# Ashland Lakefront Sediment Remediation

## ENVIRONMENTAL AND SAFETY RISKS OF DRY DREDGE

Northern States Power Company-Wisconsin (NSPW), an Xcel Energy company, supports a safe, environmentally sound, and implementable approach to the cleanup of contaminated sediments at the Ashland Lakefront Site. The "Dry Dredge" remedy selected in EPA's Record of Decision (or ROD), however, is not implementable, does not meet national recognized safety standards and may result in irreparable harm to human life and the environment.

There are safer, more effective, alternative remedies that could be implemented for the sediments at the site such as:

1. A permanent engineered shoreline, which would extend the adjoining park creating new park lands and would promote marina redevelopment.
2. A wet dredge, consistent with nationally recognized best practices.

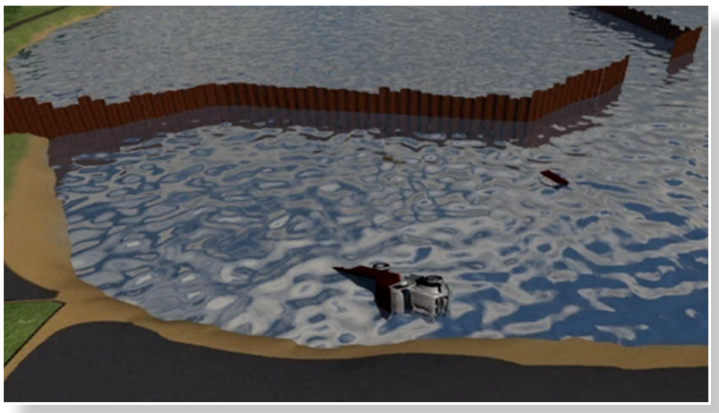
These approaches are safer, implementable, environmentally sound and more cost effective than a dry dredge.

**What is a Dry Dredge?**

The near shore dry dredge excavation remedy selected for the site involves de-watering the near-shore part of Chequamegon Bay on Lake Superior (the largest freshwater lake in the world) by installing a sheet pile wall to hold back the lake, and dredging contaminated sediments from a quasi-dry lakebed. There are serious environmental and safety risks associated with this approach due to the unique conditions at this site. These conditions have been well documented by several nationwide environmental consulting firms. According to these firms, standard industry safety factors, established by Army Corps of Engineers and U.S. Navy, can not be met under the dry dredge approach.

The dry dredge poses unnecessary and irreversible risks to worker safety, the environment, and community. Due to conditions such as basal heave, failure of the sheet pile wall, and other failures, contamination could mobilize and spread to new areas of the site and cause irreversible impacts on the regional hydrogeology. A dry dredge also poses safety risks to workers and the surrounding community and will require that public parks and facilities be closed for long periods of time.

Basal heave and/or failure of the outer sheet pile wall could lead to unsafe conditions for workers, potential loss of life, and complete and irreversible failure of the project.



Basal heave could potentially release groundwater contamination, which is currently held in place via artesian forces.

## What are the risks of a dry dredge?

- **Basal heave:** The area is currently in equilibrium, with the weight of the lake water and sediments pushing down on the clay aquitard, and artesian pressures from groundwater pushing upward. Removing water and sediments during a dry dredge will upset this balance, and may cause the aquifer to burst through the aquitard. If this occurs, the consequences would be irreparable and potentially catastrophic. Once the clay liner is breached, it cannot be repaired and the area could never be returned to pre-basal heave conditions.

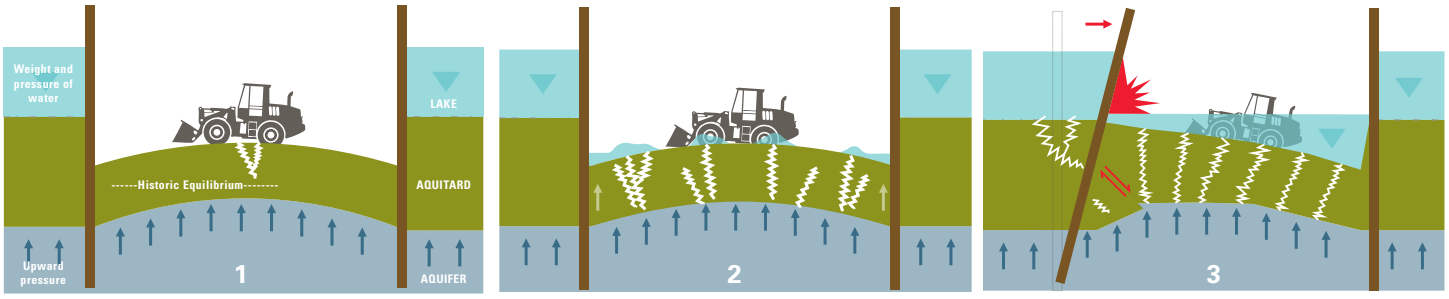
  Breach of the aquitard could result in flooding of the area while workers and equipment are present, causing serious safety risks. It could also mobilize the presently-contained groundwater underneath the site resulting in new contamination, or recontamination of areas that have already been cleaned up.

- **Containment failure:** In order to dewater the near-shore area to allow for dry dredging, the EPA's Record of Decision requires a sheet pile wall to be driven into the aquitard, which will drive contamination from the sediment into the aquitard and could create basal heave or other containment failures (see diagrams below). Additionally, the sheet pile wall may not withstand the extreme winter conditions in Lake Superior.
- **Timing:** The dry dredge will take longer to implement than other remedies, resulting in greater disruption to the community, longer closure of Kreher Park, and greater interference with City of Ashland's plans for redevelopment of the area.
- **Community Impacts:** Significant noise and air emissions. Long-term closure of Kreher Park.

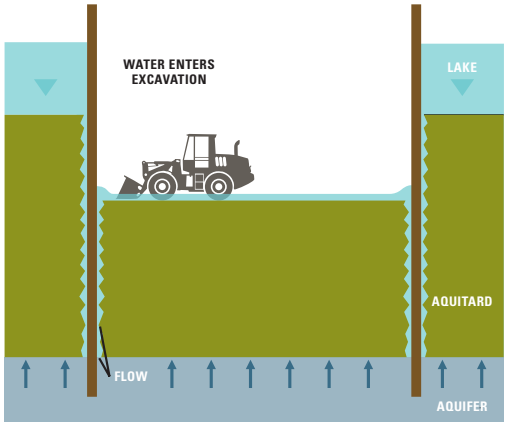
### Dry Dredge Consequences

- Irreparable environmental damage
- Serious injuries or loss of human life
- Significant costs and delays, and community distruption

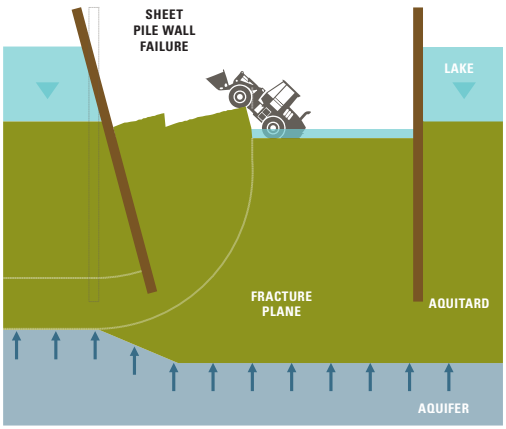
## Probable Environmental and Safety Scenarios




**(1)** uplift of bottom soil along sheet pile walls and weakening foundation soil which can lead to **(2)** rupturing from artesian uplift and uncontrolled flow into excavation, which can lead to **(3)** loss of support to sheet pile wall due to the weakened foundation soil from uplift, and potential sidewall failure




Loss of of restraint due to pressures of retained soil and free water, weakened further by artesian pressures, is another possible cause of wall failure




Installation of sheet pile creates damaged 'slot' through aquitard allowing piping through weakened soil into excavation area.