2022 Americas Site Solutions Technology Transfer Conference

Title: Nature Based Solutions Transform a Riparian Corridor with Benefits to the Community, Environment in Butte, Montana

Authors' Names: Lis Nelis and Mandi Miller

Presenter's Name: Mandi Miller

Key Topic: Sustainable Solutions

PDP Manager/Managing Principal's Name: Eric Hodek

Client Name: Atlantic Richfield

Project Name: RMSC: Monitoring for Ecosystem Services

Project Location: Butte, Montana

Primary Ramboll Project Staff (Office): Lis Nelis (Seattle, Washington), Mandi Miller (Denver, Colorado)

ABSTRACT

Background/Objectives:

Historic mining practices resulted in contamination of soils across Butte hill and impacts to surface water and groundwater at and below the Silver Bow Creek riparian corridor in Butte, Montana. As part of the superfund remedy, the Butte Priority Soils Operable Unit Silver Bow Creek Conservation Area (SBCCA) will utilize the implementation of Nature-Based Solutions (NBS) to benefit the community and the environment. The NBS will complement historic mine waste removal and the capture and treatment of contaminated groundwater to ensure that surface water resources will be further protected, biodiversity will increase, and the community will gain a public natural area. The resulting Silver Bow Creek Conservation Area will be a 160-acre urban greenway in the heart of Butte which will provide many ecosystem services (ES). To achieve this goal, Ramboll is providing on-call consulting for NBS, remediation and restoration activities, and long-term monitoring for ES. This presentation focuses on the monitoring study, including how it is being used to quantify ES, inform adaptive managing, and increase the probability of overall success of the remediation project.

Approach/Activities:

Atlantic Richfield plans to use remediation, restoration, and NBS to help Atlantic Richfield increase ecosystem services (ES) across the SBCCA. ES are defined as the benefits that humans receive from functioning ecosystems. Ramboll uses ES long-term monitoring, both before and after restoration/remediation activities. We also worked with local landscapers to develop an appropriate planting schedule that creates and supports a diverse habitat. This habitat will allow wildlife to thrive, and it will beautify the community. Ramboll developed a monitoring plan and began baseline sampling in June 2022. This monitoring plan focuses on the following ES: climate regulation, carbon sequestration, habitat development, pollination of flowering plants, soundscape improvement, viewshed improvement, pest and invasive species control, flood regulation, nature viewing, physical activity, and support and increase of biodiversity. Field surveys and assessments will allow us to understand how these ES are changing over time and whether we need to advise Atlantic Richfield to make changes to the remediation plan through adaptive management to successfully increase ES.

Results/Lessons Learned:

Ramboll conducted our baseline data collection for ES in June 2022, before remediation activities take place in fall of 2023. Our baseline surveys have provided lists of native species that are thriving without irrigation, suggestions on how to save natural capital for reuse, and overviews of areas of special concern during remediation. After reviewing these initial assessments, we will also be updating survey protocols from what we have learned in the field to better ensure ES goals are met.

Aspect of Work that Relates to Sustainability:

Instead of using only engineered solutions to accomplish the project goals, this project uses innovative and sustainable solutions in conjunction with engineered solutions, such as integrating NBS, while increasing ecosystem services. The monitoring study also involves innovative assessment methods which allow us to understand the success of the project's sustainable NBS by measuring how ES, such as biodiversity, are changing over time. If we are not seeing the predicted change, adaptive management will increase the chance of a successful outcome.