

2014

# Larimer County Engineering Department Annual Report

Engineering A Better Future For Larimer County







*A Letter from the Department Head*

## **T**HE ROAD TO LONG TERM RECOVERY

For many people, particularly those living in the eastern portions of Larimer County, the 2013 flood was perhaps a momentary inconvenience and is becoming a distant memory. However, as I wrote in my letter last year, we know we'll be working on flood recovery for years to come. For staff in the Engineering Department, we continue to deal with the after effects every day as we work on getting projects designed and ready to go to construction to repair our damaged or destroyed infrastructure. When people talk about "long-term recovery" efforts - that's an apt term. It's definitely a marathon event rather than a sprint race to the finish.

The question we hear all the time is: Why is this taking so long? On our own, Larimer County couldn't afford the \$125 million price tag to put our infrastructure

back together. Fortunately, the state and federal government are available to help fund a majority of the repair costs. With this assistance, however, comes extensive requirements for clearances, reviews, permits and approvals and then follow-up documentation of processes and procedures that will allow us to obtain - and keep - our monetary reimbursements. Every day, it seems like we learn something new about state and federal rules and regulations.

In spite of the major focus on flood repairs, we also completed some major improvement projects that have been in the works for quite some time - realigning and paving Owl Canyon Road between CR 70 and CR 72 and construction of dual rural roundabouts on CR 30. By themselves, these would be fairly major projects totaling about \$8 million. Added to the flood rebuilding efforts, these are even more notable achievements of our staff, design consultants and contractors.

I'm continually amazed by the dedication and perseverance of our staff as they deal

with new challenges - both technical and procedural - on a daily basis. We're going to keep pushing on, because for us it truly is all about our chance to *Engineer a Better Future for Larimer County*.

Mark Peterson, PE  
Engineering Department Head



*Department head Mark Peterson (left) hikes with staff to survey roadway damage in the early days following the flood. In many areas, assessments were only possible by air or on foot.*  
Photo: Rusty McDaniel



## *Flood Review Board*

The Flood Review Board provides invaluable service to Larimer County. They review and approve various projects and developments within the regulatory floodplain overlay zones. Members of the Flood Review Board are technically qualified in civil engineering with an emphasis in river hydrology, hydraulics and geomorphology. The board members have extensive knowledge of local and federal flood plain regulations. In 2014, the Board heard items such as flood recovery projects, gravel mining uses, and variance requests from the public. The Flood Review Board also provided valuable input into the flood recovery efforts.

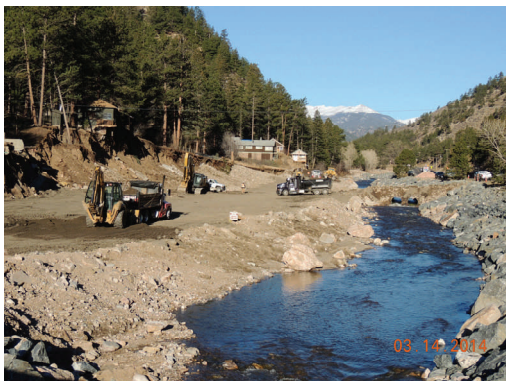


Gregory Koch , Chris Carlson, Elisabeth Ervin-Blankenheim  
Not pictured: John Hunt, Michael Oberlander, Christopher Thornton

## *Emergency Watershed Protection*

Larimer County was the recipient of \$3 million from the USDA’s Natural Resources Conservation Service’s (NRCS) Emergency Watershed Protection program. We partnered with the NRCS to provide recovery assistance to private properties impacted by the 2013 floods, which is designed to relieve imminent hazard to life and property caused by flood, fires, storms and other natural disasters. Prior to beginning the work, permissions from impact property owners were obtained as well as environmental clearances, and designs were completed.

A team of NRCS engineers worked with county engineers to provide the design and construction management for the project. Work ranged from debris removal to river bank restoration and stabilization. This type of work was performed at over 35 sites between April and August of 2014. The work was performed by two local contractors, Connell Resources and Gerrard Excavating.



*Work in process*

The 25% local share was funded equally at 12.5% between the County and State of Colorado’s Office of Emergency Management while the NRCS covered 75% of the costs.



*Flood damage in the Big Thompson Canyon*



*Final bank stabilization*

***“These projects relieve imminent hazards to life and property...”***





## Permanent Flood Repairs

**County Road (CR) 27:** Repair of 10 miles, 4 large box culverts, 3 new bridges and making extensive repairs to 1 existing bridge. Construction in 2014-2015. Budget is \$17 million

**CR 43:** Reconstruct 10.5 miles of roadway between Drake and Glen Haven, including 8 new structures. Construction in 2014-2015. Budget is \$42 million

**CR 44H:** Reconstruct close to 10.3 miles of roadway from CR 27 west to Ballard Road including replacing 12 structures. Construction anticipated for 2016. Preliminary budget \$6 million.

**Pinewood Springs:** Replacement of the Kiowa Rd bridge, and repairs to Cree Court and Seneca Bridges, and repairs to Iroquois Road, just south of Cree Court. Construction in 2014-2015. Estimated cost \$2.5 million.

**Fish Creek:** Reconstruct 4.5 miles of roadway from US 36 to SH 7 that includes major utility relocation, installation of large culverts, extensive embankment armoring, reconstruction of the bike/pedestrian trail, and reconstruction of significant roadway sections. Construction in 2014-2016. Budget \$15 million.

**CR 15 Bridge:** Replace the bridge over the Little Thompson River. Construction scheduled for 2017 with an anticipated cost of \$2.5 million.



*CR 27 bank stabilization*

**CR 29/22H:** Construct concrete retaining walls and embankment protection. Construction begins winter 2015/2016. Cost approximately \$6 million.

**Local Roads:** Repairing the subdivision roads to pre-flood conditions (as close as possible) in the Estes Park, Big Thompson Canyon, Storm Mountain, Little Valley, and Pinewood Springs areas. This includes repairing or replacing culverts, restoring roadside drainage, and resurfacing the roads.

**CR 23:** Replace existing 36 inch diameter culvert with a 15 ft x 3 ft concrete box culvert at the low water crossing in Bellvue. Construction 2015.

**CR 25E :** Replace several culverts and stabilize roadway embankment.

**CR 47:** Reconstruct approximately 2.5 miles of roadway including several new bridges. Construction is scheduled for 2016 at an anticipated cost of \$4 million.

**West Creek Structures:** Three new structures will be built across West Creek along West Creek Drive. Construction is scheduled for 2016 at an anticipated cost of \$ 1.5 million.



*Kiowa Bridge*



*Utility work on Fish Creek*





## **B**UILDING IN RESILIENCE

Disasters, whether man made or from natural causes, have a significant impact on the human and natural environment. The flood in September 2013 impact on infrastructure in Larimer County alone amounted to about \$125 million. There is a concerted effort on the federal, state, and local levels to have replacement infrastructure that is more resilient.

What does resilience mean? According to CDOT/FHWA, It's the "Capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and environment."

An example of resilience is Larimer County Road 43, the Glen Haven Road, which runs between US 34 and the Town of Glen Haven. The flood caused 10.5 miles of damaged roadway that will include installing 8 new structures. We are building in resiliency by moving the road away from the river and into bedrock to protect it from future flood events. The structures, bridges and culverts, will be designed to withstand a flood event that may necessitate repair rather than complete replacement.

Resiliency is the ability to bounce back quickly and limit the amount of damage that not only protects infrastructure but human lives as well.



*Grouting Riprap along the stream bed (CR 43)*



*Flood Damage (CR 43 )*



*Temporary repairs (CR 43)*



*Permanent repairs into bedrock (CR 43)*



## Flood Repair Facts:

- “Normal” year Capital Project Budget: **\$5 million**
- Flood repairs in 2014: **\$30 million**
- Total flood infrastructure repair cost: **\$125 million**
- Total miles of **roadway** reconstructed: **30**
- Bridges and large culverts repaired or replaced: **more than 50**



Fish Creek Utility Work

## Other Projects



CR 30/11C

**Roundabouts:** As part of capital construction projects, three new rural roundabouts were constructed during 2014. They are located at the intersections of County Rd 11 and County Rd 30, County Rd 11C and County Rd 30 and County Rd 19 and County Rd 70. As experienced at the 2 roundabouts currently in operation, it is expected the number of severe crashes occurring at these intersections will be reduced.

**Owl Canyon:** In November 2008, the Board of County Commissioners adopted the Owl Canyon Corridor Project and the phased improvements identified in the plan were incorporated into the Transportation Capital Improvements Plan. Phase one of the improvements included various spot safety improvements which were implemented between 2009 and 2013. The phase 2 improvements were constructed in 2014 that included realigning the connection between CR 70 and CR 72 at the western end.

A rural roundabout was constructed at the CR 19/CR 70 intersection and CR 19 was realigned to the north and west to tie into CR 72.

The one mile section of CR 70 between CR 19 and CR 21 as well as the one mile section of CR 21 from CR 70 to CR 72 is being vacated back to the property owners.

### Compressed Natural Gas

**(CNG):** Larimer County leveraged

federally available funds to purchase CNG vehicles for use in the Public Works Department. The CNG vehicles save between 40 to 60% on the cost of fuel. The funding is available for use in 2015. Additionally, a CNG fueling site is being developed at the County Fleet Facility in north Fort Collins.



Owl Canyon Roundabout

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### Horseshoe Lake Spillway Bridge:

The narrow, deteriorated and load posted County Road 11C Horseshoe Lake Spillway bridge just north of Loveland was replaced in 2014. The replacement included a special spillway gate as a high level outlet facility. It took almost 20 years of negotiation with the Reservoir Company and overcoming funding issues before the project could be completed. The new bridge is much wider and safer and can now carry Colorado legal truck loads. Photos on back cover.



National Renewable Energy Laboratory (NREL) Image Gallery

## Changes in staff

The Engineering Department welcomed six new staff members in 2014.

**Suzette Mallette** joined Larimer County as our Transportation Program Manager. She brings a wealth of experience in the region from her time as the Planning Director with the North Front Range Metropolitan Planning Organization.

**Erich Purcell** is a Civil Engineer with a strong background in project and construc-

tion management. He made immediate contributions to a wide variety of flood recovery and capital improvement projects.

**Alex Castino, Esq.**, is a Land Agent working on easements, right-of-way and property acquisitions for both Natural Resources and Engineering projects.

State funding for flood recovery enabled us to hire **Crystal Lesmeister**, a Civil Engineer with expertise in floodplain management; **Don Stang**, a Construction Inspector to handle the additional workload associated with flood recovery activities; and **Shelley Bayard de Volo, Ph.D.** is an

Environmental Permits Coordinator and handles environmental clearances and mitigation requirements associated with federal disaster assistance funding.



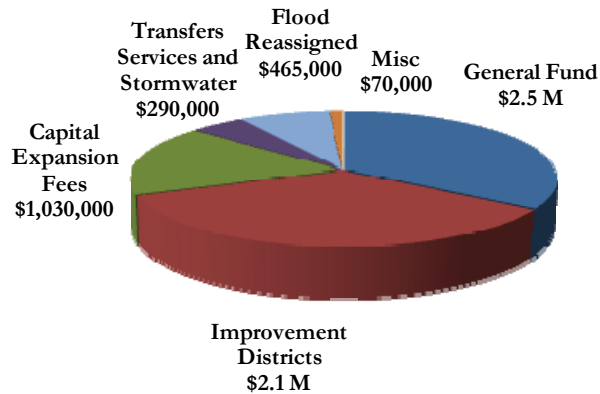
Alex Castino, Suzette Mallette, Don Stang, Erich Purcell, Shelley Bayard DeVolo (not shown Crystal Lesmeister)

## SUMMARY OF FINANCES—NON FLOOD

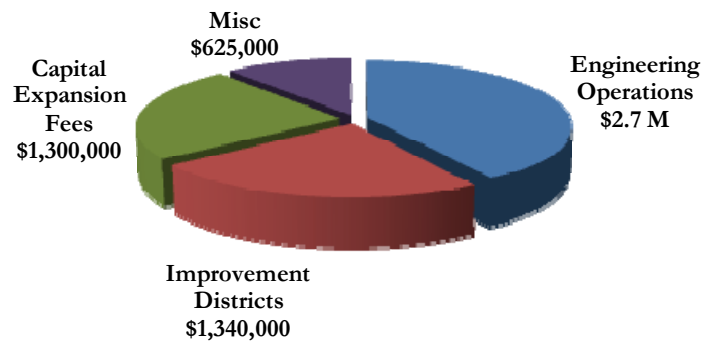
Engineering Department funding comes primarily from the County's general fund and Capital Expansion Fees. During 2014, the Engineering Department designed and managed the construction of approximately \$9 million of non-flood related improvements for roadways and bridges. This is in addition to the flood repair projects which are managed by Engineering but budgeted in other County accounts.

Improvement Districts, a significant portion of the budget, are voter approved assessment districts that tax themselves for improvements in specific areas. There were 55 active improvement districts in 2014 with more being added each year. Improvement Districts are managed by Road Boards, with oversight from the County, that have discretion over improvements and spending in their area.

### 2014 Revenue \$ 6,028,000



### 2014 Expenses \$ 5,525,000



These figures are unaudited. Audit to be completed mid 2015.





*Horseshoe Lake Spillway Bridge: before and after*



## Contact Information

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### Public Works Division

**Engineering**

**Natural Resources**

**Road and Bridge**

**Solid Waste**

**The Ranch**



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