California Tahoe Conservancy
Agenda Item 5
December 14, 2023

Wetland Carbon and Greenhouse Gas Monitoring

The California Tahoe Conservancy (Conservancy) has teamed up with the University of Nevada, Reno (UNR) to explore how restoring Tahoe's wetlands can help combat climate change. The California Department of Fish and Wildlife (CDFW) is funding a Conservancy and UNR research project to measure carbon stocks stored in plants and soils and greenhouse gases (GHGs) released in a portion of the Upper Truckee Marsh Restoration Project (Project). GHGs, such as carbon dioxide, methane, and nitrous oxide, are gases that trap heat in the atmosphere. Staff is also working with UNR to expand this monitoring to other projects in the Lake Tahoe Basin (Basin). This ongoing and future science will expand our understanding, inform future restoration projects, and help us contribute to statewide goals for reducing GHGs.

Healthy wetlands store significant carbon and reduce GHG emissions. Research indicates that impaired wetlands can be GHG sources, while restored wetlands can sequester GHGs at a scale comparable to a rainforest. Grasses, trees, and other plants capture carbon dioxide from the air and use the carbon to grow leaves, stems, and roots. In impaired meadows and wetlands, with dried up soil, plants struggle to grow and store less carbon. In addition, dying plants decompose and release GHGs back into the atmosphere. But when plants can thrive throughout the growing season in moist soils like those in healthy, functioning wetlands, they can help combat climate change by capturing and storing significantly more carbon above and below ground.

In 2019, CDFW awarded a Wetlands Restoration for Greenhouse Gas Reduction Program grant to the Conservancy for the Project, which included funding for this GHG study. UNR researchers are monitoring an area that developers filled in the 1950s and 60s, for planned, but never completed, development. The Conservancy removed the fill and converted the area back into a wetland. Attachment 1 identifies the monitoring areas. The researchers measured carbon in the soils and vegetation before the restoration and are currently monitoring post-project. These measurements will help the Conservancy understand how well the new wetlands capture and store carbon. UNR is also measuring GHG off-gassing to calculate total GHG sequestration. As part of this study, UNR is monitoring the adjacent Lower West Side Restoration Project that the Conservancy completed over 20 years ago, to understand how restoration affects GHG sequestration over time.

Staff is working with UNR to expand wetland GHG monitoring to additional project sites around the Basin. UNR will analyze GHG sequestration at restoration projects within the

Upper Truckee Watershed and other Basin locations and will include a suite of past and future projects. One study location is Maʔyála wáťa (Meeks Meadow), where the Washoe Tribe of Nevada and California (Tribe) is working with the USDA Forest Service, Lake Tahoe Basin Management Unit (LTBMU), to restore over 300 acres of meadow. The Tribe and LTBMU are removing encroaching conifers and performing cultural burning practices, presenting a new opportunity to measure GHG sequestration for this type of meadow restoration treatment. By monitoring additional project sites at a regional scale, the UNR researchers will help the Conservancy understand how restoration improves carbon storage over decades. This science will complement similar efforts by the Sierra Meadows Partnership and will help land managers prioritize and design restoration projects.

List of Attachments

Attachment 1 – Upper Truckee Marsh Monitoring Location

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