



MEMORANDUM

DATE: September 18, 2023

TO: Chair Bryson and Public Works and Facilities Committee

FROM: Katie Koester, Engineering and Public Works Director
Rorie Watt, City Manager

SUBJECT: Long-term Follow-up to 08-05-2023 Jökulhlaup and Mendenhall River Flood Event

The purpose of this memo is to provide an update on post-event actions and long-term recovery and mitigation after the Jökulhlaup and subsequent flooding of the Mendenhall River on August 5, 2023.

What has CBJ done? The initial response by CBJ primarily involved the Capital City Fire and Rescue and the Juneau Police Department working to keep people safe and to help evacuate when necessary. CBJ was able to facilitate permitting for bank stabilization, work with property owners on the safety of their homes for occupancy, and collect flood related debris on public beaches and from flood-affected homes. The disaster declaration lasted 30 days. Long-term recovery will include: working with property owners on permitting for more than just immediate safety and stabilization, CBJ efforts to protect municipal infrastructure long-term, and further study of the changing suicide basin.

The Science. The Assembly heard a presentation from a scientific panel at the [8.28.23 COW](#). The panel educated the Assembly on the sheer enormity and unpredictability of Suicide Basin and the need for more funding and research to better understand the Jökulhlaup and ultimately to predict it more accurately. They also explained the difficulty in mitigating a future event with the dynamic nature of the change with the receding glacier and the sheer size of the basin. The August 5th event released 14 billion gallons of water (21,300 Olympic-size swimming pools or roughly 1 foot deep water covering all of Douglas Island) in approximately 48-72 hours (start to finish). The peak flow of this flooding event was 1.6 times the previous record flooding event that occurred in 2016. The August 5th peak flow was over 5 times greater than the typical summertime river flow. The event timeline is reported in the National Weather Service event [summary document](#). An Evening at Egan is scheduled on October 27 at 7 p.m. to hear from experts more on the science behind this alpine phenomenon.

Recovery & Adaptation

There are things CBJ can do to help understand and adjust to the dynamic and ever-changing Mendenhall River. These options will require resources and/or funding from CBJ.

Permitting. Permits are being handled on a case-by-case basis by the Community Development Department (CDD) now that the 30-day emergency has run out. Due to the number of permitting agencies involved (CBJ, Army Core of Engineers, Alaska Department of Fish and Game, and Alaska Department of Natural Resources) and overlapping jurisdiction, CBJ held an open house with representatives from the various agencies on Thursday, August 31, 2023. Approximately 50 people attended. CDD and General Engineering continue to work with the property owners as they move from stabilizing the property and onto permanently protecting and redeveloping the property.

Project CBJ infrastructure. When CBJ infrastructure is at threat (storm drains or the Mendenhall Wastewater Treatment Plant, for example), we must protect the public investment. When we have a parcel where armoring is integral to the success of the stabilization for the adjacent property owners, CBJ considers armoring on a case-by-case basis. When we do these projects, we try to coordinate with neighbors to realize maximum cost efficiencies.

Backflow prevention. Two of the 20 stormwater outfall pipes that drain into the Mendenhall have duck bill coverings that prevent water from backing up into them during flood events. However, CBJ Streets and Engineering should do a comprehensive analysis of our storm drain infrastructure and determine where preventing the backflow of flood waters would be beneficial during large flood events. Engineering will work on developing a CIP project to that effect.

Understand the new Mendenhall. National Resource Conservation Service (NRCS) was in town the week of 9/11 to perform an initial river survey. They will look at the entire river and discuss changes, concerns, potential areas of mitigation and provide suggestions. Their work will result in a paper that will give CBJ and the public a better understanding of the behavior and path of the river.

Mapping. One week after the flood, the Alaska Department of Transportation (ADOT) flew LIDAR which gave us a good snapshot of the original bank loss. However, so much has changed since then that we are working on collecting additional LIDAR data with the bank stabilization work that has been done. An initial map comparing the river in 2013 and September of 2023 can be found [here](#). The next step is to have the high water marks surveyed and produce HEC - RAS models which are hydraulic river flow models used to identify river capacity and project flooding inundation limits at different river flows. With this information, the River Forecast Center and NWS can revise the theoretical [flood maps](#).

Advocate for long-term research. Much of what we know about Suicide Basin is due to a grant UAS had to study the phenomenon that has expired. CBJ can help UAS advocate for additional federal funding for full-time research staff. In the near term, this looks like supporting a request to direct USGS funding. In the long term, the University is advocating for a Congressionally Directed Spending request to support a 3-year research project.

More Accurate Predictions. CBJ works closely with the federal agencies that predict river stages and monitor the basin and contributes \$7,500 annually to those efforts. USGS has requested an additional \$27,500 CBJ contribution to improve video monitoring for enhanced imagery analysis for volume and stage calculations. Combined with \$10,000 from USGA, this would fund staff time to collect and interpret the data, additional cameras, a laser stage sensor with accompanying electronics and shelter, and helicopter time to access the equipment. This is reasonable and will provide important information for the community; we recommend introducing an ordinance.

Adaptation – armor the river. CBJ has received interest in coordinated efforts to armor large sections of the Mendenhall River. A large-scale project that armors the riverbank is beyond the means of CBJ – it would cost hundreds of millions of dollars and represents the kind of financing only the federal government could provide. Any CBJ led project with federal support would come with strings attached, including a higher level of design, additional cost, and CBJ taking over ownership and maintenance. There are also legal questions behind spending public funds to protect private property.

History of Meander Way/ Riverbank Restoration Project. It can be difficult to get a group of private property owners with differing degrees of interest and vulnerability to agree to a project of this nature. In 2017 CBJ helped a neighborhood effort to form a Local Improvement District (LID) to armor 26 properties along the riverbank (Meander Way/ Riverbank Restoration Project). The original proposal was funded through NRCS and an anticipated property owner contribution of \$40,000 per parcel. When all was said and done the project was estimated to cost just shy of \$12M with half being paid for through an NRCS grant, property owners' contribution capped at \$80,000 per parcel with CBJ funding the remainder at just over \$2 million. The property owners voted down the improvement. It was a long and complicated process and one CBJ is hesitant to repeat.

Recommendation:

- 1) Introduce ordinance to add \$35,000 to the operating budget to aid USGS monitoring of Suicide Basin
- 2) Introduce a resolution to support University requests for funding for ongoing research.
- 3) Discuss appetite for different levels of CBJ involvement in research, mitigation, adaptation, and next steps (discussion at Committee of the Whole, for example.)