

**CITY OF BOULDER
WATER RESOURCES ADVISORY BOARD
INFORMATION ITEM**

MEETING DATE: November 18, 2013

AGENDA TITLE: Discussion of Future Schedule: Impacts of September 2013 Flood on Upcoming WRAB Meeting Agendas

PRESENTERS:
Jeff Arthur, Director of Public Works for Utilities

EXECUTIVE SUMMARY

The responsibilities of the Water Resources Advisory Board include reviewing capital improvements proposed by the Utilities Division and reviewing, monitoring, and proposing changes to the division's master plans. WRAB's recommendations are considered by City Council in approving the Capital Improvements Program and accepting master plans. The significant flood event that occurred in September has resulted in the acquisition of information that will influence both master planning and capital projects. This memorandum provides an overview of key projects and policies that WRAB may be asked to consider in 2014 and beyond. This information is intended to support WRAB's monthly discussion of future schedule.

BACKGROUND

The WRAB reviews and makes a recommendation to City Council on the Utilities CIP each year. Typically, the CIP is discussed at the April, May, and June meetings. A final recommendation is voted on at the June meeting, prior to the CIP being forwarded for Planning Board and City Council consideration. Master plans and floodplain mapping studies are updated periodically and are reviewed by the WRAB prior to consideration by City Council.

The September 2013 flooding caused extensive damage to both private property and city infrastructure. Significant damage and operational issues occurred in all utility systems including water, wastewater, stormwater, and major drainageways. Efforts to restore critical infrastructure are ongoing and will take at least several years. Knowledge gained from the flood will serve to inform changes to master plans, floodplain mapping studies, and capital projects. The impacts experienced by the public are likely to create interest in or advocacy for new projects, reprioritization of existing projects, and expedited schedules. On October 15, 2013,

City Council adopted “Key Objectives for Near-Term and Long-term Resiliency” which are included as Attachment A to the memorandum.

It is anticipated that the Federal Emergency Management Agency will reimburse the city for 75% of eligible costs to restore flood damaged, publicly maintained infrastructure to pre-flood conditions. The State of Colorado has indicated that it will provide an additional 12.5% toward eligible expenses. While this reimbursement will be a tremendous benefit to the city, not all costs are eligible and the city will still need to provide a 12.5% contribution even on eligible projects. Funding to restore facilities to better than pre-flood conditions is limited and generally administered through competitive grant funding. The city is currently investigating grant funding opportunities for mitigation projects. FEMA will not provide the city with funding to address damage on any private properties or infrastructure not maintained by the city prior to the flood. For example, most areas of Gregory Creek are on private property without easements for city maintenance. FEMA will not allow the city to accept easements and maintenance responsibility after the fact as a means to obtain funding.

In addition to direct costs associated with flood emergency response and recovery, it anticipated that there will broader impacts to the financial health of the utilities funds. Shortly after the flood, the city was contacted by bond rating agencies concerned about the city’s potential inability to make payments in the wake of the disaster. While we do not expect any issues with meeting existing debt obligations, we do anticipated that reduced reserves and increased market awareness of flood risk could impact the city’s ability to obtain favorable bond rates at least in the near future. We are also already beginning to see cost escalation and shortages in construction materials and labor due to the regional nature of the flood disaster. This will impact flood related work as well as unrelated CIP work that relies on similar resources.

It will be important for the WRAB to have a clear understanding of existing master plans, studies, projects, and funding when considering potential changes. The June 2014 deadline for a 2015 CIP recommendation provides a very limited timeframe to perform analysis and schedule agenda items to help inform the WRAB recommendation. It is also important to note that the existing CIP and rates are based on meeting existing regulatory and replacement needs for the Utility’s approximately \$2B in assets. Any additional proposed or expedited projects would likely require additional revenue or deferral of other high priority projects.

ANALYSIS

Water

Flood Impacts

The city’s domestic water system was significantly impacted by the flood, but remained operational throughout the event. Key impacts included loss of use the canal from Carter Lake to Boulder Reservoir, loss of ability to treat water from Boulder Reservoir due to high turbidity, loss of power to both the Betasso and Boulder Reservoir Water Treatment Facilities, loss of vehicular access to Betasso Water Treatment Facility, damage to transmission facilities in Boulder Canyon, loss of access to treated water storage facilities, and other related issues.

Potential CIP Considerations

Some examples of projects that could be considered in the CIP include –

- Expedited construction of a pipeline from Carter Lake to Boulder Reservoir. Left Hand Water District, a partner in the proposed project, was severely impacted, is supportive of an expedited schedule, and is investigating potential flood related grant funding options.
- Generator installation at Boulder Reservoir Water Treatment Facility. The facility current has a single electric feed, no backup power supply, and no infrastructure in place to connect a trailer mounted generator. This would be a significant investment since the Boulder Reservoir Treatment Facility pumps untreated water uphill from the reservoir and treated water into the distribution system.
- Investment in distribution system evaluation and upgrade that would allow the city to be served exclusively from the Boulder Reservoir Water Treatment Facility during an emergency.
- Hardening of critical infrastructure such as water transmission facilities.

Key Policy Issues

City code requires that WRAB not involve itself in any review under the land use regulations unless requested by City Council. Work is currently underway to evaluate the feasibility of annexing residential properties located in county enclaves. Many of these properties have identified issues with their wells and septic systems and are seeking to connect to city utilities. The Utilities Division may be asked to support annexations through infrastructure construction, financing, or fee waivers. This may impact funding available for other projects.

Financial Considerations

The 2014 budget for the water fund includes approximately \$14M (54%) for operating costs and \$12M (46%) for capital/debt service. Major projects currently in the CIP include rehabilitation of the Betasso Water Treatment Facility (\$16M in 2016), Barker Dam rehabilitation (\$8M in 2018), and Carter Lake Pipeline (\$28.5M in 2017/18). A 1% rate increase in the water fund generates approximately \$215,000 in annual revenue. \$1M in bond funding requires approximately \$100k/year for 20-years.

Wastewater

Flood Impacts

The city's wastewater treatment facility and wastewater collection system experienced severe operational issues and damage during and after the flood event. The wastewater treatment facility is protected by a flood berm and remained operational throughout the event. The facility suffered damage to a number of key components including the headworks and an anaerobic digester cover. Several sections of the wastewater collection system were exposed or destroyed by floodwaters. The 17.24 inches of rain that fell in the Boulder area over an eight day period resulted in infiltration and inflow from numerous sources as well as the entry of significant sediment and debris into the collection system.

Potential CIP Considerations

The city has separate wastewater collection and stormwater collection systems. The recent flood event may support additional investment in improvements to reduce the vulnerability of the wastewater collection system to flood events such as rehabilitation or enhancement of the collection system. The extensive system inspection being conducted to identify and address flood related damages may also identify other issues with pipe conditions or hydraulic capacity that result in reprioritization.

Key Policy Issues

A significant portion of the infiltration/inflow into the wastewater collection system appears to be related to illicit connections and other inflow and infiltration on private property. Illicit connections are not easily identified or remedied. The WRAB may be asked to make a recommendation on measures to attempt to reduce illicit connections in the system.

Financial Considerations

The 2014 budget for the wastewater fund includes approximately \$10M (63%) for operating and \$6M (37%) for capital/debt service. Many wastewater projects are funded over multiple years and the average annual wastewater CIP for 2014-2019 is \$2.8M. The 2014 CIP includes approximately \$700k for rehabilitation, repair, and replacement of the collection system with most remaining funding committed to the wastewater treatment facility. Current funding allows for rehabilitation of about 1% of the city's approximately 400 miles of wastewater collection system each year. A 1% rate increase in the wastewater fund generates approximately \$135,000. \$1M in bond funding requires approximately \$100k/year for 20 years.

Stormwater & Flood Management

Flood Impacts

The series of storms that occurred in September produced significant rainfall both within city limits and in upstream watersheds. Flooding occurred on Boulder Creek, its 14 tributaries, and as a result of rainfall in localized areas not directly impacted by creeks. Significant sediment and debris removal will be required to restore capacity of both local and major drainage systems. Significant longer term efforts will be required to restore habitat and features such as drop structures and sediment traps. In general, properties in areas where the city has been able to complete flood mitigation projects were significantly less impacted than other areas.

Potential CIP Considerations

Floodplain mapping studies to identify hazards and support mitigation efforts generally involve a multi-year process prior to submittal to FEMA for review and adoption. Building community consensus on mitigation approaches, securing property interests, and completing construction can take many more years. Current CIP funding levels and work program are based on a long term approach with several of the city's major drainageways in some stage of study or mitigation at any point in time. As examples, Two Mile Creek/Upper Goose is currently being restudied, a mapping study of Boulder Creek is currently in review by FEMA, mitigation planning for South Boulder Creek is ongoing, and a mitigation project on Wonderland Creek upstream of the Kings Ridge neighborhood had been designed and slated for construction prior to the flood. The flood has resulted in significant data that can be used to calibrate floodplain models to better predict future events. It has also resulted in requests from multiple neighborhoods to add or expedite

flood management related efforts and public concerns about the adequacy of local drainage systems. The extensive inspection required to assess and flood related damage may also identify other system issues that will need to be addressed through the CIP.

Key Policy Issues

Mapping Studies: Floodplain mapping studies and mitigation planning have historically been controversial. It has been fairly common for residents and business owners to oppose adoption of mapping that identifies their properties as within a regulatory floodplain. Recent examples include Boulder Creek where amendments to the city analysis prepared by property owners were submitted to FEMA (and subsequently rejected) and the Two Mile /Upper Goose Creek restudy which was delayed based on requests for additional analysis from impacted property owners. The WRAB plays an important role in balancing the interest of property owners to avoid being identified as within a flood prone area with the need to accurately map hazards to prioritize outreach and mitigation efforts.

Floodplain Regulations: City Council recently approved a “Critical Facilities” ordinance requiring certain land uses to meet higher regulatory standards for development in floodplains. This ordinance was the result of a multi-year process that removed numerous requirements contained in initial drafts to address concerns from potentially regulated businesses. The recent flooding may result in community interest in changes to regulations and WRAB will play a role in considering such changes

Property Acquisition: The Utilities Division allocates approximately \$500k/year to acquire private properties at highest risk for flood. Recent events may result in community interest in an increased level of property acquisition. City property agents are currently in discussion with a number of property owners in heavily impacted areas. In areas like Gregory Creek, the city does not have easements that would allow access for restoration or mitigation. Flood mitigation projects typically require a contiguous city property interest and are not feasible if the city is unable to obtain easements from all impacted property owners.

Climate Change/Resiliency: Most city infrastructure is designed based on a storm event with a 1% probability of occurring in any given year based on historic data (the 100-year storm). As reflected in the City Council’s key objectives, the community’s experience with the recent flood event and the likelihood that similar events or larger events will occur in the future, may trigger a broader discussion of what scale of event the city should invest in preparing for. As an example, current design standards for new stormwater collection systems on residential streets are based on up to 18” of flow depth at the gutter during a 100-year storm event. Design standards could be modified, but would result in increased costs and could decrease the resources available to upgrade or construct systems in areas that were built prior to current standards and may have significantly less capacity.

Education/Outreach: Earlier this year, the WRAB discussed the city’s current flood education and outreach efforts and provided input. Staff is assessing the success of previous outreach efforts and opportunities to update approaches based on new information.

Financial Considerations

The 2014 budget for the stormwater and flood management utility fund is approximately \$3.7M (27%) for operating and \$10.2M (73%) for capital/debt service. Many capital projects in this fund are budgeted over multiple years. The currently proposed CIP for 2014-2019 averages \$4.6M/year. Major near term CIP projects include \$8M for flood mitigation on Wonderland Creek and \$5.5M for mitigation on South Boulder Creek. A 1% rate increase in the stormwater and flood management fund generates approximately \$50k in additional annual revenue. As with the other utility funds, \$1M in bond funding requires approximately \$100k/year for 20 years.

NEXT STEPS

Staff is requesting the WRAB's input on future agenda items including a schedule to discuss key issues ahead of a recommendation on the 2015 Capital Improvements Program.

ATTACHMENTS

Attachment A – “Responding to the 2013 Flood: Key Objectives for Near-term Recovery and Long-term Resiliency,” Adopted by City Council Oct. 15 2013

Attachment B- WRAB Upcoming Agenda Items, Nov. 11, 2013

**Responding to the 2013 Flood:
Key Objectives for Near-term Recovery and Long-term Resiliency**

September 2013 brought unprecedented rainfall to our region, causing significant flooding, loss of life, and widespread damage. The Boulder community is quickly getting back on its feet. But while many are back to normal routines, others will be dealing with the floods' impacts for months and years to come. As a community, adequate care and support should be ensured for those most affected, in Boulder and surrounding areas, while focusing on the important work of reconstruction and other priorities. The flood has caused harm, but has also created an opportunity: to think critically about our future, and to work together like never before in support of long-term community sustainability and resiliency.

Our key objectives for the near-term recovery and long-term resiliency are:

1. **Help people get assistance.** Facilitate access to individual assistance for affected homeowners, renters and businesses to support their recovery from flood impacts and strengthen long-term resilience.
2. **Restore and enhance our infrastructure.** Invest in projects to restore services and to rebuild and enhance infrastructure, as appropriate, in the interests of public health and safety, community quality of life, and long-term resilience.
3. **Assist business recovery.** Work with the Boulder business community and key partners to connect affected businesses with resources, recover quickly from flood impacts, and support long-term economic vitality.
4. **Pursue and focus resources to support recovery efforts.** Work in partnership with volunteers, governmental and other agencies to maximize financial resources and efficiencies for recovery.
5. **Learn together and plan for the future.** Engage the Boulder community in assessing neighborhood impacts, refining and rethinking community design options, prioritizing actions and opportunities that mitigate hazards before rebuilding and support long-term community resilience and sustainability. In doing so, we build a city both greater and more beautiful than we were before.

Adopted by Boulder City Council, October 15, 2013

WATER RESOURCES ADVISORY BOARD

Upcoming Agenda Items – All Items Tentative

Revised 11-11-2013

December 16, 2013

- Matters Item – Flood Recovery Update
- Information Item – Water System Event Detection (Wind/Givler)
- Action Item – Recommendation to City Council on 2014 Priorities

January 27, 2014

- Matters Item – Flood Recovery Update
- Information Item – Review of 2013 Operations
- Update on AWWA Benchmarking (Harberg/Baird)

February 24, 2014

- Matters Item – Flood Recovery Update
- Wastewater Treatment Asset Management (Douville)
- Matters Item – City Council Retreat Follow Up

March 17, 2014

- Matters Item – Flood Recovery Update
- Information Item Water Supply/Climate Change (Taddeucci)
- Pre and Post Fire Watershed Planning (Taddeucci/Linenfelser)

April 21, 2014

- Information Item – Overview of Water Supply & Drought Response Triggers (Taddeucci/Skeie)
- Information Item – Overview of 2015 Capital Improvement Program

Upcoming Items/Not Scheduled

- Public Works *Design and Construction Standards* (Schum)
- Commercial/Industrial/Institutional Water Budgets (Sands)
- EcoDistricts Project (Sands)
- Water Conservation Futures Study (Sands)