The Collaborative Effort Required to Effectively Manage Disaster Debris
Topics

• History of Debris Management

• Disaster Debris Management Guidelines

• Hurricane Matthew

• Takeaways
Types of Disasters

- Hurricanes
- Tornados
- Floods
- Ice Storms
- Earthquakes
Disaster Debris Management in SC

- Hurricane Hugo made landfall on Sept 21, 1989, as a Category 4 storm with sustained winds of 140-mph
  - Majority of the storm debris was burned
  - Charleston County’s Bees Ferry Site is still dealing with debris from Hugo
  - Downed 8,800 sq miles (5,632,000 acres) of trees, enough timber to build 660,000 homes (Wikipedia)
Disaster Debris Management in SC

• DHEC began sending a standard email that detailed requirements for establishing Disaster Debris Management Sites
• Coastal Counties draft Disaster Debris Plans and have DHEC pre-evaluate their sites
Disaster Debris Management in SC

- Email was status quo until Winter Storm Pax (Feb 2014)
- SCDOT's contractor requested Debris Management Sites
- FEMA requires approval by the regulator (DHEC) for reimbursement
What Does the Guidance Document Cover

- Staging, Grinding, and Burning of Debris
  - Land Clearing Debris
  - Building Debris

- Disposal of Vegetative Debris
  - Wood Chips may be spread at agronomic rates
  - Taken to a permitted facility to finish composting
  - Left on-site with property owner’s permission

- Disposal of Ash from Vegetative Debris
  - Spread over field if requested by owner
  - Placed in a pit and covered with 1 foot of clean soil
Other Wastes that Need to be Considered

- Electronics (Computers, TVs, etc.)
- White Goods (Appliances)
- Household Hazardous Waste
Hurricane Matthew

- Hurricane Matthew made landfall on October 8, 2016, @ 10:45 am in McClellanville, SC
- Category 1 Hurricane with sustained winds of 75 mph
- Rainfall Totals
  - 14” – Beaufort
  - 11” – Hilton Head Island
  - 10.5” – Charleston
  - 9.8” – Folly Beach
  - 5.7” – N. Myrtle Beach
- Nearly 850,000 people in South Carolina without power
Springmaid Pier in Myrtle Beach
FLOODING IN MULLINS
CHERRY GROVE
Hurricane Matthew Recovery

- DHEC received 91 applications for Disaster Debris Sites located within 22 different Counties
  - 48 from SCDOT or its contractors
  - 43 from Counties or local Municipalities
  - 2 Site applications were denied
  - 89 sites have been approved
    - 25 Burn Sites
    - 64 Chipping Sites
  - All requested facilities were for Land Clearing Debris only
## State Debris Totals (Estimated)

4/18/2017

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Total (CY)</th>
<th>Collected (CY)</th>
<th>Remaining (CY)</th>
<th>Percent Complete</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide Total</td>
<td>7,200,000</td>
<td>7,102,465.16</td>
<td>97,534.84</td>
<td>98.65%</td>
<td>$156,794,971.96</td>
</tr>
</tbody>
</table>

### Top 5 Applicants (By Estimated Volume)

<table>
<thead>
<tr>
<th>SCDOT includes 16 counties</th>
<th>Total (CY)</th>
<th>Collected (CY)</th>
<th>Remaining (CY)</th>
<th>Percent Completed</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town of Hilton Head Island</td>
<td>2,200,000</td>
<td>2,181,284.35</td>
<td>18,715.65</td>
<td>99.15%</td>
<td>$45,000,000.00</td>
</tr>
<tr>
<td>Beaufort County</td>
<td>1,650,000</td>
<td>1,600,432.75</td>
<td>49,567.25</td>
<td>97.00%</td>
<td>$34,000,000.00</td>
</tr>
<tr>
<td>SCDOT</td>
<td>2,000,000</td>
<td>2,000,000.00</td>
<td>0.00</td>
<td>100.00%</td>
<td>$38,300,000.00</td>
</tr>
<tr>
<td>Charleston County</td>
<td>500,000.00</td>
<td>500,000.00</td>
<td>0.00</td>
<td>100.00%</td>
<td>$11,000,000.00</td>
</tr>
<tr>
<td>Horry County</td>
<td>221,000.00</td>
<td>221,000.00</td>
<td>0.00</td>
<td>100.00%</td>
<td>$3,700,000.00</td>
</tr>
<tr>
<td><strong>Totals for Top 5:</strong></td>
<td><strong>6,571,000.00</strong></td>
<td><strong>6,502,717.10</strong></td>
<td><strong>68,282.90</strong></td>
<td><strong>98.96%</strong></td>
<td><strong>$132,000,000.00</strong></td>
</tr>
</tbody>
</table>

### Overall Debris

<table>
<thead>
<tr>
<th>Category</th>
<th>Total (CY)</th>
<th>Collected (CY)</th>
<th>Remaining (CY)</th>
<th>Percent Complete</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Debris</td>
<td>5,140,501.80</td>
<td>5,076,638.39</td>
<td>63,863.41</td>
<td>99%</td>
<td>$104,168,971.96</td>
</tr>
<tr>
<td>Marine Debris</td>
<td>6,498.20</td>
<td>6,498.20</td>
<td>0.00</td>
<td>100%</td>
<td>$7,000,000.00</td>
</tr>
<tr>
<td>Private Property Debris</td>
<td>2,053,000.00</td>
<td>2,022,345.97</td>
<td>30,654.03</td>
<td>98.51%</td>
<td>$45,626,000.00</td>
</tr>
</tbody>
</table>
Hilton Head Island

- 2 Disaster Debris Management Sites Established

- Processed approximately 2.2 million cu. yd. of debris
  - Honey Horn Site
    - 5 Horizontal Grinders and 2 Tub Grinders at site
    - 30,000 cubic yards of debris per day
  - Chaplin Park Site
    - 2 Horizontal Grinders and 1 Tub Grinder at site
    - 7,500 cubic yards of debris per day
The PROs and CONs of Relying on Landfills for Debris Management

• The PROs
  • Permitted facility where waste is already being handled
  • Available space

• The CONs
  • Landfill may not have a cell ready
  • Budget constraints
  • How much waste can the facility handle
  • Reduces the life of landfills
The Collaborative Effort

- Counties, Towns, Cities and their contractors need to communicate with permitted facilities
  - How much debris is it
  - Time lines

- Permitted facilities need to communicate with DHEC
  - Alternative waste handling and storage options

- We all want the debris managed quickly and in a way that is protective of human health and the environment so that the impacted communities can return to a state of normalcy.