



Flood Reference Guide for Municipalities

March 2023

This guide is designed to assist municipalities in preparing for, and responding to, flooding events. This is intended as short-term guidance for municipal officials to provide action items that can be implemented in the last days before a flood. Longer term outreach and technical assistance and permitting is necessary, but well before or well after an incident. Please use this as a reference for basic answers to municipal flood event needs, and as a place to find further assistance. DEP phone numbers for technical assistance (on-the-ground, by phone, email, or other) are listed at the end of the document.

Flooding can affect water quality, cause major damage to wastewater collection systems and treatment facilities, to roadways, culverts, dams, retaining walls and other structures that may need to be repaired quickly in the interest of public safety. These events can also result in an accumulation of debris and waste materials, some of which may be hazardous, and may require specific actions for safe handling and disposal. This guidance builds on lessons learned from natural disasters we have already experienced in Maine and our region.

Contained are a few examples of common problems a municipality is likely to face from a flood.

- General Considerations
- Fuel Storage and Spill Response
- Debris Management / Solid Waste
- Emergency Repairs to Infrastructure
- Stormwater, Wastewater, and Drinking Water

General Considerations

- Know your community's vulnerabilities: review your community's flooding history and plan accordingly
- The one-hundred-year flood benchmark (or 1% storm) is changing (see Floodsmart.gov)
- Establish emergency staging areas, supply dumps, temporary debris storage areas, and evacuation localities
- Establish alternative emergency communications systems



*St. John River at Ft. Kent, Maine Flood 2008
(Photo credit: USGS)*

Fuel Storage and Spill Response

Examples of common problem areas:

- Increased incidence of oil spills resulting from above ground fuel storage tank damage
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- Increased risk of fuel spillage and leakage caused by increased generator usage and increased petroleum fuel handling
- Increased risk of exterior heating oil tanks settling or collapsing as a result of erosion or softening of the footings, causing a discharge of oil
- Damage to fuel storage facilities such as from tanks floating away, debris impact, or oil displacement for submerged tanks
- Floating basement fuel storage tanks
- Discharge from fuel and chemical storages in homes and business—also increases risk to drinking water supplies, and to the environment
- Unknown or unlabeled containers washing up in flood debris
- Vehicles washed into the water
- Increased risks of contamination of wellfields or drinking water intakes as a result of exterior oil storage tank spills that linger in soils

Things to consider:

- Underground fuel storage tanks are required to be anchored if they are within the 100-year flood plain, or if they will be in contact with groundwater (as per Ch. 691 Appendix D)
- Above ground fuel storage tanks are required to be anchored per National Fire Protection (NFP) rules

Spills & Site Cleanup Contacts

- Statewide 24-hour spill response numbers:
 - Oil Spill 800-482-0777
 - Hazardous Material Spill 800-452-4644
- General Questions 207-287-7688



*Aroostook River, Main Street Fort Fairfield, April 1994
(Maine River Basin Report)*

Debris Management & Solid Waste

Examples of common problem areas:

- Basement flooding can result in demo debris contaminated with heating oil, paint, pesticides, household chemicals, or mold
- During and after a flood event, there may be the need to quickly remove material that results in the accumulation of solid waste and debris from residences, businesses, roadways, and open spaces
 - Examples: vegetative wastes, and limited amounts of demolition debris and municipal solid waste (MSW) - trash, damaged furnishings, appliances, and building debris
- Debris management sites can be difficult or impossible to access if they are in flood plains, or are accessed by roadways that get excessively muddy, flooded, or washout
- Flood debris may be highly commingled and may include special wastes such as asbestos
- Product management programs prevent universal waste, including electronics, mercury added products, paint, and pharmaceuticals (under development) from going to a landfill
- Many landfills are located next to rivers and could be in the flood plain
- Landfill infrastructure that is vulnerable to flooding could breach, leading to increased risk of groundwater contamination from leachate (may contain heavy metals such as mercury)

Things to consider:

- Homeowners in flood prone areas may wish to consider proper disposal of household waste prior to a flood or disaster, and storage of all household hazardous waste (HHW), including pressurized containers, ignitable fluids, paint, and pesticides. Whether in nearly or partially empty containers or in new, sealed containers, HHW should be stored in above grade locations to avoid spilling or mixing of wastes
- Methods for sorting, storing, and processing debris, as well as where the sorted or processed wastes will be sent
- Designating specific areas within a debris management site for the various types of waste expected can minimize contamination and improve management of the debris
- Open burning of flood debris is a less preferable option and should be avoided if possible
- Maine DEP can provide written pre-authorization for temporary disaster debris management sites for municipalities without requiring a license or fees, also ensuring consistency with Federal Emergency Management Agency (FEMA) requirements if reimbursement funding is available for disaster expenses
- Please contact Materials Management Division staff in your local DEP regional office to begin the process of pre-authorizing a temporary storage site and to acquire the Temporary Debris Management Site Registration Form (contact numbers on last page)

Areas mapped outside of the 100-year floodplain could experience flooding: on average, 40 percent of National Flood Insurance Program (NFIP) flood insurance claims occur outside the high-risk flood areas.” (July 2021) [floodsmart.gov](https://www.floodsmart.gov)

Emergency Repairs to Infrastructure

Examples of common problem areas:

- Washouts and damage to culverts and road segments
- Impacts to road infrastructure in low-lying areas where water table is directly beneath the road
- Structural damage to homes and buildings, particularly in or near protected natural resources
- Deposition of debris in streams
- Damage to seawalls and other coastal structures

Things to consider:

- Typical activities that may need to be undertaken after major storm events:
 - Culvert clean out or replacement
 - Riprap installation
 - Debris removal from stream channels
 - Road/shoulder repair near streams and wetlands
 - Applicable regulations include the Natural Resources Protection Act (NRPA) and Permit-By-Rule (PBR)
 - If damage occurs in a Coastal Sand Dune System as a result of storm surge, additional regulations may apply
 - The NRPA contains exemptions that may mean that no permits are necessary from the Department for certain repair activities undertaken by a municipality’s public works department
 - Other activities may only require a Permit-by-Rule (PBR) from the Department
 - For more information, please refer to statutory language in NRPA here:
www.mainelegislature.org/legis/statutes/38/title38sec480-Q.html
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- If in a Sand Dune System, please consult the DEP storm repair guidance here:
<https://www.maine.gov/dep/land/nrpa/dunes/faq-sand-dune-storm-repai.pdf>

Stormwater, Wastewater, and Drinking Water

Examples of common problem areas:

- Increased risk of erosion, especially in exposed areas, of public wastewater systems, waste disposal, and water supply infrastructure
- Stormwater and flooding can greatly affect water quality by causing damage to a community's critical water and wastewater infrastructure
- Even short-term loss of access to drinking water and sanitation could affect public health and access to emergency housing
- Flood waters could result in collection system becoming inundated with flow
- Could affect the operation of wastewater disposal systems in and near flood zones
- Could result in discharge of untreated wastewater from manholes, pump stations, and treatment facility
- Wastewater could back up into homes and businesses due to inoperable collection system
- Continued operation of wastewater pumping stations serving flooded areas can impact wastewater treatment facility, e.g. washing out solids, overtopping lagoons, etc.
- Debris and soil could be washed into systems resulting in blockages
- Flooding around empty wastewater treatment tanks can cause damage due to floating
- Flooding of any well presents the potential for bacterial contamination
- Power outages and potential for bypass and release of untreated wastewater
- Pump/Lift station failures from overworked pumps, damage, or lack of power
- Excess flows causing leaks into system
- Excess flow into pond systems to critical levels
- Flood waters could lead to spillage of fuels and lubricants getting into sewers and treatment systems, impacting/killing treatment facility bacteria
- Flooding around pond systems causes risk of overtopping as well as undermining the integrity of walls leading to failure
- Ice in flood could cause physical damage to treatment plant, collecting system, or power system
- Utility employees could be cut off from being able to make it to work site



*Response Northern Maine Office 2006
(Photo credit: ME DEP)*



Things to consider:

- Need for outreach for water quality alerts should there be overflows or extended periods of bypassing from wastewater utility
- In the event of a discharge of raw wastewater public health warnings may be necessary
- Become member of the Water/Wastewater Agency Response Network WARN community
- Wastewater treatment plant preparation and preparation for emergency funding

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- If there is need to disinfect a flooded drinking water well, or a flooded septic system, connect with appropriate staff at Department of Health and Human Services. (see contacts at end of guide)

Contacts

Augusta, Main Office and Central Maine Regional Office

(Mail) 17 State House Station, Augusta, Maine 04333

(Physical) 28 Tyson Drive, Augusta, Maine 04333;
(207)287-7688 • (800)452-1942 • FAX (207)287-7826

Bangor, Eastern Maine Regional Office

106 Hogan Road, Suite 6, Bangor, Maine 04401;
(207)941-4570 • (888)769-1137 • FAX (207)941-4584

Portland, Southern Maine Regional Office

312 Canco Road, Portland, Maine 04103
(207)822-6300 • (888)769-1036 • FAX (207)822-6303

Presque Isle, Northern Maine Regional Office

1235 Central Drive, Presque Isle, Maine 04769
(207)764-0477 • (888)769-1053 • FAX (207)760-3143

Spills & Site Cleanup Contacts

Aboveground Tanks: Fire Marshall 626-3800
(first), [David McCaskill](#) 287-7688

Contaminated Wells: DHHS 866-292-3474 or DEP 800-482-0777

Public Water Supplies: Drinking Water Program, DHHS 287-2727

Oil Contaminated Soil Cleanup: [Sean Dougherty](#) 441-7159 or [Tim MacMillan](#) 458-9484

Soil Cleanup: Response, Remediation or Hazardous Waste Group 287-7688

Leaking Underground Oil Storage Tanks (UST)

- Central Region - [Jon Woodard](#) 287-7688
- Eastern Region- [Bob Shannon](#) 941-4592
- Northern Region - [Jesse Clark](#) 760-3138
- Southern Region - [Steve Flannery](#) 822-6300

Report a leak or discharge: DEP 800-482-0777

Well Testing for Oil or Gas Contamination: See regional office numbers listed above

Solid Waste and Special Waste Contacts

Recycling: [Megan Pryor](#) 314-3357; [Elena Bertocci](#) 557-3218; [Brian Beneski](#) 592-0248

Solid or Special Waste (Disaster Debris Management or general questions) any of these staff can direct questions to the appropriate person:

- Central Region– [Michael Parker](#) 287-7704
- Eastern Region – [Karen Knuuti](#) 941-4561
- Northern Region - [Margaret Watson-Pierce](#) 242-0383
- Southern Region– [Eric Hamlin](#) 822-6344

Land Contacts

Land Licensing and Compliance (Division Director) – [Mark Stebbins](#) 592-4810

- Central Region - [Dawn Hallowell](#) 557-2624
- Eastern Region – [Jessie Damon](#) 446-1216
- Northern Region - [Scott Belair](#) 760-3145
- Southern Region - [Alison Sirois](#) 699-7028; [Dawn Hallowell](#) 557-2624

Hydropower and non-hydropower dams - [Laura Paye](#) 219-9563

Water Contacts

Wastewater dischargers - Technical assistance and compliance

- Central Region – [Jim Crowley](#) 287-8898
- Eastern Region – [Clarissa Trasko](#) 941-4572
- Northern Region – [Sean Bernard](#) 554-9547
- Southern Region – [Fred Gallant](#) 413-4511

Climate Change Contacts

Adaptation: [Nathan Robbins](#) 592-6590

Additional Resources

Maine Emergency Management Alerts

www.maine.gov/mema/home

National Weather Service (Caribou)

www.weather.gov/car/

Advanced Hydrologic Prediction Service

water.weather.gov/ahps/

USGS Water Resources River Gauges

waterdata.usgs.gov/me/nwis/rt

Maine Climate Office

<https://mco.umaine.edu/>

Maine Climate Hub (for decision-support)

<https://www.maine.gov/dep/sustainability/climate/index.html>

Help ME Recycle (find recycling locations)

www.maine.gov/dep/helpmereco/

Solid Waste Diversion Grant Program

www.maine.gov/dep/sustainability/compost/grant.html

Water & Waste Disposal Grant Program

www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-loan-grant-program/me

Maine Water/Wastewater Agency Response Network (WARN)

www.maine.gov/dhhs/mecdc/environmentalhealth/dwp/pws/meWARN.shtml

Emergency Response Resources

www.maine.gov/dhhs/mecdc/environmental-health/dwp/pws/emergencyResponse.shtml

Flood Preparedness Guide

www.maine.gov/dhhs/mecdc/environmental-health/dwp/wrt/documents/floodPreparedness.pdf

Incident Action Checklist for Water Utilities – Flooding

<https://www.epa.gov/waterutilityresponse/incident-action-checklists-water-utilities>

Preparing for Extreme Weather at Wastewater Utilities

<https://neiwpcc.org/2016/09/30/recently-completed/>

Adaptation Strategies Guide for Water Utilities

<http://water.epa.gov/infrastructure/watersecurity/upload/epa817k15001.pdf>

Adaptive Response Framework for Drinking Water and Wastewater Utilities

<https://www.epa.gov/crwu/apply-adaptive-response-framework-your-water-utility>

Developing a Climate Adaptation Plan for Wastewater Utilities (grant)

<https://www.maine.gov/dep/water/grants/srfparag.html>

Drinking Water Capacity Development (grant)

<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/capacityDevelopment.shtml>
