# CHAPTER 2
# DISASTER TYPES AND
# DEBRIS MODELING PROJECTIONS

## 2.1 Overview

This Chapter summarizes the types of natural disasters that could potentially occur in the County, the types of waste materials that could be generated from such events, and provides debris modeling waste generation projections. While this Plan is applicable to both natural disasters and man-made disasters, the focus of this Plan is debris management resulting from natural disasters.

In 2014 Suffolk County's Multi-Jurisdictional Hazard Mitigation Plan was approved by FEMA. The Plan includes complete hazard analyses and risk assessments for the natural disasters which may affect the county using a probabilistic approach to quantify risks. Included in this Plan are debris projections based on these FEMA approved probabilistic scenarios, including projections derived from FEMA's HAZUS estimating tool. The projections for both Hurricanes and Flood disasters used in this Plan are based on the 100 and 500 year return periods for these events. The earthquake model debris projections are based on the 500 and 2500 year return periods.

The debris projection modeling used for this Plan is displayed in table format in Section 2.3 below. Included are projections for Hurricane, Flood, and Earthquake disasters. In addition, actual debris quantities generated from the three recent Declared Disasters: the 2007 Nor'easter (DR 1692); Hurricane Irene (DR 4020); and Super Storm Sandy (DR 4085) are also displayed in the Tables for information and comparative purposes.

## 2.2 Natural Disasters

### 2.2.1 Hurricanes and Tropical Storms

Per the National Weather Service (NWS), Northern Atlantic hurricanes typically accelerate northward up the coast, reaching an average speed of 33 mph forward motion by the time they pass our latitude. As a result, the storm structure becomes skewed in such a way that the following occurs:

- Outer rain bands with tropical storm force gusts can occur way out ahead of the storm center (sometimes 14 hours in advance of the storm), which can cause coastal flooding and shut down coastal roadways.
- Flooding rains typically become focused along and west of the track of the storm, with the east side of the storm typically having only a few showers and perhaps even some sunshine.
- The strongest winds occur to the east of the track of the storm. Consequently, the storm surge (driven mostly by the strong winds) is highest also to the east of the track of the storm.
- There can be a backlash of gusty winds after the storm center passes, but typically all of the rain occurs on the front end of the storm. It is dry after the storm center passes.

***Historical Perspective on Tropical Storms and Hurricanes that have Impacted Suffolk County:*** The damaging forces of hurricanes and tropical storms include high velocity winds (up to 150 miles per hour or higher in gusts), rain and storm surge which can have devastating effects on buildings, residences, vegetation, and public infra-structure.

Storm surge results from low pressure in the center of the storm that allows water levels of the ocean to rise and lift, then fall gently. Wave action from wind on top of the surge or lifting is what causes flooding as waves and surge approach the land. The most severe damage frequently occurs in coastal areas. There has been an overall increase in the coastal population, particularly along the South Shore, putting more people and structures at risk to a natural disaster. The amount of debris generated by such an event would depend on the path, intensity and timing of the storm. The County and towns must be ready to effectively deal with a massive debris cleanup effort following a hurricane.

Although Suffolk County has not had a major hurricane directly strike us in recent years, local municipalities and agencies are concerned that the danger of such a storm making landfall here is likely to occur. This concern is supported by the International Hurricane Research Center at Florida State University which identified eastern Long Island as being one of the top ten areas in the U.S. most vulnerable to hurricanes. The 1938 hurricane, also known as the Long Island Express, and the flooding of 1955 that resulted from heavy rainfall associated with the remnants of two hurricanes are recorded as the worst natural disasters to strike Suffolk County.

The 1938 hurricane produced a storm surge that was between 30 and 50 feet above mean sea level and winds clocked at 180 mph. Debris estimates, derived from FEMA's HAZUS estimating tool were used to recreate the storm as if it struck today. The hurricane wind damage resulting from this scenario resulted in a projected debris total over 926,000 tons, with over 609,000 tons being woody vegetation and the remainder being mostly brick, treated wood, concrete and metal. This compares almost exactly with the 100 year probabilistic hurricane wind debris projection shown in Section 2.3, Table 2.1.

The Storm of '38 is generally considered by the Town and County personnel to be the model that all storms are gauged against, and is used as an unofficial worst case scenario.

Though not as strong as the 1938 hurricane, the hurricanes named Gloria (1985) and Bob (1991) are two of the more potent hurricanes to strike in the last fifty years. Hurricane Bob is noted for having caused significant crop damage in eastern Suffolk County.

On August 28, 2011, Suffolk County was impacted by Tropical Storm Irene. This storm brought sustained winds, heavy rain, destructive storm surge, and two confirmed tornadoes. At least 600,000 people were ordered to evacuate their homes from storm surge and inland flooding, and seven lives were claimed. In Suffolk County, maximum sustained winds measured 39 knots, with gusts of 53 knots. In the village of Westhampton Beach, wind gusts ranged from 28 mph to 91 mph, while Bridgehampton experience winds at 65 mph. Rainfall totals ranged from 1.07 inches in Southampton, to 6.78 inches in Northport. County-wide debris totals of approximately 95,300 tons (including both vegetative and non-vegetative debris) resulted from this storm as noted in Table 2.5. As a result of this storm, FEMA issued a disaster declaration DR - 4020 for several counties in New York, including Suffolk County.

Super Storm Sandy, one of the most recent federally declared disasters to strike Suffolk County, touched down on October 29, 2012. The County experienced maximum wind gusts between 66 mph in East Hampton and 96 mph in Eaton's Neck. The storm surge reached several feet along the entire coast of the County, measuring at over 6 feet in the Village of Lindenhurst and over 5 feet in the Hamlet of Montauk. The peak storm tide in the Hamlet of Hampton Bays was 6.53 feet on October 30$^{th}$. The aftermath of Sandy resulted in prolonged power outages from downed wires, school and business closings, flooding, fuel shortages, and downed trees across the County. County-wide debris totals of approximately 284,100 tons resulted (including both vegetative and non-vegetative debris)

from this storm as noted in Table 2.6. As a result of this storm, FEMA issued a disaster declaration DR - 4085 for several counties in New York, including Suffolk County.

### 2.2.2 Nor'easter

A Nor'easter is a cyclonic storm that moves along the East Coast of North America with damaging winds that blow from a northeasterly direction. Nor'easters can occur any time of the year, but are most frequent and strongest between September and April. These storms usually develop between Georgia and New Jersey within 100 miles of the coastline and typically move from southwest to northeast. In order to be called a Nor'easter, a storm must have the following conditions:

- Must persist for at least a 12-hour period;
- Have a closed circulation;
- Be located within the quadrilateral bounded at 45°N by 65° and 70°W and at 30°N by 85°W and 75°W;
- Show general movement from the south-southwest to the north-northeast; and
- Contain wind speeds greater than 23 miles per hour (mph).

A Nor'easter event can cause storm surges, waves, heavy rain, heavy snow, high winds, beach erosion, and coastal flooding. They have diameters that can span 1,200 miles, impacting large areas of coastline. The forward speed of a Nor'easter is usually much slower than a hurricane, so with the slower speed, it can linger for days and cause tremendous damage to those areas impacted. Approximately 20 to 40 Nor'easters occur every year, with at least two considered severe. The intensity of a Nor'easter can rival that of a tropical cyclone, and on the occasion it stalls over a coastal area, the prolonged storm conditions and resulting damages can be severe.

Long Island and New York City are particularly vulnerable to Nor'easters. Because Suffolk County is primarily surrounded by coastal waters, Nor'easters affect the entire area, particularly communities along the north and south shores of the County. Multiple sources have documented that Suffolk County has been impacted by many Nor'easters, and has felt both the direct and indirect effects, including major snow accumulations, high winds, heavy rains, flash and coastal flooding, and significant beach erosion.

### 2.2.3 Tornadoes

Damage from tornadoes is caused by high velocity rotating winds. Damage is generally confined to a narrow path extending up to half a mile wide and from a hundred yards to several miles long. Tornado debris includes damaged and destroyed structures, vegetative debris, and personal property.

### 2.2.4 Floods

The damage resulting from flood events is caused by structural inundation of flood waters and high velocity waters. Structural damage is usually limited to the floodway and the floodplain area immediately adjacent to a coastline or river. Heavy structural damage may result from high velocity waters in areas of steep slopes or failure of a flood control project, such as a dam or levee. Flood debris consists of sediment deposited on public and private property, personal belongings discarded from damaged homes, and construction materials. Landslides are often associated with flooding and result in debris consisting of soil, gravel, rock, and some construction material.

### 2.2.5 Wild Fires

Debris from wild fires consists of burned out structures, cars and other metal objects, ash, and charred wood waste. Large-scale loss of ground cover may lead to mud slides, resulting in clogged drainage structures and possible damage to homes and bridges.

### 2.2.6 Earthquakes

While the least likely of the natural disasters to occur in Suffolk County, the County experienced a minor earthquake in 2010. Earthquakes are caused by shock waves and earth movements along fault lines. Secondary damages, such as fires and explosions, may result from the disruption of utility systems. Debris consists of building materials, personal property, and sediment caused by landslides.

Earthquakes, although very low in probability of occurrence, could cause major damage and generate significant amounts of debris. The probabilistic debris projections for both 500 year (0.2%) and 2,500 year (0.04%) return period earthquakes are shown in Table 2.3.

### 2.2.7 Ice and Snowstorms

Ice storms can generate significant amounts of vegetative debris from broken tree limbs and branches, utility lines, wires, poles/towers, and building debris from damaged roofs and structures. Damage is more likely to occur when ice accumulation on trees and limbs reaches half of an inch in thickness. Ice storms are actually more difficult to deal with in terms of power restoration because the post-event weather and temperature dictates how fast ice will melt off trees and wires affecting the ability to restore power.

### 2.2.8 Catastrophic Animal Mortalities

Catastrophic animal mortalities can result from a natural disaster such as flooding caused by a hurricane or heavy rains, or may be the direct result of disease. A catastrophic storm may cause a farmer to not have access to the animals that can cause additional deaths. Also, flooding can cause animals to wash onto public and private properties. Disposal of animals presents both an environmental and health issue.

### 2.2.9 Catastrophic Vegetative Waste (from Disease and Infestation)

Suffolk County has experienced periodic occurrences of major tree diseases which have led to widespread tree death. These outbreaks are often a result of non-native diseases or insects arriving within the county and spreading rapidly throughout the existing tree population.

Oak Wilt is the most prominent disease currently threatening the tree population. Infestation from insects such as the Asian Long-horned Beetle, Southern Pine Beetle, Emerald Ash Borer, Hemlock Wooly Adelgid, Pine Shoot Beetle, Sirex Woodwasp, Tent Caterpillars, Gypsy Moths, and Viburnum Leaf Beetles also are major threats to our tree population. Information about containment of these organisms can be found at NYS DEC's Tree Pest's and Diseases page. Tree decline and death from such insect or disease outbreaks may occur over a period of months to years. While the impact of these outbreaks do not require immediate response, problems resulting from such damage may call for prompt attention from environmental officials to remove dead and hazardous trees that may be a danger to the public.

## 2.3 Debris Modeling Projections

For planning purposes in this Debris Plan, Suffolk County has used debris projections from Hurricane-winds, Floods, and Earthquakes based on probabilistic occurrences developed in the preparation of the 2014 FEMA approved Hazard Mitigation Plan. The estimates were derived from FEMA's HAZUS estimating tool (version 2.1). Hurricane - wind and Flood projections are based upon probabilistic 100-year and 500-year return period events, while the Earthquake model is based upon 500-year and 2500-year return period events.

The debris projections for the 100 year events exceed 1,700,000 tons of material. This total is derived

by combining the debris projections shown for both the Hurricane – wind and Flood 100 year return period events shown in the tables below.

It should be noted that this debris projection agrees almost exactly with the Major Hurricane debris projection for Suffolk County, of 1,775,000 tons, contained within the *2012 Regional Debris Management Plan,* produced by the Regional Catastrophic Planning Team. The total was based upon present day modeling that was done to re-create the Storm of '38 for debris projections. The Regional Plan was sponsored by FEMA, and consisted of planning team representatives from New York, New Jersey, Connecticut and Pennsylvania, as well as the US ACE, US Department of Agriculture, US EPA. The US ACE Hurricane Debris Estimating Model was also independently used to identify the projected debris totals that could be expected if the 1938 hurricane were to strike Suffolk County today. This was done for comparative estimating purposes for identifying and verifying projected debris quantities.

Pre-disaster modeling and projections provide weight/volume estimates for preparation of debris management sites and pre-positioning of resources. For each hurricane or other disaster event, these projections will be reviewed, analyzed, and refined using available modeling formulas and known data.

Debris measurements may be expressed in either weight (tons) or volume (cubic yard) units. This discrepancy can lead to confusion in temporary and long term storage requirements, transportation needs, and final disposal costs.

In order to standardize projections and analysis of debris quantities shown in Tables 2.1 – 2.6, the following guidelines should be used:

- For total debris projections from hurricanes, both the hurricane –wind and flood components (as shown in Tables 2.1 and 2.2) must be combined.
- Footnotes appearing in Tables 2.1-2.6 should be reviewed before using the data for analysis, projections or planning purposes.
- Debris unit conversions factors between tons and cubic yards shall be based on FEMA's HAZUS estimating tool as follows:
    - For Vegetative and un-compacted tree debris, 10 cubic yards (CY) of un-compacted vegetative debris volume = 1 ton of vegetative debris weight.
    - For Construction and Demolition (C&D) debris, 4 cubic yards (CY) of C&D debris volume = 1 ton of C&D debris weight

Tables 2.1-2.3 identify the estimated debris generated for each probabilistic disaster. The data displayed is fully discussed in Section 5 of the County's FEMA approved Hazard Mitigation Plan. The projected Suffolk County total is broken down into individual totals for each Town as shown.

Tables 2.4-2.6 show the actual debris quantities generated for each of three recent disasters to strike Suffolk County: the 2007 Nor'easter (DR – 1692); Hurricane Irene (DR – 4020); and Super Storm Sandy (DR – 4085). The totals identified were taken directly from individual Project Worksheets generated by FEMA, NYS OEM and the specific municipality for each of the three disasters. Some types of debris are displayed in both cubic yard and ton measurement units as a result of the Project Worksheet (PW) reporting. There is no duplication in these totals. For clarity and standardization, footnotes identify totals converted to tons.

**Table 2.1: Debris Production for 100- and 500-Year Mean Return Period Hurricane-Related Winds**

| Jurisdiction | Brick and Wood (tons) | | Concrete and Steel (tons) | | Tree (tons) | | Eligible Tree Volume (cubic yards) | |
|---|---|---|---|---|---|---|---|---|
| | 100 Year | 500 Year | 100 Year | 500 Year | 100 Year | 500 Year | 100 Year | 500 Year |
| Babylon | 10,425 | 608,390 | <100 | 21,475 | 10,950 | 80,319 | 78,108 | 569,681 |
| Brookhaven | 102,733 | 96,822 | 543 | 547 | 126,196 | 97,333 | 593,239 | 541,876 |
| East Hampton | 42,266 | 89 | 1,012 | 0 | 76,326 | 973 | 250,422 | 3,404 |
| Huntington | 9,241 | 1,138,613 | 0 | 44,595 | 22,696 | 316,221 | 148,804 | 1,986,039 |
| Islip | 27,719 | 250,197 | <100 | 6,369 | 41,023 | 103,997 | 276,386 | 726,180 |
| Riverhead | 19,321 | 1,851 | 287 | 0 | 49,289 | 11,270 | 98,359 | 22,192 |
| Shelter Island | 4,976 | 36 | <100 | 0 | 10,682 | 0 | 34,183 | 0 |
| Smithtown | 11,332 | 165,900 | <100 | 4,057 | 15,785 | 73,110 | 104,675 | 476,364 |
| Southampton | 102,625 | 1,927 | 2,272 | 0 | 131,724 | 10,223 | 420,463 | 32,741 |
| Southold | 36,025 | 601 | 909 | 0 | 56,440 | 1,316 | 183,989 | 3,916 |
| **Suffolk County** | **366,663** | **2,264,426** | **5,185** | **77,043** | **541,111** | **694,762** | **2,188,628** | **4,362,392** |

*Source: HAZUS-MH 2.1*

**NOTES:**

**- Total Suffolk County Debris Projection for the 100 year return Hurricane-wind event is 912,959 tons.**

**- For a Total Wind and Flood debris projection for a hurricane, combine the Wind event from above with the corresponding Flood event in Table 2.2**

**Table 2.2: Debris Production for 100- and 500-Year Mean Return Period Flood Event**

| Jurisdiction | 100-Year Flood Event | | | | 500-Year Flood Event | | | |
|---|---|---|---|---|---|---|---|---|
| | Total (tons) | Finish (tons) | Structure (tons) | Foundation (tons) | Total (tons) | Finish (tons) | Structure (tons) | Foundation (tons) |
| Babylon | 38,725 | 29,999 | 5,241 | 3,482 | 66,315 | 44,949 | 11,759 | 9,597 |
| Brookhaven | 177,725 | 89,034 | 42,217 | 46,475 | 253,376 | 106,116 | 69,902 | 77,367 |
| East Hampton | 66,959 | 30,138 | 19,260 | 17,562 | 105,564 | 40,649 | 33,505 | 31,410 |
| Huntington | 69,615 | 18,779 | 21,475 | 29,363 | 92,734 | 22,152 | 30,578 | 40,002 |
| Islip | 113,675 | 66,681 | 22,052 | 24,942 | 161,462 | 84,254 | 38,344 | 38,865 |
| Riverhead | 21,196 | 8,249 | 6,523 | 6,423 | 32,847 | 10,084 | 11,347 | 11,415 |
| Shelter Island | 10,882 | 5,677 | 2,670 | 2,534 | 15,587 | 6,290 | 4,500 | 4,798 |
| Smithtown | 15,357 | 6,430 | 3,928 | 4997 | 22,834 | 7,796 | 6,481 | 8,556 |
| Southampton | 227,499 | 129,714 | 48,324 | 49,462 | 370,958 | 164,165 | 96,761 | 110,035 |
| Southold | 56,548 | 25,983 | 14,801 | 15,766 | 80,320 | 31,502 | 23,558 | 25,260 |
| **Suffolk County** | **798,181** | **410,684** | **186,491** | **201,006** | **1,201,997** | **517,957** | **326,735** | **357,305** |

*Source: HAZUS-MH 2.1*

*NOTES: Total Suffolk County Debris Projection for the 100 year return Flood event is 798,181 tons; For a Total Wind and Flood debris projection for a hurricane, combine the Flood event from above with the corresponding Hurricane-wind event in Table 2.1.*

**Table 2.3: Estimated Debris Generated by the 500- and 2,500-year Mean Return Period Earthquake Event**

| Jurisdiction | 500 – Year | | 2,500 - Year | |
|---|---|---|---|---|
| | Brick/Wood (tons) | Concrete/Steel (tons) | Brick/Wood (tons) | Concrete/Steel (tons) |
| Babylon | 13,740 | 5,085 | 121,606 | 108,519 |
| Brookhaven | 30,366 | 7,519 | 244,646 | 121,171 |
| East Hampton | 1,507 | 309 | 11,167 | 3,649 |
| Huntington | 14,335 | 4,300 | 123,348 | 78,878 |
| Islip | 19,429 | 6,254 | 165,050 | 120,073 |
| Riverhead | 3,031 | 1,032 | 23,418 | 16,939 |
| Shelter Island | 130 | 23 | 1,152 | 313 |
| Smithtown | 9,149 | 2,384 | 78,669 | 43,163 |
| Southampton | 6,286 | 1,360 | 44,269 | 15,956 |
| Southold | 2,310 | 619 | 16,381 | 8,410 |
| **Suffolk County** | **100,281** | **28,884** | **829,707** | **517,070** |

*Source: HAZUS-MH 2.1*

*NOTES: Total Suffolk County Debris Projection for a 500 year return Earthquake event is 129,165 tons*

**Table 2.4: Debris Production Totals Generated by the 2007 Nor'easter (DR-1692)**

| Jurisdiction | Vegetative Debris | | Construction & Demolition (C&D) | | Household Hazardous Waste (HHW) | | White Goods | | E-Goods | | Mixed Debris | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CY | TONS | CY | TONS | CY | TONS | CY | TONS | CY | TONS | CY | TONS | CY | TONS |
| Babylon | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **17** | **0** |
| Brookhaven | 728 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **728** | **0** |
| East Hampton | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** |
| Huntington | 400 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **400** | **0** |
| Islip | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** |
| Riverhead | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** |
| Shelter Island | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** |
| Smithtown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **0** |
| Southampton | 610 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **610** | **0** |
| Southold | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **40** | **0** |
| Suffolk County | 25 | 16,984 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **25** | **16,984** |
| **Total** | **1,820** | **16,984** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1,820** | **16,984** |

*Notes: Total debris generated for DR-1692 calculated as 17,166 tons - based on conversion factor of 10 CY per ton of vegetative debris.*

**Table 2.5: Debris Production Totals Generated by Hurricane Irene (DR-4020)**

| Jurisdiction | Vegetative Debris | | Construction & Demolition (C&D) | | Household Hazardous Waste (HHW) | | White Goods | | E-Goods | | Mixed Debris | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CY | TONS | CY | TONS | CY | TONS | CY | TONS | CY | TONS | CY | TONS | CY | TONS |
| Babylon | 13,117 | 3,552 | 94 | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | **13,211** | **3,636** |
| Brookhaven | 105,836 | 17,864 | 93 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **105,929** | **17,905** |
| East Hampton | 10,406 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **10,406** | **0** |
| Huntington | 63,694 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **63,694** | **0** |
| Islip | 29,739 | 5,998 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **29,739** | **5,998** |
| Riverhead | 6,839 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **6,839** | **0** |
| Shelter Island | 8,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **8,000** | **0** |
| Smithtown | 0 | 2,444 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **2,444** |
| Southampton | 37,824 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **37,824** | **0** |
| Southold | 134,361 | 6,500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **134,361** | **6,500** |
| Suffolk County | 0 | 17,814 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | **17,814** |
| **Total** | **409,816** | **54,172** | **187** | **125** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **15** | **410,003** | **54,297** |

*Notes: Total debris generated from DR-4020 calculated as 95,342 tons - based on conversion factors of: 10 CY per ton of vegetative debris; and 4 CY per ton of C&D and other debris.*

**Table 2.6: Debris Production Totals Generated by Super Storm Sandy (DR-4085)**

| Jurisdiction | Vegetative Debris | | Construction & Demolition (C&D) | | Household Hazardous Waste (HHW) | | White Goods | | E-Goods | | Mixed Debris | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CY | TONS | CY | TONS | CY | TONS | CY | TONS | CY | TONS | CY | TONS | CY | TONS |
| Babylon | 1,535 | 17,163 | 1,644 | 60,720 | 0 | 63 | 0 | 0 | 0 | 0 | 0 | 135 | **3,179** | **78,081** |
| Brookhaven | 282,136 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 0 | **290,983** | **0** |
| East Hampton | 17,043 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **17,043** | **0** |
| Huntington | 417,723 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 273 | 0 | **417,996** | **0** |
| Islip | 6,930 | 18,090 | 181 | 821 | 0 | 0 | 0 | 0 | 0 | 0 | 288 | 1,504 | **7,399** | **20,415** |
| Riverhead | 17,291 | 4,314 | 11 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **17,302** | **4,320** |
| Shelter Island | 2,500 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2,500** | **0** |
| Smithtown | 1,624 | 30,614 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1,624** | **30,614** |
| Southampton | 119,936 | 899 | 0 | 0 | 0 | 0 | 163 | 0 | 0 | 0 | 360 | 0 | **120,459** | **899** |
| Southold | 125,980 | 0 | 3,632 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **129,612** | **0** |
| Suffolk County | 465,352 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **465,352** | **0** |
| **Total** | **1,458,050** | **71,088** | **14,233** | **61,547** | **0** | **63** | **163** | **0** | **0** | **0** | **1,003** | **1,639** | **1,473,449** | **134,337** |

*Notes: Total debris generated from DR-4085 calculated as 284,067 tons – based on conversion factors of: 10 CY per ton of vegetative debris; and 4 CY per ton of C&D and other debris.*