

# Town of Marlboro



## 2011 Tropical Storm Irene After Action Review Report

February 6, 2012

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1. Purpose. This report records observations, issues, and recommendations from the Town of Marlboro's experiences with tropical storm Irene in 2011 as a reference for the future. As an After Action Review, or AAR, it is intended to help the town sustain good things that happened and improve things that could go better during another disaster. While it contains information about what happened background, it is by no means a complete historical record.

2. Town Goals. Marlboro had clear general, if unstated, goals in preparing for, responding to, and recovering from Irene.

a. Preparation. In the days before Irene, the town wanted residents to be ready to protect themselves and their property from high winds, heavy rain, and power outages. The highway department wanted its vehicles and equipment to be ready to clear downed trees and repair roads.

b. Response. During the storm and its immediate aftermath, the highway department wanted to keep main town roads open, with reopening Ames Hill Rd as a priority due to the closure of Route 9. The town wanted to maintain communications with all residents.

c. Recovery. After the storm, the town wanted to ensure that all residents were physically unharmed and had access to normal services as soon as possible. It also wanted to control rumors and ensure all residents had accurate information about the situation and recovery efforts. The highway department wanted to ensure that all roads were open and ready for winter.

3. What Happened?

a. Preparation. Immediately before a potential disaster, the preparedness phase includes reviewing and revising response plans and preparing resources.

(1) The media and weather services provided timely and fairly accurate warnings of the winds and rain that Irene would bring.

(2) The Emergency Management Director (EMD) reviewed emergency plans and the database of people with special needs. She called to verify that people on oxygen had access to a generator and people with special medications had enough on hand.

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(3) The highway department checked and prepared its vehicles and road-clearing equipment and topped off all of its fuel supplies.

(4) Townspeople prepared themselves for winds, rain, and power outages - almost everyone was ready for short term (1-2 day) problems. However, most people did not expect to be isolated for four days or longer. Hurricanes in living memory had not been very destructive and the forecasts were not dire enough to convince many Vermonters that the rains would cause such widespread, massive erosion.

b. Tropical Storm. On August 28, 2011, Irene hit on Sunday morning with relatively light winds but very heavy rains – 7 inches in 18 hours – that caused flash flooding and massive fluvial erosion on a scale similar to the Great Flood of 1927.

(1) Irene affected the entire region – 225 towns in Vermont as well as many to the south in Massachusetts. The state government buildings in Waterbury, including the Vermont Emergency Management Emergency Operations Center, were flooded out. It also severely damaged over 500 miles of state highways and 200 state bridges. As a result, resources that the state would normally use to help towns during a local emergency were scarce or not available.

(2) While Irene affected almost all of Marlboro, different areas of town were affected very differently. Some people were not affected directly and many people lost power for a relatively short time. However, all roads in and out of town were out for a day and a half, completely isolating most residents. Along Augur Hole Rd, residents lost power, phone service, driveways, and the road itself for several days (and in some cases for a week or even longer).

(3) Many public roads and bridges were damaged and closed for several days.

- State Route 9 was closed until September 9
- Augur Hole Rd washed entirely away in places and was not completely open for normal traffic (bridgework included) until October 21
- Ames Hill Rd was impassable until 6pm the following day and required constant maintenance because of the increased traffic as a Route 9 bypass
- Adams Crossroad washed out east of Butterfield Rd
- The west end of Town Hill Rd washed out
- Hunter Brook Rd washed out

... there were literally hundreds of smaller washouts throughout the town.

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(4) Flooding destroyed one house (on Augur Hole Rd) and one business (Marlboro Collision on Route 9). Several houses had flooding problems and approximately 30 private driveway bridges or culverts washed out.

(5) Short term power outages (1-2 days) were widespread. While some areas of town did not lose power, others did not get power back for up to 9 days.

(6) Phone service for some areas (primarily along Augur Hole Rd) was out for three weeks. The storm also washed out the Digital Subscriber Line (DSL) switching station for the area, knocking out high-speed Internet connectivity for even longer.

(7) Storm runoff created doubt about whether or not wells, streams, and ponds were contaminated.

(8) Because of the road closures, several groups of travelers, including two large (50+ people) wedding parties, could not get through or leave town.

c. Response. The response phase of a disaster includes the immediate actions to save lives, protect property and the environment, and meet basic human needs.

(1) The foremost response to Irene was the closure of roads to prevent accidents where culverts, bridges, and the road itself washed out. As the storm developed, there was simply too much damage to mark specific problem areas with normal signs and the only solution was to close entire road networks. Road crews were consumed with repairing damage and in many cases, crews or residents set up traffic cones or non-standard signs to warn drivers. The state's web-based road status system, 511 (designed only to track state roads), was overwhelmed and ineffective. Many people simply refused to accept the fact that so many roads were closed; after the first day, many people began driving on the closed roads despite signs and warnings.

(2) The Emergency Management Director (EMD) activated the Emergency Operations Center (EOC) on the morning of the storm by calling and using fire company pagers to notify the EOC staff. Some of the staff had trouble getting in because of the roads and some were delayed by other duties, but by mid-morning the EOC was coordinating Marlboro's activities with surrounding towns and the state.

(3) The Vermont Agency of Transportation (AOT or VTrans), Marlboro highway department, and even local citizens immediately began working to restore roads to make them at least passable for emergency vehicles.

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(a) The AOT garage in Marlboro currently belongs to district 1 (Bennington), while district 2 (Dummerston) provides any engineering or other support for the town. AOT was overwhelmed with state road problems and could not assist the town in this case. Instead, the AOT and Vermont State Police coordinated with local EOCs to prioritize town repairs of east-west roads to create an alternate route to Route 9.

(b) The town highway department's initial priorities were to restore emergency vehicle access to all the residences in town (particularly difficult in the case of Augur Hole Rd), repair and maintain Ames Hill Rd as the main bypass for Route 9, and improve other roads as time and resources allowed.

(c) Traffic - emergency, local, and through - hampered all road crews in their restoration work. While the state Agency Of Transportation (AOT) can close a state highway, the town does not technically have authority to restrict travel on town roads without the approval of the secretary of transportation (23 V.S.A. § 1006a and 1042). Some traffic undoubtedly was essential, but the wear and tear of vehicles driving on already damaged roads or roads not designed to support heavy loads, plus the occasional accident, delayed the rebuilding, repairs, and maintenance. Inaccurate or out of date information as well as rumors – primarily on the radio and Internet – also led people to attempt to travel on roads when they should not have.

(4) The EOC made many calls residents, or to neighbors for people who had lost phone service, to provide warning and gather status information during the storm itself and the following days. While time consuming, these direct reports were critical in understanding events early in the response.

(5) In addition to fixing roads, the town roads crews talked to people in the areas where they were working to make sure they were safe and to get people connected with the outside world. Since the road crews were working in the hardest hit areas, had radios, and were driving construction vehicles, this proved to be an invaluable source of information both for the people in the area and the EOC.

(6) Marlboro College stayed in regular contact with the EOC with at least twice-daily phone calls to exchange information. The college was just beginning a fall semester when Irene hit and had about 130 people on campus; their generators kept all of their key systems working. The main issue the college had was identifying what guidance to give students because of the road damage.

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(7) Because storm runoff might have contaminated private wells, local media emphasized that people should test their water if in any doubt. In the week after the storm the Vermont Department of Health (VDH) gave the town water test kits to give out to residents. Only about 20 people took the kits, and in practice, because the kits were for artesian wells (which are not common in town) and the first set of directions for using the kits was so cumbersome, most people did not use them. VDH later released simpler instructions, but ultimately there were no reports of contaminated wells. Presumably, because of the hilly terrain in Marlboro, most of the rainwater collected in streams (leading to the erosion problems) instead of flooding wells.

(8) Because of storm runoff, the state recommended closing South Pond to swimming until the water could be tested for contaminants. The state is responsible for bodies of water in Vermont, but the Ames Hill – Marlboro Community Center (AHMCC) owns the land with the beaches. A Coast Guard team took samples, but when the results were not immediately available the AHMCC closed South Pond for swimming on September 2 on the town health officer's recommendation.

(9) Neighbors hosted people who needed temporary shelter in their homes and at the Meeting House church - a few Marlboro residents and several travelers became trapped in the town on the day of the storm. There were also two large wedding parties with over 50 guests that required special attention and support. One party at a private residence on Butterfield Rd worked on a flooded part of the road themselves to make it passable. The other party at Camp Neringa on MacArthur Rd made continual calls for assistance to local, state, and media sources, creating a distraction for the town EOC for several days.

(10) The American Red Cross opened a regional shelter in Brattleboro on August 27, primarily for people who evacuated as a precaution. Many people will not leave town for a shelter unless their homes have been destroyed (i.e. not as a precaution or if a home was damaged). As events unfolded, had Marlboro residents needed shelter, they would not have been able to get there for two days or more.

d. Recovery. The recovery phase of a disaster is the short and long term restoration of sites and services – the return of people's lives to normal or a new normal.

(1) Road rebuilding and repairs were the primary focus of recovery.

(a) The town highway department and local contractors rebuilt local roads and bridges; except for Augur Hole Rd, all town roads were open for emergency vehicles

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and local residents by September 8. AOT reopened Route 9 on September 9. All roads and bridges (including Augur Hole Rd) were open by mid-October and the roads could support normal traffic by mid-November. (These may seem like long time periods, but given the damage the work done was simply herculean - the quality and speed of the work the contractors and town highway department performed cannot be overstated.)

(b) The Vermont Agency of Natural Resources (ANR) issued emergency guidelines for in-stream work on September 3. This process, which eased administrative overhead without waiving legal requirements, made it immeasurably easier for crews to repair road damage.

(c) Traffic degraded roads and hampered repair work throughout the process. Repairs could have gone faster with roads completely closed to traffic or with trips (even official ones, much less detoured traffic and sightseers) coordinated and minimized.

(2) The Emergency Operations Center (EOC) remained active (with at least one person staffing phones and coordinating activities) through October. The main function of the EOC was that of an information center, tracking the status of problems and coordinating actions with volunteer and state organizations.

(a) Early in the response and recovery, the Emergency Management Director (EMD) identified approximately 55 houses/families that the storm had cut off. In addition to tracking the people and property, the EOC was also the conduit for many friends and relatives from outside the area to get information about and to residents. In some cases, local police from other states called the EOC on behalf of the relatives.

(b) On September 3, the selectboard relieved the Emergency Management Director (EMD), leaving the board directly responsible for EOC and recovery operations.

(3) As immediate danger passed, volunteers (including but not limited to Marlboro Alliance members) quickly began organizing to help residents recover. They worked closely with the EOC to check on people, compile lists of needs, identify resources available (such as generators), verify and update maps, and provide information and supplies to people who had been affected. Without the volunteers, the town simply would not have had people to canvas the many affected areas.

(a) One of the goals for the EOC and the volunteers was to contact everyone who was isolated at least once a day to check on them and pass on the latest information (or at least confirm that there were no updates). Volunteer coordinators

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organized a daily circuit along Augur Hole Rd and set up a local bulletin board at a business (Al Can) near the confluence of the Bellows and Gulf Brooks. Two people also set up online social media (Facebook) pages to augment the town web site, bulletin boards, and physical visits.

(b) In a few areas, established neighborhood networks were very effective in passing status information and news between the town and individual households.

(c) Almost everyone realized the magnitude of the situation and recognized the herculean efforts to restore services. Nevertheless, some people felt that visitors were bothering them and visits were a distraction, while others felt that they did not receive enough news and attention from the town.

(d) The Marlboro Alliance administered a relief fund for Irene. While the payments may not have been large, they were significant, and they helped reinforce the idea that recipients were not alone with their problems.

(4) Utilities restored power and phone service as their schedules and road access allowed. While there was not a formal company-town link, the EMD was able to coordinate directly with power and telephone company utility crews at their local staging points. Phone companies set up temporary mobile phone coverage with portable towers and the town of Newfane gave out some mobile phones to residents in the northern part of town; these helped in some cases, but did not provide truly effective coverage in Marlboro's hilly terrain.

(5) The town health officer tested the water in South Pond, and when it turned out to be safe the AHMCC reopened the beach for swimming on September 8.

(6) Residents who lost driveway bridges and Marlboro Collision (the business destroyed on Route 9) began rebuilding as soon as possible. However, the National Flood Insurance Program (NFIP) requires that towns follow their existing permitting process for rebuilding after a flood. If a town does not issue permits, NFIP can sanction the town: residents would not be able to get flood insurance and would not be eligible for assistance after a flood. To make this somewhat easier, the selectboard waived permitting fees for rebuilding and the state sent experts to work with the Zoning Administrator to review projects and grant on-the-spot state approval (if appropriate) for applications that would normally take months.

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(7) Marlboro response and recovery costs for Irene were approximately \$914,000. (For future comparison, in 2011 the total town budget, not including the school district, was \$557,000 and the real value of property in the town was \$160 million.) This was much lower than some towns, in part because of different levels of damage and in part because of the highway department's cost-effective and highly efficient use of resources. (Halifax, for example, estimated their costs at over \$7 million.) Under current normal rules, the town would expect to be responsible for 12.5% of this amount, with Vermont paying another 12.5% and the Federal Emergency Management Agency (FEMA) providing 75% through Public Assistance (PA) grants.

#### 4. Recommendations.

a. Specific. The following are specific to recovery from Irene and mitigation against disasters in the next few years. The person/group responsible is shown in parentheses.

(1) Stream Blockages (Road Foreman). The Windham Regional Commission (WRC) is working with towns to identify debris in streams that might affect roads. While there is not currently funding to clear any blockages, the only way to get funding is to map and estimate the scope of the problem across the town and county.

(2) Alert System (Emergency Management Director). The town needs a system for broadcasting messages to all residents. (The school has a telephone system for parents.) Currently, Vermont Yankee provides a telephone calling system (Code Red) and in early 2012 Vermont will roll out a VTAlert system that can make phone calls and send text and e-mail messages. The town should identify a preferred system, establish policies and procedures for it, publicize it, and test it annually.

(3) Green Up Day 2012 (Emergency Management Director). The major blockages from Irene are clear, but there is a lot of debris on the ground and in streams and ditches. During the spring Green Up Day (May 5, 2012) the town should encourage people to check ditches and culverts for debris and blockages (clearing it if safe to do so or notifying the highway department if not).

(4) Local Shelters (Emergency Management Director). In an emergency, Marlboro residents may need access to one or more local shelters (as opposed to a regional one in Brattleboro). The town should identify, coordinate, and develop sites with owners and the American Red Cross ahead of time.

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(5) Volunteer Coordination (Marlboro Alliance). Managing people to canvas the town is a job in and of itself during any kind of disaster. The town should have a Volunteer Coordinator in the Emergency Operations Center (EOC) as part of the standing staff (most of whom are themselves volunteers).

(6) Neighborhood Networks (Marlboro Alliance). During a major emergency, people are frequently isolated except for support and communication among neighbors. The town already has a program supporting neighborhood networks; continuing and expanding this to a town-wide program will fuel resilience during another disaster.

(7) Flood Hazard Areas (Planning Commission). The existing flood maps for Marlboro are based on data and systems from the 1930s. The Federal Emergency Management Agency (FEMA) is conducting flood map modernization that can identify fluvial erosion areas (which will be much more relevant). A change in the town's bylaws can start this process.

(8) Culvert and Bridge Standards (Road Foreman). The town currently follows state standards for culverts and bridges (some crossings do not meet standards but are grandfathered). During Irene many culverts were sufficient (whether or not they met state standards), but many were not (again whether or not they met state standards). The town should weigh the risk and cost when replacing or building new crossings and consider using culverts or bridges that exceed state standards.

b. General. The following topics are more general recommendations for the future – considerations that are valid now but will probably also apply in 2030 and beyond.

(1) Preparation and Expectation Management. If a disaster is likely, the town leaders and Emergency Operations Center (EOC) staff should review plans, publish a town warning message while communications are working, and validate mechanisms for continuing communications when and if the disaster hits.

(a) Residents should be prepared to be completely isolated (no power, communications, or road access) for up to 96 hours.

(b) The town should keep track of people with special needs and those people should have primary and backup systems for getting assistance.

(c) The town should warn residents with historical information (especially for newer residents). If possible, it should provide reasonable contingency directions – e.g.

if the power goes out, these people have generators they can share; if communications are down, the town will post information notices at these places; if roads are closed, these are the primary and alternate routes the town will try to reopen first; etc.

(2) Unity of Command. Everyone must work towards common goals during a disaster. Vermont and Marlboro currently use the Incident Command System (ICS) model for command and control during crises. The Emergency Operations Center (EOC), led by the Emergency Management Director (EMD), is the key to coordinating disaster response and recovery actions and supports the incident commander. For major disasters with long-term effects the selectboard will act as the commander through the EMD (who must have ICS training). To avoid misunderstandings and miscommunications during disaster response and recovery, it is critically important that the players understand their responsibilities and limits at any given time and if there is confusion, clarify their roles immediately.

(3) Documentation Collection. After a disaster, the Federal Emergency Management Agency (FEMA) normally provides Public Assistance (PA) grants to reimburse town expenses. However, FEMA requires documentation of problems, solutions, costs, etc. that is easiest to generate as work is done. Before beginning response and recovery work, workers should know to record (with notes and pictures) as much as possible, and immediately after a disaster the treasurer should review paperwork from recent disasters to see what FEMA will need.

(4) Neighborhood Status and Granularity. During a disaster, it is very easy to overgeneralize that either everyone or no one is unaffected or suffering. While difficult, it is important to identify and prioritize general relief efforts as soon as possible, while at the same time tracking specific problems in all areas to resolution.

(5) State and Federal Requirements. While reasonable breaches are normally forgiven, laws frequently do not provide exceptions for emergency actions. At all levels, the best protection for people trying to do the right thing is expectation management – letting people know as soon as possible what is allowed, what is allowable only during an emergency, and what is forbidden (and what to do if someone has made a mistake).

(6) Recovery Committee. After a disaster, the Emergency Operations Center (EOC) shuts down but recovery work can take months (or years) and exhaust a town's staff. A good way to manage this is to establish a temporary Town Recovery Committee. The committee's mission should be to manage and coordinate town recovery operations in support of the town officers until specific tasks are completed (for

example, all town roads are open, any rebuilding permits are requested, and FEMA accepts any grant applications).

5. Themes. The following issues were common through all phases of the disaster and generally apply at the household, neighborhood, town, and state level.

a. Volunteers and Neighbors Helping Neighbors.

(1) In Vermont, Irene brought out the best in a lot of people. Neighbors helped each other, residents hosted stranded travelers, and volunteers canvased areas and brought supplies and information to people who were otherwise isolated. This may simply be "the Vermont way", but Marlboro and Vermont should do everything they can to encourage and maintain this over time.

(2) Managing volunteers is an important and difficult task during an emergency. Many people who are unaffected will want to help out very early in response and recovery when there may not be enough for them to (safely) do.

(a) A volunteer coordinator is invaluable. While maintaining a continuous assignment process is ideal, it also takes a lot of time; having one or two daily volunteer check-in and project assignment periods can be an efficient way to manage people.

(b) It is important to provide volunteers with focus and options so that they can contribute (to town priorities) and feel rewarded (so that they will continue to help). Where possible, the town should have projects, priorities, and if possible leaders and resources (such as protective equipment) available for volunteers during response and recovery. Prior training and prepared classes on key information (such as hazardous cleanup safety) are very helpful.

b. Road Status.

(1) The closure of so many state and town roads highlighted the lack of a Common Operational Picture (COP) of road status between state agencies, towns, and the public. The town highway department and Emergency Operations Center (EOC) had a good picture of town roads during the response and recovery period, and they coordinated with the state agency of transportation, state police, and other towns by phone. However, the lack of a publicly available statewide COP led many people to drive on closed roads in a vain effort to get from one place to another, hampering reconstruction efforts in the process.

(2) After a week the Windham Regional Commission (WRC) established an online map showing town road status. This was hugely popular and made an enormous difference in allowing people to get from place to place. However, it also diverted traffic that may not have been vital to roads that were passable but under construction, increasing maintenance and leading to heavier-than-supported loads on some town roads.

(3) The town and state should establish a common system for labeling and publishing road status that can be updated in near real time based on reports from road crews. Potential categories may include:

- Open for normal traffic (unrestricted)
- Open for limited traffic (expect delays)
- Closed (except for emergency vehicles and local residents)
- Out (impassable)

#### c. Information Management.

(1) Accurate, timely information is at a premium during an emergency. Old, inaccurate, and redundant information creates confusion and delays response and recovery actions. The public should be able to get news and updates from familiar places; using normal channels to provide information and manage expectations is the best way for the town to satisfy most people and reduce distractions.

(2) The Emergency Operations Center (EOC) must be the authoritative source for accurate and up-to-date information during an emergency. It must be able to collect information from any number of sources and distribute information through all kinds of media. All official public information should be marked as coming from the EOC and have an as-of date and time on it.

(3) During an emergency, there are four target audiences: responders (including town leaders), affected residents, non-affected residents, and interested outsiders (including commuters and second home owners). Responders currently and typically have adequate communications means and equipment. For other audiences, normal methods currently include radio messages, phone calls, meetings, bulletin boards, mail, e-mail, and the town web site. Messengers, alert systems, social media, and neighborhood networks are a few (currently) non-standard but effective means for communicating when normal methods are not enough.

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(4) While the Internet should be a key tool for the town to collect and share information, the town must also have well-known alternate systems. Web pages and social media are an excellent method for providing near real-time, persistent updates to anyone who has Internet access (increasingly including mobile phone users). Large sections of Marlboro do not currently have ready or high-speed access to the Internet, but those who do increasingly expect to find real time information available; people may find and act on misinformation if authoritative information is not available. However, during an emergency people are likely to lose Internet access and the town must still provide regular updates. If possible, the town should identify these systems, such as a daily news flyer, and let people know how to get access before a disaster.

(5) Residents and town leaders are interested in and affected by what is happening in the surrounding towns (for example, residents will want to know road and school statuses or if the supermarket in Wilmington is closed). The EOC must track issues in the surrounding towns, coordinate them with responders, and make that information available to residents.