CALDER CREEK

RESTORATION & VISION CONCEPTS

Sebastopol, California

Waterways Restoration Institute

WILDLING DESIGN STUDIO

Sebastopol is a small, charming city known for its agricultural history and environmental ethos. The restoration of Calder Creek builds on this sensibility, bringing back the invigorating experience of a living stream to public spaces, and providing an inviting backdrop that creative and thoughtful urban design can respond to. Moreover, creek restoration here reestablishes watershed processes that build resilience to climate change and promote a natural processes-infused approach to integrated water management.

This Summary explores of Calder Creek restoration opportunities from Jewell Avenue to the Laguna de Santa Rosa. This project was focused on Ives Park, the city's "central park", with consultations with individual upstream property owners as well as "vision" level concepts for daylighting the creek through downtown Sebastopol.

Above: Overview of Calder Creek Restoration Concept and Vision Plan opportunity areas

Background

Draining a one square mile watershed, the creek initially traverses low hills and low density residential properties. Through these properties, willow riparian habitat along the creek supports songbirds, hawks, waders, aquatic birds, frogs, minks and river otters. While an 1886 newspaper article noted salmon in the creek, it was better known for a water wheel and wood slate dam, the latter which created a seasonal swimming pond. When the creek was engineered into a channel and also culverted into underground stormdrain pipes, its footprint was reduced, and flood flows increased in velocity. Eventually operation of the seasonal pond ceased, and the remaining creek area at Ives Park, with steep channel walls and floodable areas, became a management concern. The creek remains in this straightened and hardened channel through Ives Park, and is otherwise forgotten through downtown. It outlets in the Railroad Forest, approximately three hundred feet downstream from the Joe Rodota Trail trailhead at Petaluma Avenue.

"The riparian canopy of the creek produces a zone of greater evapotranspiration, offsetting urban heat islands with shade and spaces for relaxation and respite…"

Forward-looking Creek Restoration

As climate change and population pressures increase, the need for more housing, preservation of biodiversity, and water resource management is becoming more acute. Restoration of Calder Creek, including daylighting of culverted reaches and reestablishing and reconnecting its floodplain, creates a lower-maintenance option for stormwater storage, groundwater recharge, habitat and recreation. The restored channel corridor provides greater capacity and increases storage for those times when the Laguna de Santa Rose backwaters. The riparian canopy of the creek produces a zone of greater evapotranspiration, offsetting urban heat islands with shade and spaces for relaxation and respite. This will be a benefit through Ives Park as well as through any daylighted urban areas.

At Ives Park, the proposed stream restoration concept builds on the 2013 Ives Park Master Plan, maintaining the existing uses of the park while adding the necessary stream length and meander for a "dynamically stable" stream channel (one that erodes and deposits sediment in balance to maintain its channel form). It also widens and reconnects the stream to a functioning floodplain, creating more space for flooding or backwatering from extreme storms. Within the creek corridor, picnicking, trails, wading, informal nature exploration, and a sculpture garden are all accommodated. Options for modifying the Jewell Street/Willow Street intersection were evaluated in terms of pedestrian and vehicular movement, and benefit to the creek and park. A proposed "T" intersection was included in the Ives Park Master Plan with Creek Restoration presented here.

Beyond Ives Park, opportunities for Calder Creek were explored from High Street to Petaluma Avenue. In some cases, the culverted creek crosses through private property. Therefore, the Vision Plan shows possibilities to demonstrate to property owners that the buried creek as a potential attraction that adds value to developments, while also serving as a public asset for its flood management, stormwater and habitat benefits.

With chronic flooding at Petaluma Avenue due to sedimentation in the stormdrain pipes and non-native trees obstructing flows in the open-channel reaches of Calder Creek in the Railroad Forest, this project also suggests increasing flood capacity within the Railroad Forest by removal of the railroad fill prism and replacement of the trail with a boardwalk, daylighting approximately three hundred feet of the creek that is currently culverted and allowing it to establish its own channel.

Acknowledgements

This project was made possible by a Switzer Foundation Leadership Grant to the Waterways Restoration Institute (WRI) with Wildling Design Studio (Wildling), and the cooperation of the City of Sebastopol.

OVERVIEW

CALDER CREEK RESTORATION INFORMS MASTER PLAN UPDATE

1 New T Intersection
2 New park entry
3 Rose garden
4 Preserved redwood trees
5 Boardwalk trail section
6 New stage
7 Restored Calder Creek
8 Central green
9 Picnic area
10 Pedestrian bridge
11 Vehicular access bridge
12 Baseball field
13 Pool
14 Playground
15 Sculpture Garden / High Entry
16 BBQ area

Restoration of Calder creek creates a safe and accessible interface to bring the public back to the water's edge, increases habitat, flood storage and groundwater infiltration.

A portion of the existing vertical channel wall is maintained to protect a stand of redwood trees. A deck is cantilevered over this wall, with an overlook crossing the creek at the current outlet location, marking a terminus of an accessible loop trail around the creek. A pedestrian bridge protects a city sewer main within its alignment, while another bridge is rated for vehicular access. The design modifies an existing sculpture garden and uses the riparian canopy as a backdrop for some of the artwork. The playground and a bbq area are shifted to accommodate the creek, while the stage is relocated along the creek to create a large central green with seating upslope from performances.

With a geomorphic approach to restoring the channel, wide floodplains also accommodate trails, relaxing, exploration, play and habitat. Preliminary grading focused on an equilibrium stream and accessible pathways, inviting all users to experience the creek. Terracing and some vertical walls area also used to achieve this. The increase in varied terrain creates new sightlines and points of interest within the park.

Facing Page: Master Plan Update with Creek Restoration

Above: Section through creek near upper Jewell entry looking upstream towards pedestrian bridge with protected sewer line, and in the distance, redwoods, boardwalk and overlook.

Right: View of park entry from High Street with sculpture garden in the foreground. Landscape terracing in the background balances an accessible walkway with the creek's geomorphic equilibrium channel design approach.

DOWNTOWN VISION CONCEPTS

CALDER CREEK CAN INSPIRE NEW AMENITIES AND ATTRACTIONS

1 Daylighted Creek
2 Boardwalk
3 Overlook
4 Promenade
5 Seating area
6 Creek access
7. Walkway

Through downtown Sebastopol, public and private parking areas are shown converted back to a daylighted Calder Creek. Due to site constraints, there is a naturalized creek bed with vertical channel walls.

Between High and Main Street, these narrow constraints in one area result in cantilevered boardwalks along the edges, with one stretch of boardwalk crossing through the creek corridor. This is to provide support and protection for an existing city sewer main.

Top: Vision Concept for daylighting Calder Creek between High and S. Main Streets.

Above right: A daylighted Calder Creek can create an open space amenity for future urban design if desired by property owners.

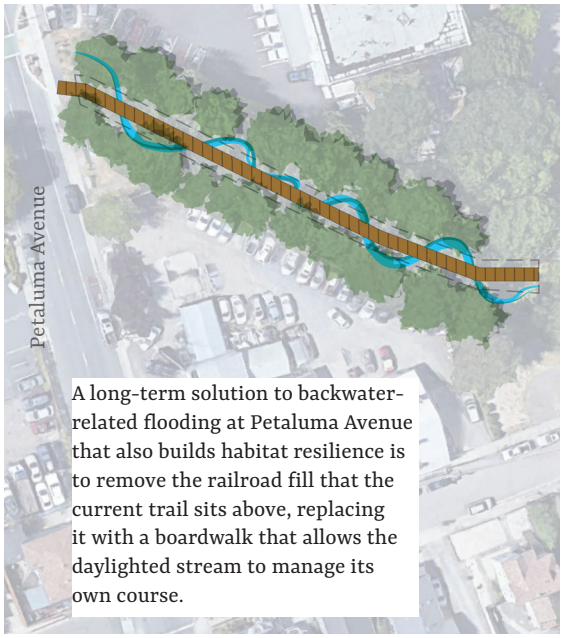
Opposite page, top: Vision Concept for daylighting Calder Creek between S. Main Street and Petaluma Avenue.

Opposite page, left: A promenade leverages the urban cooling and shade provided by the daylighted Calder Creek corridor, with outdoor dining and socializing.

S. MAIN STREET - PETALUMA AVENUE

Between Main Street and Petaluma Avenue, the creek creates a visual focus along a promenade that includes a side path gently sloping to the creek bottom. A narrower walkway completes a loop around the channel while maintaining some parking. This promenade includes extended terraces for seating ideal for future dining, from food truck "food courts" or restaurants associated with new development.

RAILROAD FOREST



A long-term solution to backwater-related flooding at Petaluma Avenue that also builds habitat resilience is to remove the railroad fill that the current trail sits above, replacing it with a boardwalk that allows the daylighted stream to manage its own course.