

Resilient St. Vrain

Background

In 2011, the City of Longmont updated the mapping of its floodplains. What they found concerned them - with updated data and analysis, they learned that the 100-year floodplain, the area where there is a 1% chance of flooding to occur in any given year, was much larger than what the existing Federal Emergency Management Agency (FEMA) maps showed.

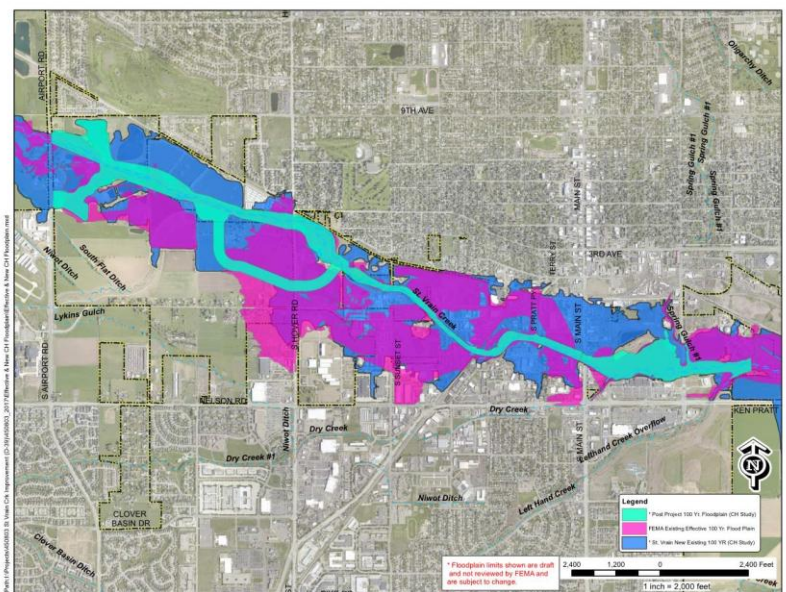
When the 2013 floods came, officials' fears came true and Longmont experienced significant flooding throughout the city, particularly areas along the St. Vrain Creek. The [most significant flood event in the city's history](#), the devastating floods damaged and destroyed hundreds of homes, businesses, and public areas. Longmont knew that it had to start taking action right away to make the Creek, and the community, more resilient against future flooding events if it wanted to avoid similar losses and damages.

Sectors

- Infrastructure
- Watershed and Natural Resources
- Community

Partners

- Longmont
- Boulder County
- State of Colorado
- Great Outdoors Colorado
- Federal Emergency Management Agency
- Federal Highway Administration (FHWA)
- Army Corps of Engineers
- Housing and Urban Development



Map showing FEMA vs. updated 100-year Floodplains

Resilient St. Vrain

Following the 2013 floods, Longmont set out to make the St. Vrain Creek channel more resilient to future flooding events. The Resilient St. Vrain Project (RSVP) is a multi-year effort to improve the St. Vrain Creek's channel and surrounding areas in preparation for any future flooding. As a result, people, homes, businesses, infrastructure, and natural areas will experience fewer impacts from flood events. The project will increase channel capacity and reduce the size of the St. Vrain Creek floodplain, which will better protect Longmont residents and businesses, as well as put the city in a better position to rebound following another major flooding event.

Through the RSVP, Longmont has [four main goals](#) for when the project is completed:

- Protect people, property, and infrastructure;
- Incorporate environmentally-focused planning;
- Integrate previous planning efforts into the project design; and
- Fully restore the St. Vrain Greenway

Actions and Benefits

When completed, the RSVP will provide Longmont's community with a number of current and long-term benefits.

1. *The RSVP will help protect people and property.*

The RSVP team is using a number of integrated strategies to meet the goals of protecting people, property, and infrastructure, while incorporating environmentally-sound design. They are taking advantage of [natural design techniques](#) to rebuild and improve the creek's channel and banks by using techniques such as vegetated riprap, rock drops, and roots and logs to stabilize the creek's banks and provide space for the creek to meander over time. These actions will strengthen, and in some areas widen, the creek channel in an environmentally sound way. As a result, the extent of future flooding is anticipated to decrease, reducing the future risk to homes, businesses, and critical infrastructure to future flooding. Upgrades to critical bridges and railroad crossings to safely handle 100-year flows will also protect community assets against the more-commonly seen 5- or 10-year floods.

2. The RSVP will protect and enhance natural environments.

In addition to using natural design techniques to improve the St. Vrain Creek's flows, the project will create and improve wetland areas. Wetlands can filter water that enters the creek after storms and runoff, helping keep pollutants out of the St. Vrain Creek. [Using native trees, grasses, and other plantings](#) will improve habitats for fish, birds, and wildlife along the creek corridor.

What does the term 100-year flood mean?

The term can be confusing and misleading, and [it's not uncommon to think](#) that a 100-year flood will only occur once every 100 years. What it really means is that a flood of that magnitude has a 1 in 100 (or 1 percent) chance of occurring in a given year. A 5-year flood has a 1 in 5 chance of occurring, or 20 percent.

3. The RSVP will incorporate existing planning efforts.

The RSVP design approach will build off of existing of existing local and plans, codes, and standards. These plans include the [Longmont Area Comprehensive Plan](#), the [Parks, Recreation and Trails Master Plan](#), the [Wildlife Management Plan](#), and the [Southeast Urban Renewal Plan](#). By incorporating these plans into the RSVP design, the project team is leveraging the research and public input that went into these planning efforts, and will integrate with how Longmont is already addressing issues such as development and environmental management.

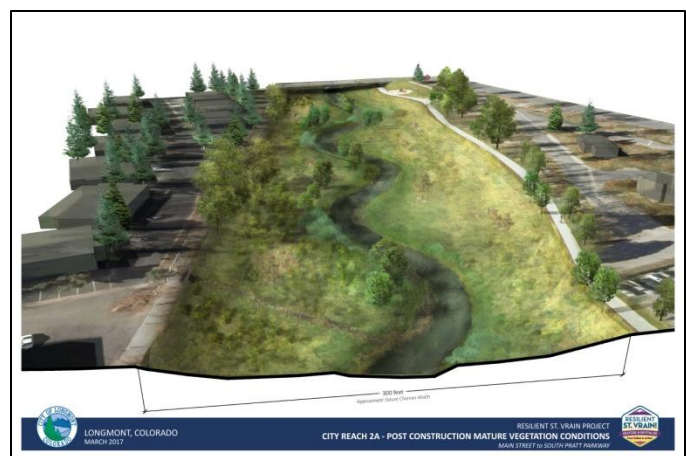
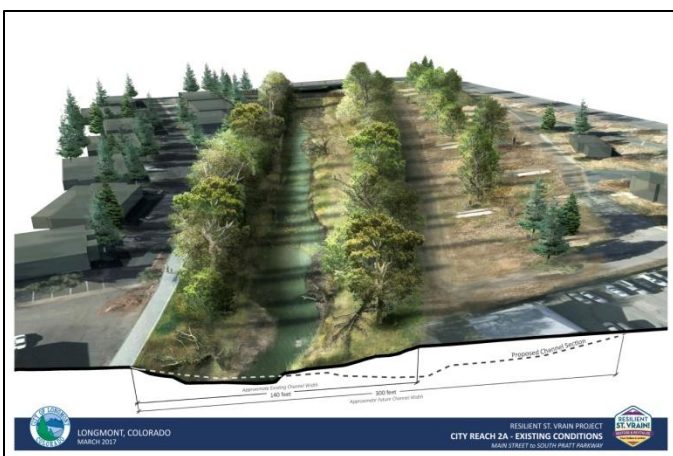
4. The RSVP will restore the St. Vrain Greenway.

When completed, the RSVP will restore the [8-mile long trail](#) that links together other trails, parks, and schools. The Longmont community will continue enjoying the recreational opportunities and health benefits that the greenway provides.

What Makes the RSVP a Resilient Project?

The RSVP includes a number of elements that moves beyond traditional flood risk management approaches, and seeks to build a more resilient community. There are many ways to evaluate how a project addresses resiliency, and using the State's [Resiliency Prioritization Criteria](#), the following highlight how this project takes a resiliency-focused approach:

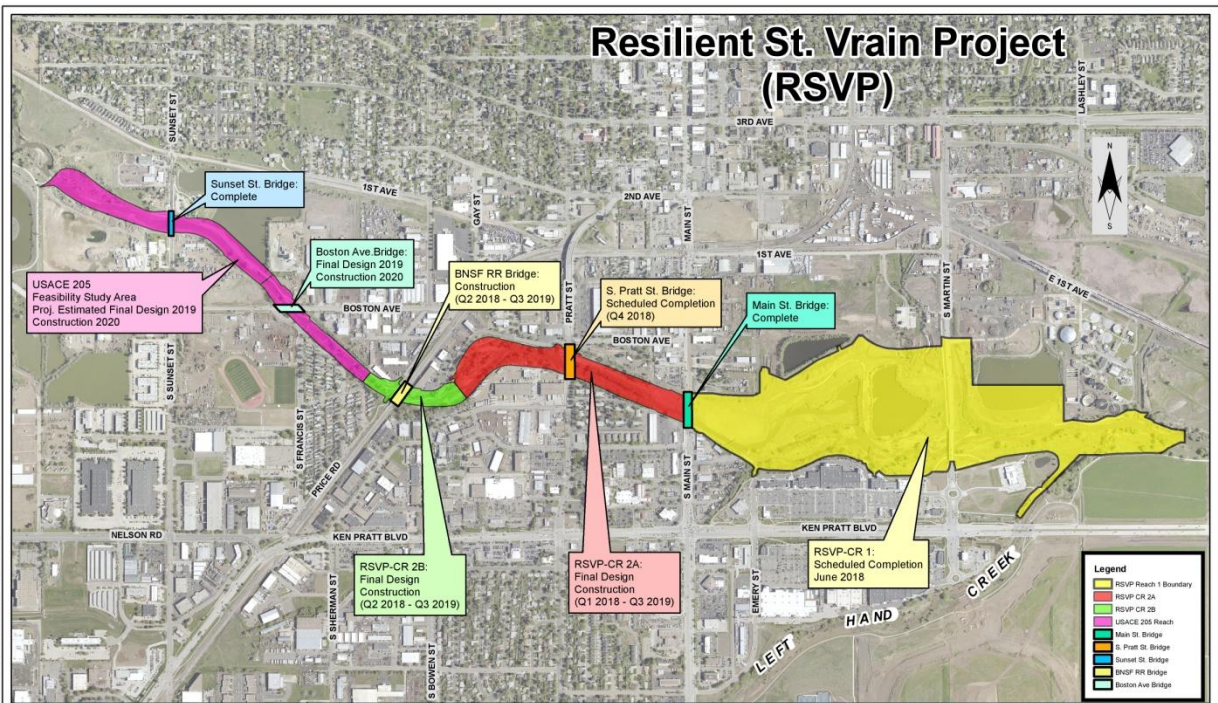
- The benefits of strengthening and enhancing the creek's channel provides **co-benefits** to Longmont's environmental, infrastructure, health and social, housing, and economic sectors by minimizing the impact of future flooding events to these sectors.
- Protecting homes, businesses, and critical infrastructure like bridges against flooding addresses city assets that are at **high risk** or particularly **vulnerable**.
- The team demonstrates the project's **technical soundness** through the use of natural design techniques for improving wetland areas and natural habitats.
- The team is **harmonizing with existing activities** by leveraging Longmont's existing plans, codes, and standards.



Renderings of Reach 2A pre- and post-construction

Progress Milestones

The RSVP includes multiple phases, or reaches. Utilizing available local, state and federal funds, the first set of reaches have been completed. In the Sandstone Reach, the team has stabilized the creek and preserved open space, allowing the St. Vrain Creek to meander and improving local fisheries. As part of the City Reach 1, the project has protected a wastewater treatment plant from future flooding - it had flooded in the 2013 floods and was offline for two days. The Main St. Bridge crossing the St. Vrain Creek was replaced to convey 100-year flows, and the City is working with BNSF to complete a new freight rail bridge that will convey 10-year flows.



Print Date: 4/4/2018 File Name: Exhibit A Rev1 11" x 17" Sheet Horiz. Scale: 1" = 800' 22" x 34" Sheet Horiz. Scale:	<table border="1"> <thead> <tr> <th colspan="3">Revisions</th> </tr> <tr> <th>Date</th> <th>Comments</th> <th>Init.</th> </tr> </thead> <tbody> <tr> <td>3-4-2018</td> <td>Changed Dates</td> <td>AM</td> </tr> </tbody> </table>	Revisions			Date	Comments	Init.	3-4-2018	Changed Dates	AM	<p>CITY OF LONGMONT 385 Kimbark Street Longmont, Co. 80501 Phone: 303-651-4304 FAX: 303-651-8352</p> <p>PUBLIC WORKS & NATURAL RESOURCES DEPT.</p>	<table border="1"> <tr> <td>No Revisions:</td> <td>Project Mgr.: J. Sherman/M. Borovina</td> </tr> <tr> <td>Revised:</td> <td>Detailer: A. Mendez</td> </tr> <tr> <td>Void:</td> <td>Subst:</td> </tr> </table>	No Revisions:	Project Mgr.: J. Sherman/M. Borovina	Revised:	Detailer: A. Mendez	Void:	Subst:	<table border="1"> <tr> <td colspan="2">EXHIBIT A</td> <td>Project No. / Year</td> </tr> <tr> <td colspan="2"></td> <td>450803</td> </tr> <tr> <td colspan="2"></td> <td>2018</td> </tr> <tr> <td colspan="2">Subst Sheet: Page of</td> <td>Sheet Number: 1</td> </tr> </table>	EXHIBIT A		Project No. / Year			450803			2018	Subst Sheet: Page of		Sheet Number: 1
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Reaches of the RSVP

Lessons Learned

Nick Wolfrum, the Engineering Services Manager with Public Works and Natural Resources for Longmont, shared a few lessons learned and best practices that the City learned throughout the project:

- **Get buy-in from the community.** The City spent time educating the public on the issues at hand and the benefits that the RSVP project would provide when completed. They hosted meetings with property owners adjacent to the project to discuss potential impacts and needs. This feedback informed the City's plan to relocate five small businesses from buildings that were previously flooded and ultimately torn down. Renderings helped to visually explain to residents what the St. Vrain Creek and surrounding areas would look like.
- **Form partnerships with appropriate agencies.** The RSVP is a significant undertaking, and Longmont recognized from the onset that for it to be successful they needed the support and expertise from multiple local, state, and federal partners to do a range of activities from restoring wetlands, to replacing bridges, to stabilizing creek banks. These partners included the [U.S. Fish and Wildlife Service](#), [Federal Emergency Management Agency](#), [Colorado Parks and Wildlife](#), among many others.
- **Upfront work can help expedite receiving project funding.** The team worked with the U.S. Fish and Wildlife Service to perform the environmental review of the entire reach of the project up front, which helped the project team get federal funding approved in a timely manner to implement the different phases of the RSVP.



Renderings of Reach 2B pre- and post-construction

Funding

The RSVP is still underway, but [the project is estimated to cost](#) between \$120-\$140 million when completed. Project funding is coming from a variety of sources, including (but not limited to):

- A Storm Drainage Bond passed by Longmont voters
- Federal Emergency Management Agency
- Federal Highway Administration (FHWA)
- Army Corps of Engineers
- Community Development Block Grant-Disaster Recovery
- Great Outdoors Colorado
- Boulder County
- State of Colorado

In general 75% of the funding comes from federal sources, while the remaining 25% are shared between Longmont, Boulder County, and the State.

For more information on the Resilient St. Vrain Project, contact Nick Wolfrum, the Engineering Services Manager with Public Works and Natural Resources for Longmont at nick.wolfrum@longmontcolorado.gov.