormwater Center, Eco Friend Bee, Harvey Park Sustainability Team, Metro State University, Colorado River Watch, Denver, Lakewood, and Sheridan.
- 2017. Investigation of Degraded Sites and Riparian Restoration along South Platte River (CO)-Metropolitan State University of Denver. Project partners included the One World One Water Center, Englewood Public Schools, South Platte Park, Denver Botanic Gardens, and the Colorado Public Health and Environment Department.
- 2016. Urban Refuge Partnership with Denver Natural Resources at First Creek City and County of Denver.
- 2016. Wheat Ridge Greenbelt Restoration and Environmental Education Network-The Institute for Environmental Solutions.
- 2015. Denver Botanic Gardens at Chatfield Riparian Restoration-Denver Botanic Gardens. Project partners included the Audubon Society of Denver, Jefferson County, and others.
- 2015. New Stewards for Conservation at the Rocky Mountain Arsenal National Wildlife Refuge-Groundwork Denver. Partners included the US Fish and Wildlife Service, Anythink Library Commerce City, Commerce City Parks and Recreation, Sand Creek Regional Greenway Partnership, and the Boys and Girls Club.
- 2014. Community Greening and Restoration Project-Environmental Learning for Kids. Project partners included Denver Parks and Recreation, Denver Public Works, and Denver Public Schools.
- 2013. Youth Water Quality Monitoring Investigation-to-Restoration-Bluff Lake Nature Center.

Forestry and Source Water Protection

- Hayman Burn Restoration Partnership. The USFS and National Forest Foundation (NFF) worked with many partners from 2010-2012 to reduce erosion and sediment flow in critical headwater areas burned by the Hayman Fire in 2002. https://www.nationalforests.org/assets/pdfs/Hayman-Final-Report_8_29_14_design.pdf
- Rocky Mountain Watershed Protection Partnerships. The USFS Rocky Mountain Region worked with municipal water providers and corporate partners along the Front Range of Colorado to restore and foster the resiliency of forests within critical watersheds.
- Source Water Planning. The Coalition for the Upper South Platte (CUSP) serves as the facilitator for a SWAP planning project for the South Platte River watershed, which is being convened by Denver Water and funded with support from the Colorado Department of Public Health and Environment (CDPHE). <http://www.uppertsouthplatte.org/sourcewater.html>
- Colorado Forest Action Plan. The Colorado State Forest Service published the 2020 Colorado Forest Action Plan. This in-depth analysis of forest trends offers solutions and guidance for improving forest health and ensuring our forests

— and the resources they provide — persevere for future generations. <https://csfs.colostate.edu/forest-action-plan/>

- **Forests to Faucets Partnership.** As the water provider to 1.5 million people in the Denver metropolitan area, Denver Water directly depends on healthy forests and watersheds. Denver Water’s collection system receives water from rainfall and snowmelt on national, state, and private land. The Forests to Faucets Partnership is a watershed management partnership to help mitigate wildfires. From 2017 to 2022, the partners (US Forest Service, Colorado State Forest Service, NRCS, and Denver Water) have committed to invest \$33 million in forest management projects to restore more than 40,000 acres of forestland. The inclusion of the State Forest Service and NRCS allows Denver Water to achieve forest treatments on private and state lands within the watershed. In the summer of 2021, the USFS Rocky Mountain Region and Denver Water worked on the next five-year phase of our Forests to Faucets partnership. The partnership aims to reduce wildfire risk in critical watersheds for Denver’s water collection and delivery system, including the Upper South Platte River. Denver Water and the US Forest Service Rocky Mountain Region are using new wildfire and sediment models to target the best areas for treatment. They will continue to use mechanical thinning to restore fire-adapted forests and also scale up prescribed burning when the opportunities present themselves. <https://www.denverwater.org/your-water/water-supply-and-planning/watershed-protection-and-management>
- **Mile High Youth Corps.** The Forests to Faucets partnership continues to support collaborative efforts between the South Platte Ranger District and the Mile High Youth Corps to provide wildland fire training to youth from diverse backgrounds. MHYC crews have provided the crucial capacity to help with pile burning and other wildfire risk reduction efforts in the Upper South Platte watershed and many graduates of the program go on to get permanent wildland fire and natural resource management jobs. Programs like this provide an example of how initiatives like the Civilian Climate Corps might work in practice to tackle climate change and its impacts on wildfire.
- **Upper South Platte Partnership.** In 2015, several organizations created the Upper South Platte Partnership (USPP) with a unique vision – actively managing private and non-federal lands within the Upper South Platte watershed. By leveraging the expertise, resources, and reach of government agencies, water providers, nonprofit organizations, fire protection districts, and academic institutions, the USPP is working towards sustainable and resilient landscapes, healthy forests, and proactive and engaged fire-adapted communities, with efficient fire response and management.
- **Rocky Mountain Restoration Initiative.** The Rocky Mountain Restoration Initiative is a new stakeholder-driven collaborative aimed at increasing the resilience of our forests, habitat, communities, recreation opportunities, and water resources across all lands in the Rocky Mountains. The initiative is taking the groundbreaking approach of tasking a diverse group of partners from Colorado to identify important landscapes, shared interests, and potential strategies where a collective effort has the potential to make transformational changes in the health and resiliency of the ecosystem. RMRI has chosen to initially focus resources on three landscapes having the greatest impact on Colorado to reach a scale comparable to the needs on the ground, one of these being the Upper South Platte Watershed. <https://restoringtherockies.org/>
- **Forest Restoration and Wildfire Risk Mitigation Grant Program.** The Colorado State Forest Service actively supports wildfire mitigation and watershed restoration projects in the South Platte Watershed through the Forest Restoration and Wildfire Risk Mitigation Grant Program. <https://csfs.colostate.edu/funding-assistance/>
- **Strontia Springs Reservoir Sediment Management Program.** The USFS Rocky Mountain Region is working with Denver Water to identify and implement National Forest System lands projects that reduce sediment impacts on Strontia Springs Reservoir. These efforts may include tree planting in riparian areas in the Buffalo Creek burn scar, installation of beaver dam analogs, road and trail improvements, and more.

Escaped Trash Protocol

- In October 2022, EPA staff, led by Region 8’s Trash Free Waters Program, conducted a pilot of EPA’s Escaped Trash Monitoring Protocol. This was done along the South Platte River, Weir Gulch, and Lakewood Gulch in the Sun Valley Neighborhood. Staff collected trash, weighed and took volumetric measurements, and then categorized the collected trash. Results were presented at the November 2022 SPRUWP Partnership meeting. The effort was done in coordination with the Denver Department of Public Health and Environment and the Denver Housing Authority. This was a follow-up to a 2012 effort by The Greenway Foundation under a nonpoint source pollution grant from CDPHE to perform a trash inventory of the South Platte River at 3 locations on 3 different dates.

Youth-Driven Urban Pollution Reduction Plan for a Watershed in Denver and Adams Counties

- EPA provided funds through the [Nonpoint Source Pollution Management Program](#) for the development of a youth-driven Urban Pollution Reduction Plan for a watershed in Denver and Adams counties. The project is made possible through a Clean Water Act Section 319 grant to the Colorado Department of Public Health and Environment, which worked to develop the sub-award grant with the project sponsor, Lincoln Hills Cares, a nonprofit organization. Lincoln Hills Cares integrated public engagement and the youth voice in the creation of an Urban Pollution Reduc-

tion Plan for a watershed downstream of the Burlington Ditch diversion that drains into the South Platte River. Staff are working with residents to develop the plan at a local watershed scale that will focus on reducing fecal coliform and other possible contaminants from polluting the river. Other expected outcomes include helping residents gain a sense of stewardship for the river and an understanding of the direct relationships between their actions in their neighborhoods, and the river's health and the recreation it offers.

- This project serves to improve water quality in the South Platte River watershed in Denver and Adams Counties by engaging underrepresented youth and families in creating a plan to reduce *Escherichia coli* (*E. coli*) loading at a HUC12 scale within the 26-mile Segment 15 of the South Platte River (COSPUS15). This segment includes the confluences with both Sand Creek and Clear Creek. A paved trail for biking, walking, and access to the river follows the majority of Segment 15.

Science and Research

- 2020. The Denver Urban Field Station completed strategic planning with support from SPRUWP facilitators. The strategic plan set goals for the Urban Field Station including establishing a long-term data and monitoring plan for metrics for the Denver metro region and Colorado Front Range. This work leverages previous SPRUWP work, including the Natural Capital Assessment.
- 2021. The Denver Urban Field Station finalized an agreement with CU-Denver to serve as a physical space for DUFFS research and graduate students. The USFS Rocky Mountain Research Station provides funding to support the space.
- 2021. The Denver Urban Field Station entered into an MOU with Denver Forestry to support the monitoring of mortality for trees planted by the city on residential rights-of-way throughout the city.
- Rain Barrel Water Quality Sampling and Analysis with Groundwork Denver. EPA Region 8's laboratory analyzed water samples from rain barrels in partnership with Groundwork Denver in 2021 and 2022. The purpose of this study is to determine the load of nutrients or metals captured by the barrel itself at 2 sampling sites. Measured components include Ammonia as N, Nitrate as N, Nitrite as N, Total Nitrogen, Ortho-Phosphate, Total Phosphorous, Aluminum, Cadmium, Chromium, Copper, Lead, and Zinc. Groundwork Denver is also measuring pH, temperature, dissolved oxygen, conductivity, oxidation-reduction potential, and turbidity.

Harmful Algal Bloom Study

- EPA Regions 7 and 8, their laboratories, and EPA's Office of Research and Development teamed up to analyze Harmful Algal Blooms (HAB) within urban lakes in three metropolitan areas including Kansas City, MO; Kansas City, KS; Cincinnati, OH; and Denver, CO. This project was under EPA's Regional Applied Research Efforts. This project focused on investigating the correlation between urban watershed characteristics and cyano HABs. This project was funded for two years (2021 – 2022). Year one (2021) was dedicated to sampling and collecting field data, while year two (2022) focused on outreach and educational activities and data analysis of the collected water quality data.
- Within the Denver area, five lakes were identified that best fit the urban watershed characteristics for this project including Sloan's Lake, Berkeley Lake, Rocky Mountain Lake, Ferril Lake, and Smith Lake. The lakes were chosen based on the volume of foot traffic and public use (recreational activities) and their history of past bloom events. These lakes were sampled once a week during the months of July and August 2021, during the peak bloom season. With a preseason sampling event occurring in April and a post-sampling event occurring in November. Parameters that were sampled include nutrients, anions, toxins, cyanobacterial abundance and identification, total organic carbon, chlorophyll, and more. Throughout this project, EPA's team worked with the Colorado Department of Public Health and Environment and the Denver Department of Public Health and Environment to coordinate sampling events and share data for public lake closures during the summer of 2021. This coordination resulted in the closure of Sloan's Lake during peak bloom events.

Green Infrastructure

- EPA awarded Groundwork Denver a \$178,000 Brownfields job training grant to build a skilled environmental workforce. Funded through EPA's Environmental Workforce Development and Job Training (EWDJT) Program, the grant will provide funding to Groundwork Denver to initiate an innovative and equitable new Green Infrastructure Training (GRIT) program.
- Predicting/Modeling Improvements in Public Health and Ecosystems Goods and Services Associated with Major Urban Redevelopment and Infrastructure Projects at Sun Valley in Denver- Regional Sustainability and Environmental Sciences Research (RESES)--Collaboration and Partnership for Sustainable and Healthy Communities. In partnership with EPA Region 8 and EPA's Office of Research and Development, partners developed models to improve public health and ecosystem goods and services in Sun Valley in Denver. A public meeting with translators to assess the

need for green infrastructure in the community was very successful. <https://www.epa.gov/research/reses>

- Sun Valley Green Infrastructure Study. (Land Revitalization Technical Assistance). A groundbreaking study of 4 different alternatives for managing stormwater demonstrated the cost-effectiveness of green infrastructure by looking at the capital and 20-year maintenance costs. https://www.epa.gov/sites/production/files/2016-08/documents/sunvalley_stormwateroptions_final.pdf
- Green Infrastructure Technical Assistance to assist in the development of Ultra-Urban GI guide <https://mhfd.org/wp-content/uploads/2019/12/ultra-urban-green-infrastructure-guidelines.pdf>
- US Army Corps of Engineers Studies: Denver Ecosystem Restoration Feasibility Study <https://www.denvergov.org/content/denvergov/en/denver-waterways.html>
- Green Infrastructure Design Assistance for 38th and Blake <https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100NAQG.TXT>
- River North Green Infrastructure Design with Mile High Flood District (formerly Urban Drainage and Flood Control District)
- Westerly Creek Green Infrastructure Stream Restoration Design (Land Revitalization Technical Assistance). <https://www.epa.gov/urbanwaterspartners/westerly-creek-green-infrastructure-and-stream-restoration-design>
- Dry Gulch (Lakewood) Green Infrastructure Channel Restoration Design (Land Revitalization Technical Assistance) https://www.epa.gov/sites/default/files/2015-07/documents/dry_gulch_stream_restoration.pdf

Brownfields Grants and Support and Land Revitalization Technical Assistance

- Brownfields Cleanup Grant to the Denver Housing Authority for Sun Valley of \$1,049,300 to cleanup the former Xcel Energy Zuni Tank Farm Support Site to become affordable housing and a riverfront park. <https://www.epa.gov/news-releases/epa-joins-mayor-hancock-award-over-1-million-revitalization-contaminated-riverfront>
- EPA awarded Groundwork Denver a \$178,000 Brownfields job training grant to build a skilled environmental workforce. Funded through EPA's Environmental Workforce Development and Job Training (EWDJT) Program, the grant will provide funding to Groundwork Denver to initiate an innovative and equitable new Green Infrastructure Training (GRIT) program. Green infrastructure uses vegetation, soils, and other greenspace features and natural design practices to manage runoff, conserve water, improve surface and groundwater quality, and create healthier communities. Over the course of two summer seasons, the program will provide young adults, ages 18 to 24 primarily identifying as racial and ethnic minorities, with job training on green infrastructure design, implementation, and management. The training will focus on various skills applicable to both private and public green infrastructure projects, such as community forestry, sustainable landscaping, stormwater control, and heavy machine operation, as well as occupational safety training. <https://groundworkusa.org/building-pathways-to-greener-futures-with-grit/>
- Targeted Brownfields Assessments for Sun Valley EcoDistrict, Stream on the Platte, Westerly Creek at Stapleton.
- Colorado Brownfields Revolving Loan Fund for Freight in River North, Ruby Hill, and Union Station.
- Denver South Platte Brownfields Area-Wide Planning Grant-River Corridor Planning. www.denvergov.org/southplatte
- Denver South Platte RiverPlace Initiative, \$400K Brownfields Assessment grant. <https://www.denvergov.org/content/denvergov/en/brownfield-redevelopment/south-platte-riverplace-initiative.html>
- Aurora Brownfields Area-Wide Planning Grant for Westerly Creek Village. <https://www.auroragov.org/cs/groups/public/documents/document/014383.pdf>

Other Funding and Support

- In 2022, The Denver USACE South Platte River projects received full federal funding (\$350 million) from the Infrastructure Investment & Jobs Act legislation passed fall 2021. The South Platte River project is a key part of a broader plan put forth by the city of Denver and the U.S. Army Corps of Engineers to permanently protect several Denver waterways. The project will restore more than 450 acres of riparian, wetland, and aquatic habitats along the waterway, beginning at 3rd Avenue and extending North into Adams County, creating new greenspaces for residents and visitors to enjoy and further protecting nearby homes and businesses from the threat of future flooding. Once complete, the project will reduce the risk of flooding for more than 350 homes located in predominantly low-income, minority communities along the river, eliminating future flood-insurance-rate increases that could force many current residents out of their homes. SPRUWP partners agreed to sign a Memorandum of Understanding in 2021 to show our support for the project.

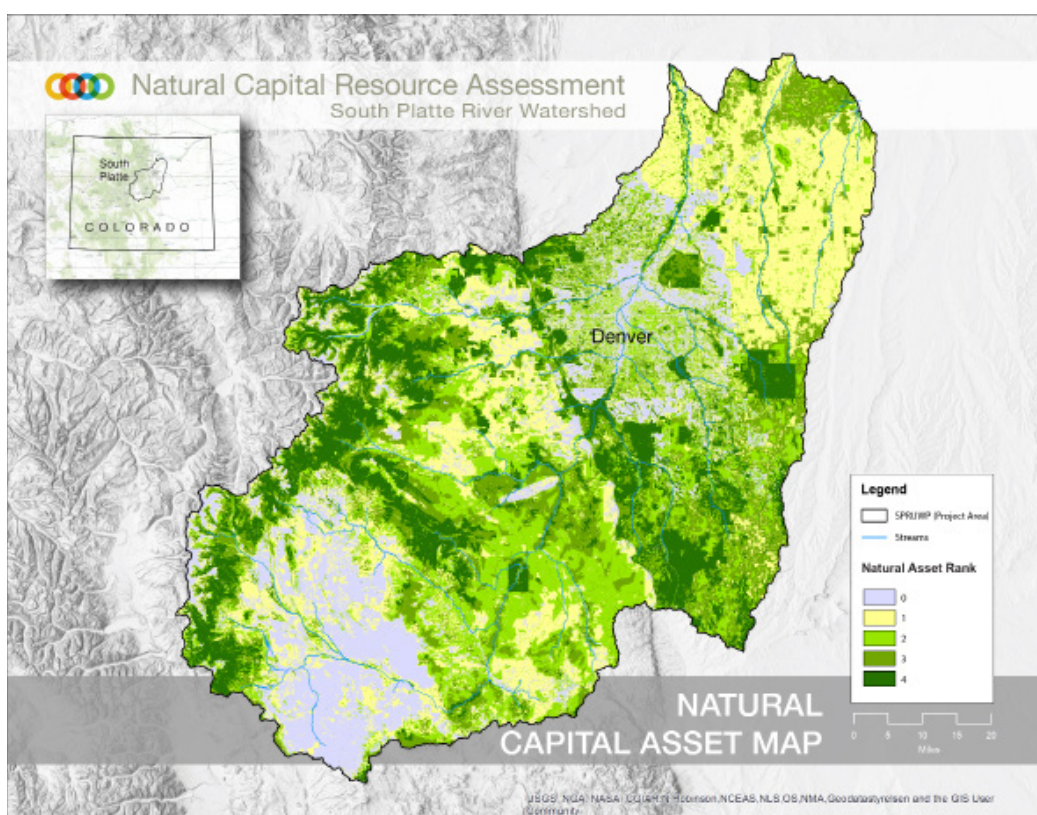
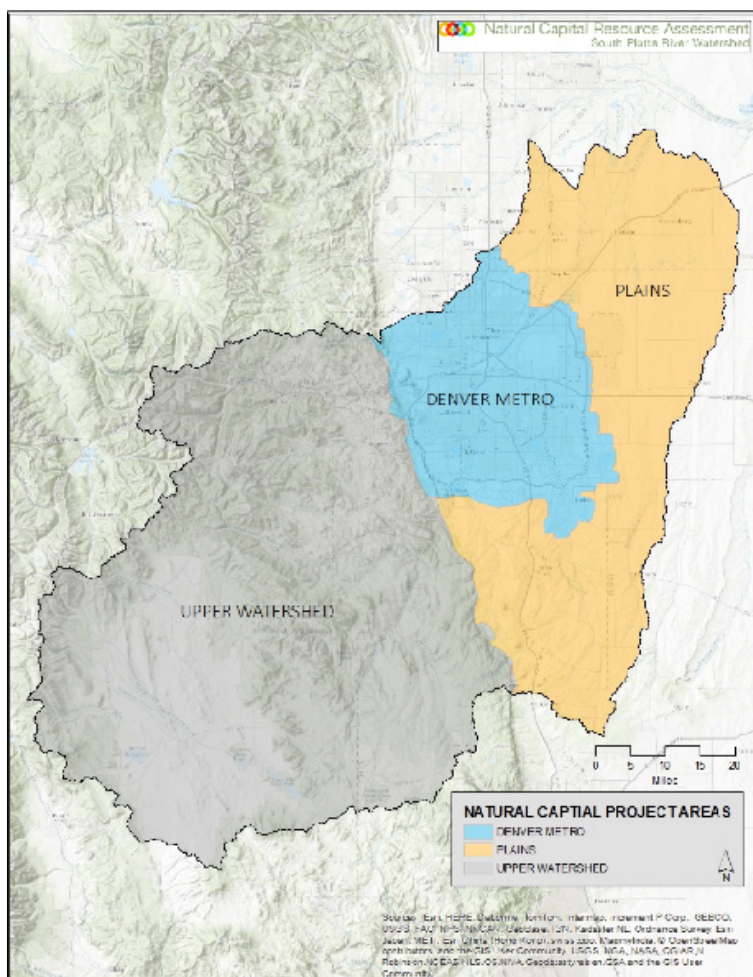
- EPA provided \$25,000 in funding in 2021 for Stormwater Messaging as a follow-up to an Urban Waters Small Grant. The Barr Milton Watershed Association messages developed during the Urban Waters small grant effort were used as a starting point, selecting preferred media and massaging those messages into a format for that particular media. The selection of outreach platforms was completed after stakeholder discussion. Platforms considered included TV, radio, internet, social media, billboards, bus stops, bus wraps, posters, flyers, bill stuffers, etc. Funding was used for local NPR radio advertising and a billboard highlighting algae and nutrient issues.
- HUD Choice Neighborhoods Planning grant and an Implementation Grant for Sun Valley EcoDistrict.
- USFS and EPA funding for the coordinator.
- South Platte River Environmental Education. EPA Environmental Education Grant awarded in 2016 to The Greenway Foundation.
- Solutions for Climate Resiliency in North Denver EJ Communities. 2015 EPA Environmental Justice Small Grants awarded to Groundwork Denver.
- ELK Youth Naturally-Community Water Connections (ELKYN-CWC). 2015 EPA Environmental Justice Small Grants awarded to Environmental Learning for Kids.
- US Army Corps of Engineers Studies for Chatfield Reservoir and Bear Creek Reservoir.
- Get Outdoors, Colorado. In celebration of Earth Day 2013, the USFS and Get Outdoors Colorado launched a new website called www.GetOutdoorsColorado.org to give people thousands of opportunities to explore and experience Colorado.
- Natural Resource Damage Settlement Funding from Lowry Landfill. The SPRUWP was used in 2013 to facilitate a funding announcement and assistance for Lowry Landfill Natural Resource Damages Settlement funding from the State of Colorado. Three projects were funded: Bear Creek water quality, Westerly Creek Greenway, and Bluff Lake Nature Center.
- Survey and Assessment of Critical Urban Wetlands in Denver and Mountain Parks. EPA wetlands grant provided funding to the Colorado Natural Heritage Program Wetland Program of Colorado State University in 2012. <http://www.cnhp.colostate.edu/download/documents/2015/Denver%20County%20Report%20FINAL%206252015%20with%20Appendices.pdf> http://www.cnhp.colostate.edu/download/documents/2015/Denver_Brochure_Final_Draft.pdf http://www.cnhp.colostate.edu/download/documents/2015/Colorado_Wetland_App_Users_Guide.pdf
- Addressing Petroleum Seepage into Sand Creek. EPA's emergency response program responded to a seep of petroleum products into Sand Creek near its confluence with the South Platte River beginning in November 2011. EPA continues to provide technical support to CDPHE and the responsible party.
- Improving Access to the South Platte River Greenway. NPS RTCA helped the City and County of Denver and the Greenway Foundation identify and overcome barriers that prevent residents of neighborhoods adjacent to the South Platte River in Denver from accessing the South Platte River Greenway and its many amenities and benefits.
- Rocky Mountain Greenway Trails. The US Department of Transportation awarded \$1.735 million for seven miles of trails along the Rocky Mountain Greenway. The Greenway will connect the Rocky Mountain Arsenal and Rocky Flats National Wildlife Refuges with the Two Ponds Refuge and Rocky Mountain National Park. The Rocky Mountain Greenway is part of the Department of Interior's America's Great Outdoors Initiative and the Urban Waters Federal Partnership.

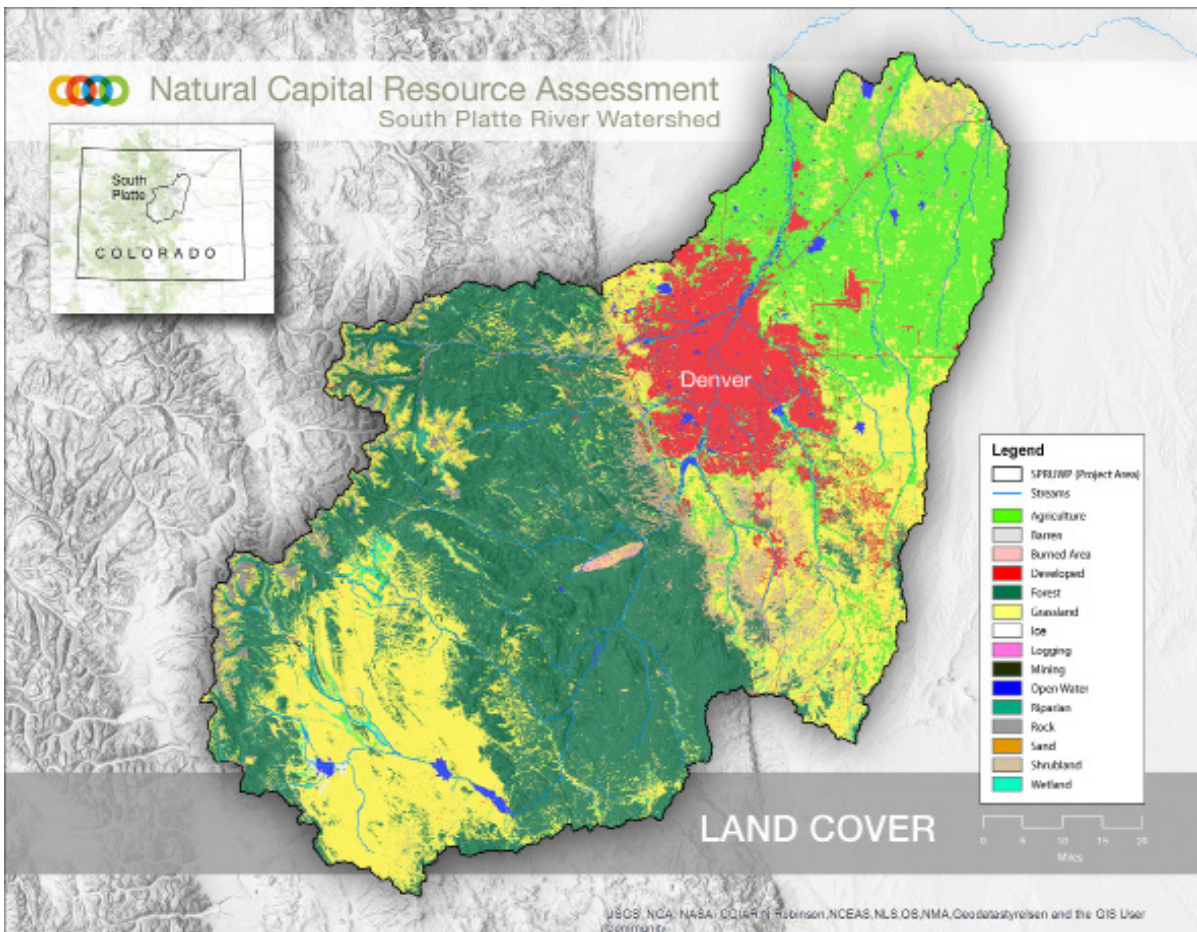
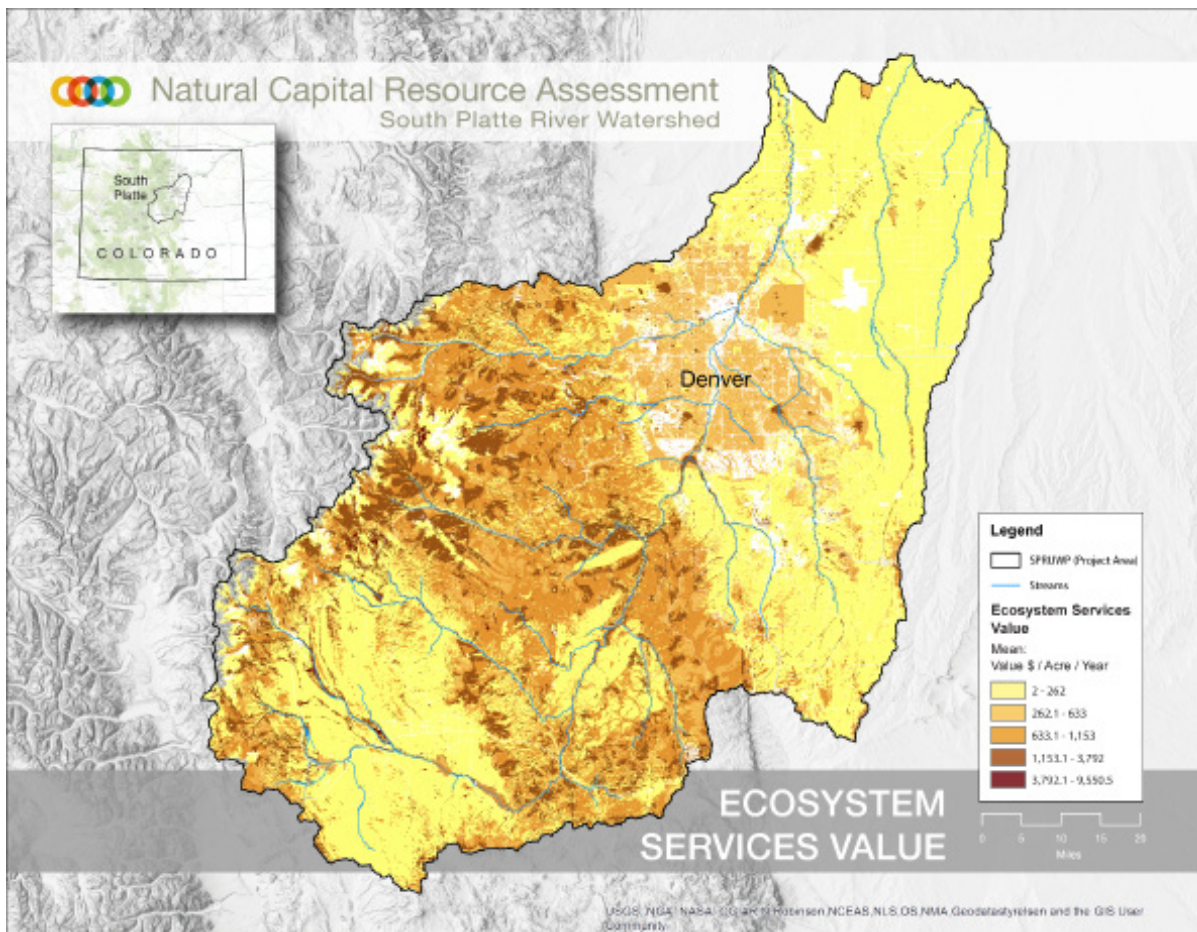


South Platte River at Shoemaker Plaza Photo Credit: Stacey Eriksen

Appendix C

Natural Capital Maps





Appendix D

SPRUWP and Environmental Justice

Environmental Justice (EJ) is an essential aspect of all of SPRUWP's work. The most significant EJ issues that SPRUWP partners have raised are recreation, access to rivers, and E Coli in streams; lack of parks, open space, and green infrastructure; and replacement of lead pipes on private property (addressed by Denver Water as part of their waiver and agreement with EPA). Here are some of the SPRUWP's most considerable efforts connected to EJ:

- Access to data through the water quality assessment tool and the natural capital resource assessment and the ecosystem benefits tool.
- Collaboration with the Metro Denver Nature Alliance, which promotes equal access, and with which many SPRUWP partners are involved, including the EPA.
- Collaboration with the Denver Urban Field Station, a SPRUWP spinoff and a priority location for USFS due to its positioning in the middle of the country and a semi-arid climate.
- EPA support, urban waters small grants, and EJ grants to Groundwork Denver for Lower Bear Creek, which resulted in the creation of a watershed plan, water quality monitoring, TMDL planning, creation and execution of a youth corps blue team, and installation of rain gardens and rain barrels in an EJ neighborhood in Sheridan, CO, as well as a job training grant.
- EPA and SPRUWP partners' participation with Trust for Public Land (TPL)/City and County of Denver in data sharing as part of the TPLs Climate Smart Denver tool.
- EPA's participation in the redevelopment of the Sun Valley neighborhood, brownfields assessment work, Sun Valley stormwater options land revitalization project, Regional Sustainability and Environmental Sciences Research Program (RESES) project on predicting/modeling public health improvements and ecosystem benefits in Sun Valley and a brownfields cleanup grant.
- EPA's funding for a land revitalization/EJ project on Westerly Creek in conjunction with the City and County of Denver and Trust for Public Land, which helped bring the area to the top of the City's list and secure Natural Resource Damage Assessment (NRDA) funding for the implementation.
- EPA's work in supporting green infrastructure and brownfields in EJ neighborhoods.
- EPA funding for a brownfields river corridor plan and South Platte River Place Initiative brownfields assessment grant.
- EPA's Urban Waters Small Grant funding for the Heron Pond Natural Area/Carpio Sanguinetti Park to improve access to some parks in an EJ area along the South Platte River at a former wastewater treatment plant with brownfields and Superfund issues.
- EPA's Urban Waters Small Grant funded Earth Force and Denver Wastewater and their KIC-NET Trios program with youth in EJ neighborhoods, which was later expanded to Albuquerque.
- EPA's Urban Waters Small Grant funded the Barr Milton Watershed Association to create stormwater messages on algae, eliminate the use of phosphorus in fertilizer, and scoop dog poop, which has been expanded to other watersheds in Colorado and will be part of an upcoming social media campaign that will include water conservation.
- EPA Region 8's laboratory analyzed water samples from rain barrels in partnership with Groundwork Denver in 2021. This partnership continued in 2022. The purpose of this study is to determine the load of nutrients or metals captured by the barrel itself at 2 sampling sites. Measured components include Ammonia as N, Nitrate as N, Nitrite as N, Total Nitrogen, Orthophosphate, Total Phosphorous, Aluminum, Cadmium, Chromium, Copper, Lead, and Zinc. Groundwork Denver is also measuring pH, temperature, dissolved oxygen, conductivity, oxidation-reduction potential, and turbidity.
- In October 2022, Region 8's Trash Free Waters Program, conducted a pilot of EPA's Escaped Trash Monitoring Protocol. This was done along the South Platte River, Weir Gulch, and Lakewood Gulch in the Sun Valley Neighborhood. Staff collected trash, then weighed and took volumetric measurements, and categorized the collected trash. Results were presented at the November 2022 SPRUWP Partnership meeting. The effort was done in coordination with the Denver Department of Public Health and Environment and the Denver Housing Authority. This was a follow-up to a 2012 effort by The Greenway Foundation under a nonpoint source pollution grant from CDPHE to perform a trash inventory of the South Platte River at 3 locations on 3 different dates.

- The Colorado Discharge System draft permit for the Suncor Refinery was available for public comment through February 17, 2022. The Colorado Department of Public Health and Environment proposed multiple major changes, including adding limits for per- and poly-fluoroalkyl substances (PFAS) and other substances/contaminants, the addition of more stringent requirements to outfalls previously assumed to be only discharging stormwater due to actual discharges of process wastewater through the outfalls; and requirements to identify seeps of contaminated groundwater into Sand Creek. EPA staff reviewed the Suncor Refinery permit as part of its oversight of the state's water quality program. EPA staff provided technical assistance to the state as part of the permit development process at <https://cdphe.colorado.gov/suncor-water-quality-permits>. In September 2020, EPA staff conducted off-site compliance monitoring of the Suncor Refinery's compliance with Clean Air Act Section 112(r) chemical Risk Management Plan and Emergency Planning and Community Right-to-Know Act (EPCRA) regulations. EPA contractor Eastern Research Group, Inc. led the activity and CDPHE's Air Pollution Control Division also attended the activity. EPA staff inspected the Suncor Refinery in June 2021 to determine compliance with the facility's state-issued permits for discharging wastewater and stormwater into Sand Creek. CDPHE's Water Quality Control Division participated in the inspection.
- EPA's approval for the waiver for Denver Water prioritized replacing lead pipes on private property instead of adding orthophosphate.



Cherry Creek, Photo Credit: [Colin Lloyd](#) on [Unsplash](#)

Appendix E

Water Quality Messaging

