

LENA GULCH FLOOD RESPONSE PLANNING 2015

From: Kevin Stewart

Sent: Thursday, May 28, 2015 3:51 PM

To: Brian Nielsen

Cc: Mike Greenwell; Vince Casteel; EMERGENCY MANAGER- MARK COONEY; Bryan Rappolt; Brad Simmons; Tim Tonge; Bob Glancy; Diana Reimer; Chris Jones; Rick Newman; Markus Ritsch; Kate Malers; Ken MacKenzie; Mark Westberg; Scott Brink; Steve Nguyen; Kevin Corzine; Baxter Vieux; George Cotton; Clint Fey

Subject: RE: Maple Grove Reservoir

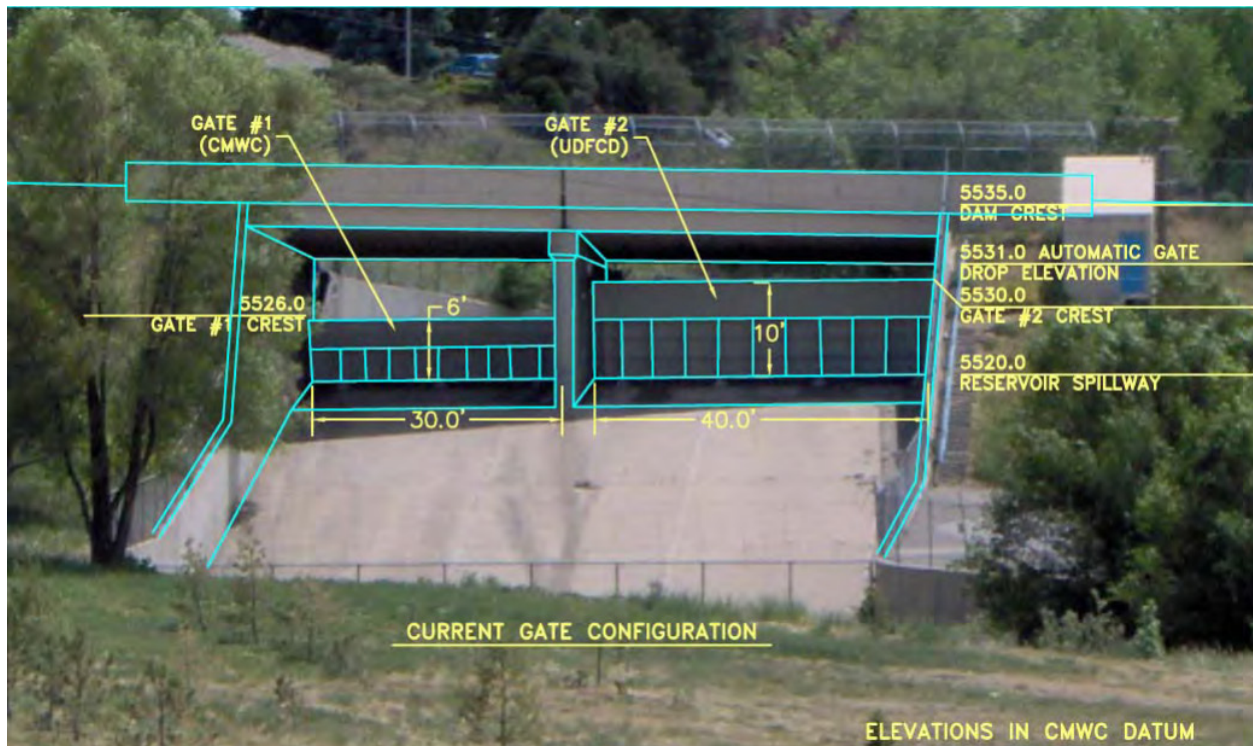
Brian,

We have been working on this diligently between storms. It's been an interesting month. Our meteorologists and GWS/Skyview are aware of our plans for the TTX on June 30. They will be assisting us with developing the weather/flood scenario and threat notification messaging. I would also like to include the NWS, Bob Glancy specifically, in this activity. Let me know if you object.

Concerning MGR operations, the following is our understanding of the situation that exists today:

Maple Grove Reservoir Spillway

(Ref: Figure 27, page 44, 2007 MAJOR DRAINAGEWAY PLANNING -
PHASE B: CONCEPTUAL PRELIMINARY DESIGN REPORT for Lower Lena Gulch)



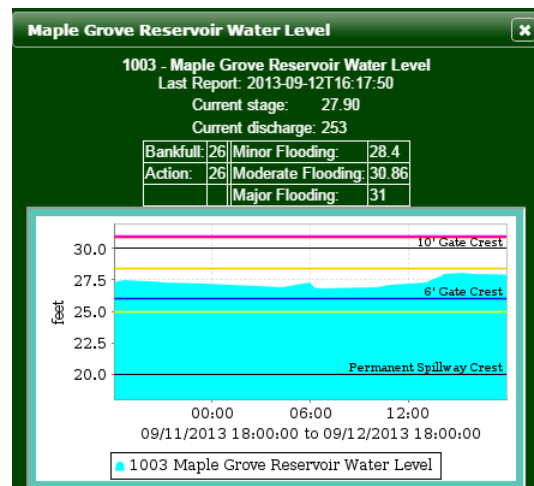
1. Elevation 5526.00 ft. (gage height or stage=26') is the lake level right before the smaller crest gate, i.e. the 6' gate, overflows. I believe the actual overflow begins at a gauge reading of 26.1. The 10-foot gate will overflow at a stage of approximately 30'. Again, the actual overflow level may be 30.1. Spillway releases between 26 and 30 are capable of causing some downstream damage to private homes in the Wheat Ridge neighborhood along Swadley Street north of W. 32nd Ave (see map). I do not have the lake level threshold for this yet. I'm waiting to hear back from Wheat Ridge Public

Works staff before setting that threshold. We estimate that the spillway flow will be slightly under 800 cfs when the lake level reaches 30-ft. The principle outlet (gated pipe controlled by CMWC) is capable of discharging approximately 100 cfs, there the conservative assumption would be Lena Gulch downstream of the dam would be flowing at about 900 cfs immediately before the wider 10-ft gate is overtopped.



2. The ALERT streamgage will trigger an alarm notification when the lake level reaches 26.0. According to the most recent version of CMWC’s Crest Gate Operation plan, CMWC will contact both Lakewood PD and Wheat Ridge PD when 26.1 is reached. At 27.0, CMWC staff will notify their top officials concerning the situation.

3. The current “Flood Stage” setting for MGR occurs at 28.4 (see darker yellow/orange line in plot). The estimated discharge at this gage height is roughly equal to the 10-year frequency flow of 360 cfs. That is enough to begin impacting properties downstream. We will change this threshold if a more detailed analysis warrants. The last time this lake level was approached (September 12, 2013—28.0 spilling 270 cfs at 3:20PM), it caused some minor overbank flooding (alarming residents) and erosion damage along the channel. Although this may look like a low discharge for a “flood” designation, careful monitoring of rainfall and inflows to MGR will



become increasingly important. Discussions about potential evacuations are recommended at this threshold if not sooner.

4. As the lake level approaches 30, prior to overflowing the 10-ft crest gate, the spillway flow over the 6-ft gate will be 770 cfs. After this level is reached, spillway releases will begin to increase more rapidly reaching 1,140 cfs (not the 100-year flow yet) at 30.86 feet. This is the level designated as the "Moderate Flood" threshold (red line), but any lake level above 30 certainly could be considered a flooding emergency (my opinion) given the existing gate operation plan approved by the Colorado State Engineer's Office (DWR/SEO). The 100-year peak flow rate from the 2007 master plan is approximately 1,900 cfs (see attached excerpt).
5. When the lake level exceeds 31, both crest gates will automatically begin lowering until they reach 20.0, the level of the concrete spillway crest according to the current MGR gate operation plan. As this is happening, discharges will increase rapidly over the period of time it takes to lower the gates fully. This is what we hope to change, but this will take some time. Incremental lowering of the gates is what the 2007 master plan calls for along with implementation of an enhanced early warning system. CMWC will need to be comfortable with whatever we come up with here and ultimately, nothing can be changed without approval from the SEO. In the meantime, improving the flood response plans for Lakewood and Wheat Ridge will be a good initial step.

If my understanding here is incorrect, please let me know. We are proceeding based on the above assumptions.

I will begin preparing a DRAFT Interim MGR Operation Plan for consideration by CMWC and SEO. I hope to get something out for review before I leave town on June 11. I will be returning on June 22. GWS/Skyview are already working on weather scenarios for the June 30 exercise.

Let me know if you have any questions. Please feel free to forward this on to anyone I inadvertently missed.

Kevin

-----Original Message-----

From: Brian Nielsen [mailto:BriNie@lakewood.org]

Sent: Wednesday, May 13, 2015 7:10 PM

To: Kevin Stewart

Cc: Mike Greenwell; Vince Casteel; EMERGENCY MANAGER- MARK COONEY

Subject: Re: Maple Grove Reservoir

Kevin,

To my knowledge Lakewood did not have any issues relating to the last storm event.

I do very much appreciate your continued help on this matter. I will pencil the date on my calendar.

Brian

On May 13, 2015, at 4:55 PM, Kevin Stewart <kstewart@udfcd.org<mailto:kstewart@udfcd.org>> wrote:

Brian,

I am currently working with our consultant on a detailed response to your questions. Should have something for you on this by tomorrow.

Per our earlier discussion, I have tentatively blocked June 30 AM for the TTX. Is this a good time for everyone? After the exercise, we should be able to assist you with finalizing an interim flood response plan for Lena Gulch. That plan will likely require revision after CMWC and Colorado SEO have agreed to a new crest gate emergency operation plan for the MGR spillway. That will take some time. I did talk with Chris Jones at CMWC about this late last week. He agreed.

Our Board of Directors<http://udfcd.org/about_us/board.html> will be visiting the dam spillway on a bus tour of UDFCD projects next Thursday (5/21). That should give them some perspective on the situation.

We did have some minor spillway flows last week. Any problems to report from this event?
Kevin

From: Brian Nielsen [mailto:BriNie@lakewood.org]
Sent: Tuesday, May 12, 2015 1:40 PM
To: Kevin Stewart
Cc: Vince Casteel; Kit Lammers; Mike Greenwell; 'Mark Cooney'
Subject: Maple Grove Reservoir

Kevin,

After the events of last weekend and several communications regarding Maple Grove Reservoir I wanted to reach out to you to see where we are with scheduling a table top exercise and finalizing the response plan for the dam? I would very much like to finalize the Revised Plan for the dam as soon as possible.

Also, could you remind me again as to the Water Action Levels for the dam?

Thanks, Brian

Brian Nielsen
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