



WILDWOOD

September 28, 2022

MEMORANDUM

To: Watershed Erosion Task Force Members

From: Department of Planning and Parks

Re: USGS Update – Field Work in Caulks Creek (**Wards – All**)

Cc: The Honorable James R. Bowlin, Mayor
Steve Cross, City Administrator
John A. Young, City Attorney
Rick Brown, P.E. and P.T.O.E., Director of Public Works
Melanie Rippetoe, Assistant Director of Planning and Parks
Dan Rahn, Assistant City Engineer
Travis Newberry, Senior Planner

The Departments of Planning and Public Works continue to monitor the progress of the science team from the United States Geological Survey (USGS) and its work on the mid to upper portions of the Caulks Creek Watershed. The team of scientists are continuing the definition of the main channel and related tributaries into it, as well as gauging water levels from all storm events that occur to assist in understanding the volatility of this system. This data collection will be the basis for future conclusions that will eventually be developed by the team.

Attached to this Memorandum is an update in this regard. This update was prepared by Dr. LeRoy. In the update, Dr. LeRoy noted that additional mapping was completed over the course of the time, since the last update provided by the team. Along with these mapping efforts, the team has been preparing the data and images that has collected for analysis. This process is to continue for the foreseeable future.

If any of the Task Force Members have any questions or comments, please feel free to contact the Department of Planning with them at (636) 458-0440. A brief presentation is planned at tonight's meeting. Thank you for your participation in this presentation.

Subject: RE: Caulks Creek project update
Date: Wednesday, September 14, 2022 at 3:19:44 PM Central Daylight Time
From: LeRoy, Jessica Z
To: Joe Vujnich
CC: Hix, Kyle D, Dan Rahn, Melanie Rippetoe, Rick Brown, Travis Newberry

Hi Joe,

Good to hear from you. The main update is that the second set of t-lidar scans have been collected at all sites. All but one of the sites was surveyed over July 26-29 and the final site (TL2) as surveyed on August 9th (after the intense rainfall). It would have been nice if we could have predicted that intense rainfall and gotten all the sites after that occurred, but that's how it goes sometimes.

There's not much new to report on the modeling front, but it is on my to-do list for the coming months.

Please let me know if you need any further information.

Best,
Jess LeRoy

Jessica Z. LeRoy, Ph.D.
(she/her/hers)
Hydrologist
USGS Central Midwest Water Science Center
405 N. Goodwin Ave.
Urbana, IL 61801
(217) 228-9755 (office)
(217) 372-9121 (cell)
jleroy@usgs.gov

I am working from home during the COVID pandemic and can be reached through Teams or on my cell phone.

CDI Geomorphology Focus Group webpage:
<https://doimsp.sharepoint.com/sites/usgs-CDI-Geomorphology-Focus-Group>

From: Joe Vujnich <joe@cityofwildwood.com>
Sent: Tuesday, September 13, 2022 11:29 AM
To: LeRoy, Jessica Z <jleroy@usgs.gov>
Cc: Hix, Kyle D <khix@usgs.gov>; Dan Rahn <dan@cityofwildwood.com>; Melanie Rippetoe <MRippetoe@cityofwildwood.com>; Rick Brown <rick@cityofwildwood.com>; Travis Newberry <travis@cityofwildwood.com>
Subject: Re: Caulks Creek project update

Dr. LeRoy:

Hope you are well.

I was hoping you could provide an update on the progress of the study for a meeting the task force has scheduled for Wednesday, September 21, 2022. It has been a few months and any updates would be appreciated.

Thank you,
Joe Vujnich

From: LeRoy, Jessica Z <jderoy@usgs.gov>
Date: Friday, June 24, 2022 at 3:24 PM
To: Joe Vujnich <joe@cityofwildwood.com>, Dan Rahn <dan@cityofwildwood.com>
Cc: Hix, Kyle D <khix@usgs.gov>
Subject: RE: Caulks Creek project update

Hi Joe, Dan,

I am just writing to let you know we have some weeks targeted for our second set of t-lidar scans on Caulks Creek. I am hoping our crew can get the work done July 11-15, but if we run into weather delays we are also holding the weeks of July 25th and Aug 1st for completing the work. I won't be there for this survey, so your local point of contact for that week will be Kyle Hix (816-738-5807), though you can still feel free to call me if any issues arise.

Let me know if you have any questions or concerns.

Have a great weekend!

Best,
Jess LeRoy

Jessica Z. LeRoy, Ph.D.
(she/her/hers)
Hydrologist
USGS Central Midwest Water Science Center
405 N. Goodwin Ave.
Urbana, IL 61801
(217) 372-9121 (cell)
jderoy@usgs.gov

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From: LeRoy, Jessica Z
Sent: Tuesday, May 31, 2022 1:30 PM
To: Joe Vujnich <joe@cityofwildwood.com>; Dan Rahn <dan@cityofwildwood.com>
Subject: Caulks Creek project update

Hi Joe, Dan,

I hope you're both doing well and had a nice holiday weekend. I am writing to give you a brief update on the Caulks Creek project. I've summarized the scope of our original proposal below and noted where things stand for each component:

- Field data collection
 - Terrestrial Lidar monitoring – *The first 2022 scan collection complete and processing is near-complete, second 2022 scan planned for July/Aug. The 2023 scans will likely take place on a similar timeline (first scan in Feb/Mar, second in July/Aug).*
 - Water level sensor installation – *COMPLETE (and first data pull done in May 2022)*
 - Erosion pin installation – *COMPLETE*
 - GPS/GNSS surveying – *COMPLETE*
 - Sediment sampling – *Samples have been collected and are in the queue at our sediment lab but have not yet been processed*
- Hydrologic modeling to assess basin-response characteristics (flood peak, volume, and timing) to design storms
 - current climate conditions – *COMPLETE*
 - future climate-changed conditions – *COMPLETE*
 - effect of additional storage – *COMPLETE*
- Hydraulic modeling of the mainstem of Caulks Creek to identify the spatial distribution of velocity, shear stress, and stream power for current and future hydrology and to determine the effect of additional storage –*This component uses the results from the hydrologic modeling, so could not be started in earnest until that piece was complete. Preliminary work incorporating surveyed bathymetry into the aerial lidar terrain is in progress and now that the hydrologic modeling is complete, we will shift focus to this component.*
- BSTEM (Bank stability and toe erosion modeling) – *Dependent on hydraulic model results, sediment samples, and t-lidar data. Intend to begin in early 2023.*

I attached some screengrabs from the terrestrial lidar processing just so you can see what those look like. What you're looking at is the lidar point cloud, in which each individual point has 3D coordinates and is colorized using photos that were captured simultaneously with the lidar data. Please note that these are provisional and subject to revision.

The upshot here is that we're on schedule with what was proposed. Feel free to share this information with the WETF if you like. Please let me know if you would like further detail or if you have any questions.

Best,
Jess LeRoy

Jessica Z. LeRoy, Ph.D.
(she/her/hers)
Hydrologist
USGS Central Midwest Water Science Center
405 N. Goodwin Ave.
Urbana, IL 61801

(217) 378-9765 (office)

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