Planning for Bad Weather: A Utility Perspective

Paul Thomas Hunt
Portland Water District
Portland, Maine
Air and Water Temperatures Increase
Regional air temperatures are predicted to rise between 2° and 6°F by mid-century, and

More Frequent and Intense Precipitation
Data from the Portland Jetport (confirmed by the 2015 Update of Maine’s Climate Future) show that Maine is experiencing increases in both annual precipitation

Rising Sea Level Exacerbates Flooding Risks
Over the past century, Portland's tide gauge has shown an average annual increase in sea level of 1.9 mm per year (7.5 inches per century), close to global
Overview

• Why prepare?
• The prompt
• The process
  – Pre-storm
  – Mid-Storm
  – Post-Storm
• Wrap-up
Portland
pop. 60,000
Portland Water District

- Drinking Water since 1908
- Wastewater since 1978
- 200,000 consumers in 11 communities
- 186 employees

11 Departments
Nearly 100 Facilities
Why Prepare?

Table B.1. Strategic Priorities Working Group Identified Risks for the Water Sector

**Most Significant Risks**

- Natural disasters (such as water quality and quantity impacts from floods, hurricanes, earthquakes, ice storms, pandemic flu, and other geographic catastrophes)
- Economic implications of aging infrastructure
- Cyber events
- Capability in managing an area-wide loss of water
- Although the Water Sector has been defined as a lifeline sector, it is not commonly recognized among all relevant stakeholders, which can escalate consequences during area-wide events

Water Sector Strategic Priorities Working Group

May 2013
Prepare: By Department

Each department identified how to prepare for:

Level 0, 1, 2, or 3 storm

– Level 0, No impact, business as usual
– Level 1, Light impact, localized
– Level 2, Medium impact, more widespread
– Level 3, High impact, full response, system-wide
Level 2 Storm Response

2. Place all storage systems in “Storm” mode (keep full). No unnecessary plant shutdowns.

3. Portable standby generator fueled and deployed at Prides Corner Pump (or Winn Rd/Gorham as appropriate).

4. Confirm SLWT Generator has adequate fuel for extended power outage (3-4 days). Order fuel if necessary and time allows. Review single generator run SOP.

5. Confirm propane/diesel levels appropriate for 3-4 day outage (order if necessary and time allows) at the following locations:
Example of Department Plan

Wastewater Systems – L9
Portland Water District
Storm Response Procedures

Level 2 Storm Response

1. Place generator at Broad Cove N. Pump Station. Confirm generators/fuel for Shore Acres and Cumberland Res. Telemetry sites.
2. Inspect and prepare mobile generators and pumps.
4. Contacted septage haulers for availability during the event to assist with pumping selected pump stations during power loss.
5. Monitor event as it develops and occurs.
The Prompt: What Gets Things Going?

Cumberland County EMA
Storm Alerts
Current Situation: Heavy Rain and Snow with Strong Winds Thursday

Expected Snowfall Amounts Thursday

- Snow is expected in the mountains
- A mix of rain and snow is expected in the foothills (more snow as you go up in elevation)
- Rain is expected over southern New Hampshire and along the coast of Maine.

Highest Wind Gusts Thursday

Highlights / Key Messages

- A period of heavy precipitation is expected from just before daybreak Thursday through early afternoon
- Significant river flooding is not expected
- In areas with snow, snowfall rates of 1-2’ per hour are likely
- Snowfall will be heavy and wet, increasing the risk for isolated power outages
- Strong winds are expected Thursday morning, particularly along the coast where gusts over 45 mph are likely
- Splash over and minor coastal flooding are possible at the time of high tide early Thursday afternoon from Portland south to the New Hampshire Seacoast
Pre Storm: Incident Assessment

### Table 2-2: Incident L

<table>
<thead>
<tr>
<th>Points</th>
<th>Assessment</th>
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<tbody>
<tr>
<td>0-1</td>
<td>LEVEL 0</td>
</tr>
<tr>
<td>2-3</td>
<td>LEVEL 1</td>
</tr>
<tr>
<td>4-7</td>
<td>LEVEL 2</td>
</tr>
<tr>
<td>&gt; 7</td>
<td>LEVEL 3</td>
</tr>
</tbody>
</table>

#### Incident Assessment:

1. **Anticipated Extent of PWD Response or Asset Damage**
   - None – Enter 0
   - Minor – Enter 1
   - Moderate – Enter 2
   - Severe – Enter 3
   
<table>
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<tr>
<th>Points</th>
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<tr>
<td>2</td>
</tr>
</tbody>
</table>

2. **Anticipated Duration of Event and/or PWD Response**
   - None – Enter 0
   - 0 - 6 hrs – Enter 1
   - 6 - 16 hrs – Enter 2
   - 16 hrs – Enter 3
   
<table>
<thead>
<tr>
<th>Points</th>
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<tbody>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

3. **Anticipated Impact to Level of Service**
   - Single Location – Enter 0
   - Scattered – Enter 1
   - Widespread – Enter 2
   - Regional – Enter 3
   
<table>
<thead>
<tr>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
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*8-9 2013*
Pre-Storm: Virtual EOC

• Share Level with VEOC members
• Emergency steps implemented
• Individual department plans become utility plan

So when the storm hits...
11 department plans working as one
Mid-Storm: Op Briefings

With the utility plan being executed...

• Communication continues
• Things change
• Establish operation periods of 6 to 8 hrs

In preparing for battle I have always found that plans are useless, but planning is indispensable.

-- Dwight D. Eisenhower
Mid-Storm: Op Briefings

Water Distribution

Water Treatment

WW Treatment

Facility Manager

SCADA

WW Collections

Information Services

From: Tony Alves
To: Mike Kozak

From: Joel Anderson
To: Mike Kozak; Virtual EOC Group

From: Steve Stain
To: Virtual EOC Group

From: Roger Paradis
To: Mike Kozak; Virtual EOC Group

From: Bob Waterman
To: Virtual EOC Group

From: Emile Richard
To: Charlene Poulin; Mike Kozak; Virtual EOC Group; Instrumentation Dept

From: Charlene Poulin
To: Mike Kozak; Virtual EOC Group

From: Chad Davis
To: Jim Wallace

From: Emile Richard; Mike Kozak; Virtual EOC Group; Instrumentation Dept; Gordon

Subject: Re: Weekend Storm Update - ET, Instrumentation Response

All IS systems 100% operational.
If your staff is opening Work Orders to deal with storm related issues please have them use the following budget numbers:

13011J - Water
13012J - Cape Elizabeth WW
13013J - Cumberland WW
13014J - Gorham WW
13015J - Portland WW
13016J - Westbrook WW
13017J - Windham WW
Post-Storm: MEMA Reimbursement

**Maine Emergency Management Agency**
**Damage and Injury Assessment**

- **Type of Disaster:** Storm, Ice and snow
- **Jurisdiction:** Portland Water District
- **Area Affected:** Entire Greater Portland service area

**Information provided by:**
- **Name:** Michael Koza
- **Address:** Portland Water District, PO Box 3553 Portland ME 04101

**PUBLIC DAMAGE**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>DEBRIS REMOVAL (trees, building wreckage, sand, mud, silt, gravel, vehicles, and other disaster-related material)</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>B</td>
<td>EMERGENCY PROTECTIVE MEASURES (sandbagging, barricades, signs, extra police and fire, and emergency health measures)</td>
<td>$53,000.00</td>
</tr>
<tr>
<td>C</td>
<td>ROADS AND BRIDGES (repairs, related utilities, assistance, etc.)</td>
<td>$</td>
</tr>
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Wrap-up

1. Increase in storm frequency/intensity
2. Tough guy mentality gone
3. Coordinating before, during and after
4. Assessment form prompts action before the storm
5. Communication is regular during the storm
6. Overall sense of unity
Roses are red, violets are blue.
CMP
We need you.

Questions?