

U.S. EPA Suggested Post-Hurricane Activities for Water and Wastewater Utilities

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The Environmental Protection Agency's Water Security Division has developed a checklist to assist drinking water and wastewater facilities recover from adverse weather conditions. Recognizing that water utilities will want to restore and /or maintain operations, the following steps are recommended for resumption of operations post severe weather conditions.

A. General:

1. For water utilities, the first priority should be restoring fire flow and pressure.
2. For wastewater utilities, the first priority should be to restore primary treatment and disinfection.
3. Line up and schedule emergency operations and clean up crews
4. Make arrangements with the local power utility to repair and restore power to the plant as a primary customer. Power should not be turned on to buildings or process units until the floodwater has been removed and the area is safe to occupy.
5. Notify State and Federal Agencies when the facility is back in operation.
6. Notify media where to access information and press advisories, such as boil water orders, beach closures, and other public instructions.
7. Make arrangements with local companies to deliver materials and supplies and to provide heavy equipment needed to make repairs to the plant.
8. Make arrangements with local companies to deliver materials and chemicals as soon as it is safe, and facilities are prepared and ready for operation.
9. Contact State and local authorities to determine if there are any restrictions on disposal of materials and debris removed from the site or if a temporary discharge permit (NPDES or other) is needed for the water pumped from tanks and other flooded structures.

B. Grounds and Common Areas:

10. Inspect all service vehicles for water and wind damage.
11. Check site including remote locations for visible damage to power lines and above ground structures.
12. Inspect all sewage collection systems for damage and blockages. Most collection systems will require cleaning after a flood.
13. Inspect all exposed pipes, especially at river crossings, for leakage. Broken pipes can discharge raw sewage into rivers and streams. Broken water pipes including service connections to severely damaged structures can provide a source of contamination and/or pressure loss to the potable water system.
14. Check all remote control systems, including telemetering, telephone, and SCADA, etc.

C. Administration and Laboratory Building:

15. Check windows and doors for wind damage. Replace and repair as needed to prevent further damage and to provide security.
16. Check roofs for water and wind damage. Make repairs as needed to prevent further damage.
17. Pump out and remove silt, mud and sand from basements and other below grade areas.
18. Clean and disinfect masonry walls with bleach solution to prevent the growth of mold and mildew.
19. Remove all plasterboard, wallboard, and sheet rock that is wet or shows signs of water damage. Clean and disinfect all the interior studs and other support structures behind the damaged walls with bleach solution to prevent the growth of mold and mildew.
20. Inspect all switch gear, motor control centers, electrical boxes, junction boxes, and other electrical equipment in flooded areas for silt and sand or loose connections. Boxes should be cleaned and dried with portable or hand held dryers before the electrical power is restored.
21. Thoroughly clean all wet carpets. It is advisable to remove carpets for cleaning. If removing the carpets is not practical, carpets should be steam cleaned, disinfected and mechanically dried. The carpets also should be treated with an anti-bacterial agent to prevent the growth of mold and mildew.
22. Check and reset fire alarms, door alarms, clocks and other control and measurement devices.
23. Start sampling, monitoring and testing, including the water distribution system for coliform bacteria, as soon as the laboratory is operational.

D. Treatment Plant and Pumping Stations:

24. Pump out all tanks, wet wells, dry wells, channels, vaults and pits to remove silt, mud, sand, and debris. In some cases washing down walls will be necessary before returning to service. Make sure you have all the necessary permits to dispose of the collected material and for discharging the wastewater.
25. Inspect all equipment, clean and lubricate.
26. Inspect all switch gear, motor control centers, electrical boxes, junction boxes, and other electrical connections in flooded areas for silt and sand or loose connections. Boxes should be flushed with fresh water and dried before the electrical power is restored. Breaker boxes and other contacts may need additional cleaning to remove corrosion, especially if the damage was caused by salty or brackish water.
27. Inspect all electric motors. Generally, it is more cost-effective to replace small flood damaged motors than to try and repair them. In some cases, motors can be flushed with de-ionized water. Be sure the motor is thoroughly (oven dried) dry before restoring power. Starters and other electrical controls may also be damaged and will need to be replaced.
28. Large motors that were not removed but were wrapped in plastic should be inspected for damage. Be sure the motor is thoroughly dry before restoring power. However, having the motors cleaned and dried by motor or armature specialists is recommended. Starters and other electrical controls may also be damaged and need to be replaced.
29. Large horsepower motors that were not wrapped in plastic should be removed and sent out for cleaning and drying. Check with the motor or armature specialists in your area. They often have equipment to clean and ovens to dry motors under controlled temperatures.
30. Inspect and clean debris from all air intakes and vents.
31. Inspect all chemical storage and feed equipment to make the equipment is undamaged and is properly calibrated
32. Chemical and fuel tanks that were filled with water should be pumped out and restocked with fresh materials. Caution: Water from fuel tanks may still contain hydrocarbon residues and may require special handling and disposal.

33. Check and refuel emergency generators in the event of future power outages. If generators and diesel engines have been flooded, they will need to be overhauled or engines rebuilt. Getting emergency power capability resorted, should be a high priority. Renting portable generators or pumps should also be considered.