Riverside County Department of Waste Resources
Southeast Drainage Channel Improvement Project at the (Closed) Corona Landfill
Executive Summary

Overview

Through a multi-agency collaboration, the County stabilized a landfill slope within a major water course, preserved habitat, and reduced mitigation fees by $2,000,000 to $4,000,000.

Challenge

The Riverside County Department of Waste Resources (RCDWR) manages 32 closed landfills throughout Riverside County, many of which were in operation and/or closed prior to the implementation of modern solid waste regulations. As a result, environmental and engineering issues occur at these sites that can potentially cost the County millions of dollars to protect the public and environment. The Southeast Drainage Channel Improvement Project at the (Closed) Corona Landfill within the City of Corona (City) is one such project where after the landfill closed in 1986, the southeast channel became an integral link in the City's drainage plan and now conveys nuisance and storm water from approximately one-third of the City's watershed. The channel is positioned against the southeastern landfill slopes along its northern bank and against an existing residential neighborhood and residential development along its southern bank. Prior to this project, the channel was under-capacity and contained high velocity flows during storm events that contributed to multiple failures of existing grouted riprap armor along 1,800 feet of landfill slope. The engineering goals included slowing the water and armoring the slope to prevent landfill exposure and increasing the capacity of the channel to prevent flooding. Due to the proximity of the residences and development, expansion was limited to the landfill, necessitating a minimal channel expansion. Additionally, the channel contained habitat for the federally and state recognized endangered species, Least Bell's Vireo (LBV), which entails mitigation.

Solution

RCDWR approached this project with the dual goals of designing a solution to protect the public and environment from landfill exposure and to maximize habitat preservation for onsite mitigation. Early in the permitting and design stages, RCDWR consulted and collaborated with multiple environmental regulatory agencies, including, but not limited to the US Army Corps of Engineers, California Department of Fish and Wildlife, and the California Regional Water Quality Control Board, in generating a solution that included on site mitigation. By demonstrating a willingness to work with the environmental regulatory agencies in preserving on-site habitat, RCDWR was able to negotiate 1:1 mitigation fees and use of another closed landfill project at the Pedley Landfill as mitigation land. RCDWR researched channel lining and protection systems that would allow the project to preserve habitat and minimize the disturbance to the landfill. The solution generated by RCDWR preserved

1.9 acres of habitat and included floodplains for capacity, articulated concrete blocks (ACB) to armor landfill slopes, and grade breaks and riprap channel bottom lining to slow the water velocity. Unlike traditional or standardized engineering solutions, such as concrete or riprap, vegetation can grow in the ACB and the landfill slope will take on a natural appearance over time (neighborhood aesthetics).

Innovation

This project is innovative among California counties in that RCDWR approached the project by recognizing the financial value of collaborating with the environmental regulatory agencies to preserve habitat for an endangered species instead of using one of the typical and standardized channel designs used in most major water course channels that would remove all vegetation and habitat from the channel. Additionally, RCDWR researched and engineered an innovative solution, as recognized by the American Society of Civil Engineers Los Angeles Section with the Environmental Engineering Project of the Year Award for 2018. The combination of collaboration and innovative engineering design allowed RCDWR to successfully reduce the mitigation fees by $2,000,000 to $4,000,000.

Results

Since construction completion, the channel has performed well in winter storms and now has flow capacity, protection from landfill exposure, and preserved habitat for the endangered Least Bell's Vireo. RCDWR significantly reduced mitigation fees and has further enhanced the working relationship between RCDWR and the regulatory agencies involved in this project.

Replicability

This project has demonstrated the value of working with regulatory agencies to create mitigation onsite and using innovative engineering designs instead of falling back to traditional or standardized designs. The approach used in this project can be applied to other similar closed landfill projects to achieve similar cost-saving results by working with regulatory agencies to develop mitigation on site and by researching and evaluating traditional and alternative engineering designs to effectively protect the public and environment from landfill exposure while implementing onsite mitigation.

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