



Office of Emergency Management (OEM)

*Milwaukee County*

Christine Westrich, Director OEM

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The Office of Emergency Management identifies significant risk in Estabrook Dam impoundment [gates closed to create an inland lake] due to aggravated upstream flooding should the dam gates fail to open during periods of severe weather.

AECOM's April 9, 2015 analysis, *Estabrook Dam Repair – Operation Plan Options*, indicates the most amenable option in fact to be yearlong impoundment, i.e., the gates are closed all year. A seasonal drawdown option [gates open from mid-September through mid-May] is not favored by the Wisconsin Department of Natural Resources [WDNR] due mussel attrition from asphyxiation, desiccation, or freezing when the gates are opened and the upstream water elevation lowered.<sup>1</sup>

If yearlong impoundment is adopted, the WDNR still mandates the ten gates to remain operational for the purposes of flood prevention during a 10-year [or more severe] flood frequency event. Milwaukee County staff must maintain strict response protocol and the gates must be in working condition at all times.<sup>2</sup>

The gates must be maintained and tested at regular intervals.<sup>3</sup> Varying water events, poor maintenance and/or a delayed response by the dam operator/keeper may result in the following emergency levels:

- Slowly developing high water [Emergency Level 1],
- Rapidly developing storms causing high pressure on the gates and potential failure of the gates in the closed position [Emergency Level 2], and
- Dam failure is imminent or in progress [gates cannot be opened] and flash flooding is occurring upstream due to gates remaining in the closed position [Emergency Level 3].<sup>4</sup>

The April 25, 2014 revised SEWRPC Staff Memorandum annotates the flood impact should the gates fail in the open position during flood flows with annual probabilities of occurrence of 10-, 2-, 1- and 0.2-percent [recurrence intervals of 10, 50, 100, and 500 years].<sup>5</sup>

Additionally, SEWRPC modeled a scenario for a 100-year flood event with the gates closed [impoundment]. The resulting river level profile showed elevations of 1.5 feet greater near the dam

<sup>1</sup> AECOM, *Estabrook Dam Repair Operation Plan Options*, April 9, 2015, page 3.

<sup>2</sup> *Ibid*, pages 1 and 3.

<sup>3</sup> Dam Safety Fact Sheet, Responsibility of Owners, WDNR, pages 1-2.

<sup>4</sup> Milwaukee County Parks, *Emergency Action Plan for Kletzsch Park Dam*, May 13 2015, page 8-9.

<sup>5</sup> Southeastern Wisconsin Regional Planning Commission, *Hydraulic Analyses for Estabrook Dam Environmental Assessment*, April 8, 2015; revised April 25, 2014.

and through the river passage 2.2 nautical miles further north to the east-west running bridge of W. Bender Road.

Wisconsin Admin Code Ch. NR 116 prohibits known dam operations that exceed .01 feet of water elevation during a 100-year flood event. Exceptions are granted, however, when deed restrictions are placed on the affected properties allowing such increases in the river profile.<sup>6</sup>

Barring deed restrictions on roughly 350 residential homes along the north passage of the Milwaukee River in the City of Glendale, the SEWRPC analysis indicates Estabrook dam operations of yearlong or seasonal impoundment are in violation of NR 116.<sup>7</sup>

Most importantly, should impoundment principles be adopted and an inland lake established via the Estabrook Dam operations, flooding will occur in severe weather events in which the gates become immobile due to debris, ice, high water pressure, animal interference or maintenance failures.

At a minimum, North Shore and Milwaukee Fire Departments, Police Departments; Office of Emergency Management; WDNR Dam Safety Officials; Water Management Engineers; and elected officials will respond on scene. The evacuation of 350 families (approximately 840 persons) located in the upstream floodplain would be necessary for life safety.<sup>8</sup>

The evacuation, sheltering and initial recovery will be guided by County Emergency Support Functions such as Search and Rescue, Debris Management, Mass Care, Public Health, and Mass Casualty/Fatality Management.<sup>9</sup>

Recovery begins upon stabilization of floodwaters with OEM coordinating with the State Wisconsin Disaster Fund and FEMA for disaster assistance. Flood plain residents that choose not to carry flood insurance will rely heavily upon volunteer support from NECHAMA, Mennonite Disaster Service and Samaritan's Purse, to name a few.<sup>10</sup>

Public health will regulate water sanitization, and mold and sewage remediation, halting the return of families and business owners to their properties; return will likely take days to weeks depending on the floodwater elevations.<sup>11</sup>

The significant infrastructure repair costs [\$5.134M], yearly operations and maintenance cost [\$160k]<sup>12</sup>, ecological impact, and risk posed by upstream flooding make the repair and operations of the Estabrook Dam an unrestrained operational decision.

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<sup>6</sup> AECOM email and associated SEWRPC Estabrook Dam Existing Condition Comparison, Water Surface Profile Comparison of Existing Dam Conditions to Condition Assuming Gates are Closed During Flood Flow Events, April 29, 2014.

<sup>7</sup> Wisconsin Administrative Code, NR 116, Wisconsin's Floodplain Management Program, [http://docs.legis.wisconsin.gov/code/admin\\_code/nr/100/116.pdf](http://docs.legis.wisconsin.gov/code/admin_code/nr/100/116.pdf), May 22, 2015.

<sup>8</sup> AECOM, Environmental Assessment for Estabrook Dam, August 2014, page 3-11.

<sup>9</sup> Milwaukee County Comprehensive Emergency Management Plan (CEMP), ESFs 3, 6, 8, 9, 12, <http://county.milwaukee.gov/Planning15643.htm>, May 22, 2015.

<sup>10</sup> National Voluntary Organizations Active in Disasters (VOAD), <http://www.nvoad.org/voad-network/national-members/>, May 22, 2015.

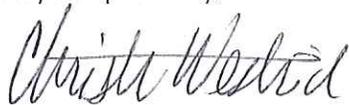
<sup>11</sup> American Red Cross Flood app, <http://www.redcross.org/prepare/mobile-apps/flood>, May 22, 2015.

OEM has considered the impact to surrounding property values as well as the positive wellness impacts; however, the introduction in our now highly urbanized metropolitan Milwaukee area of a yearlong impoundment mandates consideration for mitigation.

And mitigation requires taking action before the disaster to reduce human and financial consequences. FEMA's Federal Insurance and Mitigation Administration (FIMA) manages the National Flood Insurance Program (NFIP), which thrives on the concept of self-reliance and early decisions that reduce risk to life and property.<sup>13</sup>

The hard choices before us must be met with a commitment to invest in the long-term well being of our local communities. Milwaukee County and its operations must prioritize stabilizing community resiliency and ensuring our homes and businesses remain safe without jeopardy to financial security.

Very Respectfully,



Christine Westrich  
Director, Office of Emergency Management  
Milwaukee County

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<sup>12</sup> AECOM, Environmental Assessment for Estabrook Dam, August 2014, page 4-20.

<sup>13</sup> FEMA, What is mitigation – Risk Reduction, <http://www.fema.gov/what-mitigation#4>, May 22, 2015.