

4 MINUTE READ

# Westmoreland Park



from **Engineering With Nature: An Atlas, Volume 2.**

by US Army Engineer Research and Development Center



## Portland, Oregon, United States

**Restoring an urban creek in the middle of a highly developed park.** A tributary of Johnson Creek, Crystal Springs Creek runs for 3.8 kilometers through Portland and is the coldest salmon-bearing stream in the city. But channelization for agriculture, large in-line ponds for irrigation, and urban development degraded the floodplain into a disconnected watercourse too warm for salmonids. In 2003, the City of Portland worked with the community to develop the Westmoreland Park Master Plan, which called for creating a healthier park environment for people and native wildlife. The project team, including Portland Parks & Recreation, the Portland Bureau of Environmental Services, and the U.S. Army Corps of Engineers, began by restoring 730 meters of Crystal Springs Creek. Completed in 2013, the restoration removed concrete curbing along the creek and pond's banks, removed the duck pond and replaced it with a wetland, and planted 15,000 native plants to shade the creek and prevent erosion. The project also added logs, pools, and riffles in the creek channel and more than 760 meters of new boardwalks and paths, two new overlooks and a water access ramp, and a number of benches, picnic tables, and additional

lighting. Now Crystal Springs is a designated salmon sanctuary—a first for Portland—and a gorgeous natural space for the local community.

Article cover: Crystal Springs Creek, just downstream of the former, pond showing the healthy and attractive park environment for both people and wildlife. (Photo by Kerry Solan)

## **Producing Efficiencies**

The creek's path through the city meant the team needed to think creatively to engineer the restoration and to design the project so that flood elevations downstream did not rise. The team added large woody debris to the waterway without completely preventing access to this popular park, and they arranged the native plantings to make sure visitors could see into and through the wetland to the creek. Porous pavement managed stormwater and protected the water quality of the creek. To allow fish passage, they replaced the culvert under the nearby four-lane bridge, as it was not only undersized and a velocity barrier for fish but also inverted so the river flowed uphill through it.

## **Using Natural Processes**

The new wetland acts as a sponge for the heavy springtime rains, increasing flood protection without altering the course of the creek. The gentle contours of the restored wetland environment make the habitat more suitable for native fish and other species in the area. The installed features slowed down the water flow, keeping it at the 0.6 meters per second that salmon need to avoid getting flushed back down the creek. Planted trees naturally lower the temperature of the water by providing shade, and the wider culverts create a more natural hydrology that prevents severe erosion.









At the northernmost end of the park looking northward, the large woody debris provides habitat for native fish species.

(Photo by Kerry Solan)

## Broadening Benefits

Already, salmon have returned to spawn along the entire length of the creek, leading to Crystal Springs' designation as a sanctuary for the species. The creek also provides habitat for the culturally important Pacific lamprey (*Entosphenus tridentatus*) and one of the healthiest freshwater mussel populations in Portland. As much of the watershed is publicly owned, the park represents a perfect opportunity to showcase salmon and lamprey recovery to the community. The city added its first Nature Play playground to compliment the restoration, creating a regional destination for children and educators. The park is now one of the top five parks in Portland.





Southernmost end of the restored park looking southward.

(Photo by Kerry Solan)

## Promoting Collaboration

The project team worked with 21 different partners to make this project a reality. The plan required extensive coordination and outreach to local residents, many of whom had the creek running through their backyard. It incorporated input from stakeholders, including line-of-site tree planting to deter crime and night lighting that projected downward so as not to shine in nearby homes. Convincing residents of the necessity of closure and construction of this very popular park took a team effort but paid off: the walking tours, videos, signage led to a reopening event that has since become an annual community celebration.





Woody debris, pools, and riffles in the restored Crystal Springs Creek just downstream of the Umatilla Street culvert.

(Photo by Kerry Solan)



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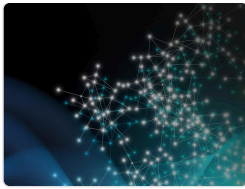
### Introduction

13min pages 19-29



### Conclusion

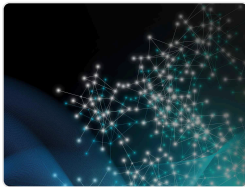
5min pages 320-325

**Coastal Resilience and Natural Solutions Toolkits**

2min pages 310, 318-319

**Coastal Storm Modeling System**

2min pages 310, 316-317

**Natural Infrastructure Opportunities Tool**

2min pages 310, 314-315

**Ecosystem Services Identification and Inventory**

2min pages 310, 312-313

**Cypress Reforestation**

4min pages 306-309

**Matarandiba Island**

3min pages 302-305

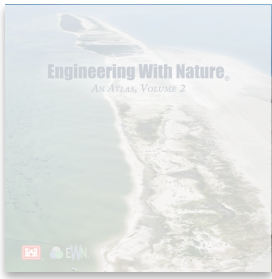
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