

MAGIC 8 BALL FORECAST

9 AM  
SOFT  
SHOWERS  
54

“YOU SAY ITS  
GOING TO RAIN  
A LITTLE”

# THE GREAT VERMONT FLOOD OF JULY 2023

VERMONT URBAN SEARCH AND RESCUE TASK FORCE 1

MIKE CANNON, PROGRAM MANAGER

AARON COLLETTE, RESCUE MANAGER



## ROSTERED Crew:

The Below members are requested to be at the Colchester Cache for 1500hrs and be ready for a 24 hour in state deployment. This activation is for all hazards.



ELEVATION MAP  
OF THE  
STATE OF VERMONT

1880

1:500,000

U.S. GEOLOGICAL SURVEY

WASHINGTON

1880

# VERMONT WATER RESCUE RESOURCES

- 1- TYPE III STATE URBAN SEARCH AND RESCUE TASK FORCE WITH TYPE I SWIFTWATER (45 PERSONNEL)
- 2 TYPE II SWIFTWATER TEAMS (MOA) (12 PERSONNEL EACH)
- 8 TYPE III SWIFTWATER TEAMS (MOA) (6 PERSONNEL EACH)
- 3 WATER RESCUE TEAMS WITH OTHER MUNICIPAL AGENCIES

# OVERVIEW (MID JULY - 4 AUGUST 2023)

4-9" COMMON OVER SPINE OF GREEN MOUNTAINS

9.2" HIGHEST RECORDED 48 HR TOTAL

CATASTROPHIC FLASH FLOODING AND RIVER FLOODING

RESULTING IN:

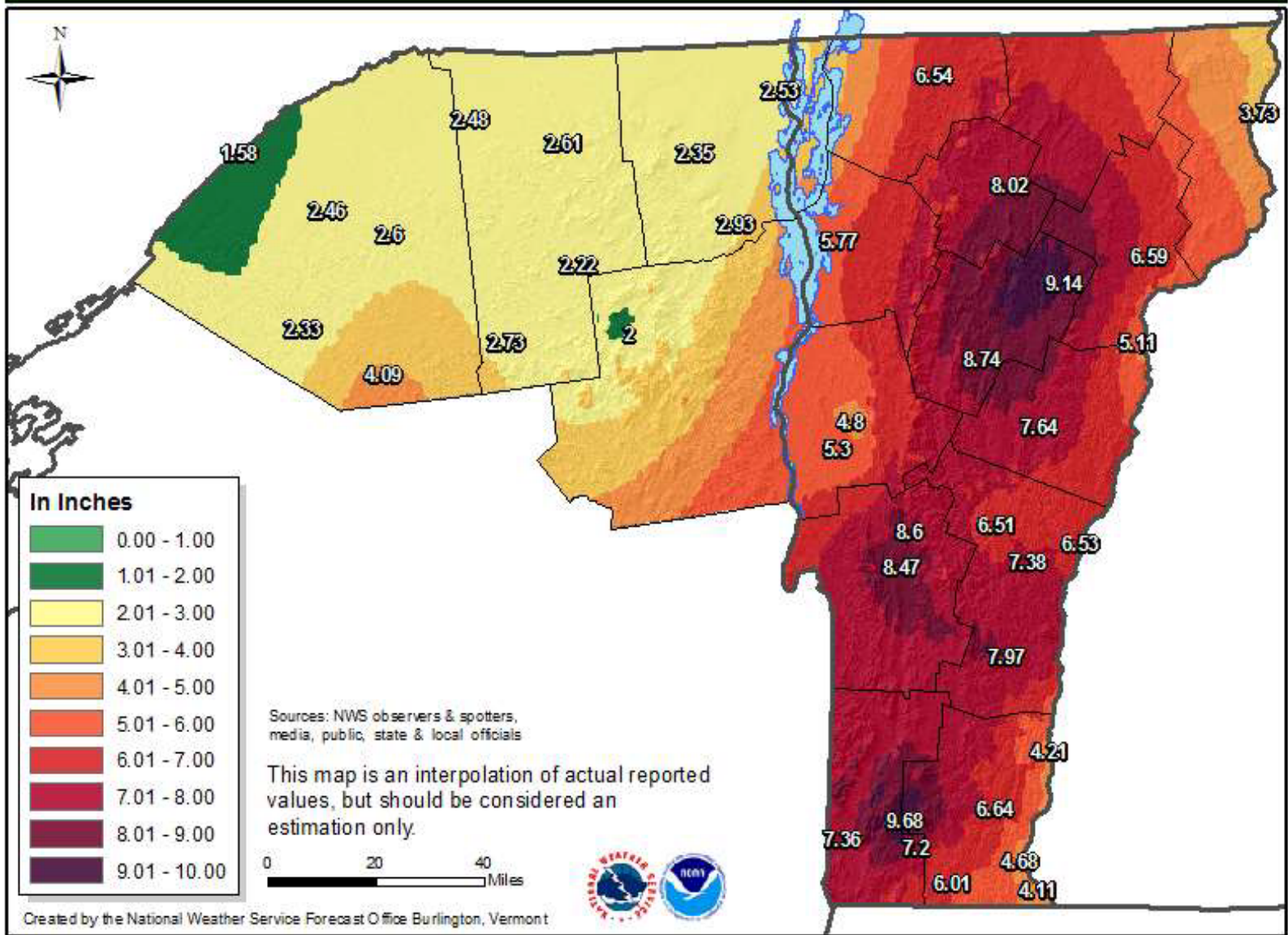
- EXTENSIVE FLOODING TO COMMUNITIES,
- WASHOUTS OF ROADS AND BRIDGES
- LAND AND MUDSLIDES
- SIGNIFICANT PROPERTY LOSSES (MONETARY VALUES ARE STILL BEING TALLIED)

# HISTORICAL FLOODS IN VERMONT

## FLOOD OF NOVEMBER 1927

- WORST NATURAL DISASTER IN VERMONT HISTORY
- OCTOBER RAINFALL 200-300% OF NORMAL
- RAINFALL 9-10"
- 84 FATALITIES
- 1 DAM WASHED AWAY
- HUNDREDS INURED
- 1,285 BRIDGES DESTROYED
- 645 HOMES AND BUSINESSES SWEEP AWAY
- HUNDREDS OF MILES OF ROAD AND RAILROAD TRACKS DAMAGED

# North Country Total Precipitation ~ November 1-6, 1927



1.58

2.48

2.61

2.85

2.53

6.54

3.73

2.46

2.6

2.93

5.77

8.02

2.33

2.72

2

9.14

6.59

4.09

2.73

4.8

8.74

5.11

5.3

7.64

8.6

6.51

6.53

8.47

7.38

7.97

7.36

9.68

6.64

4.68

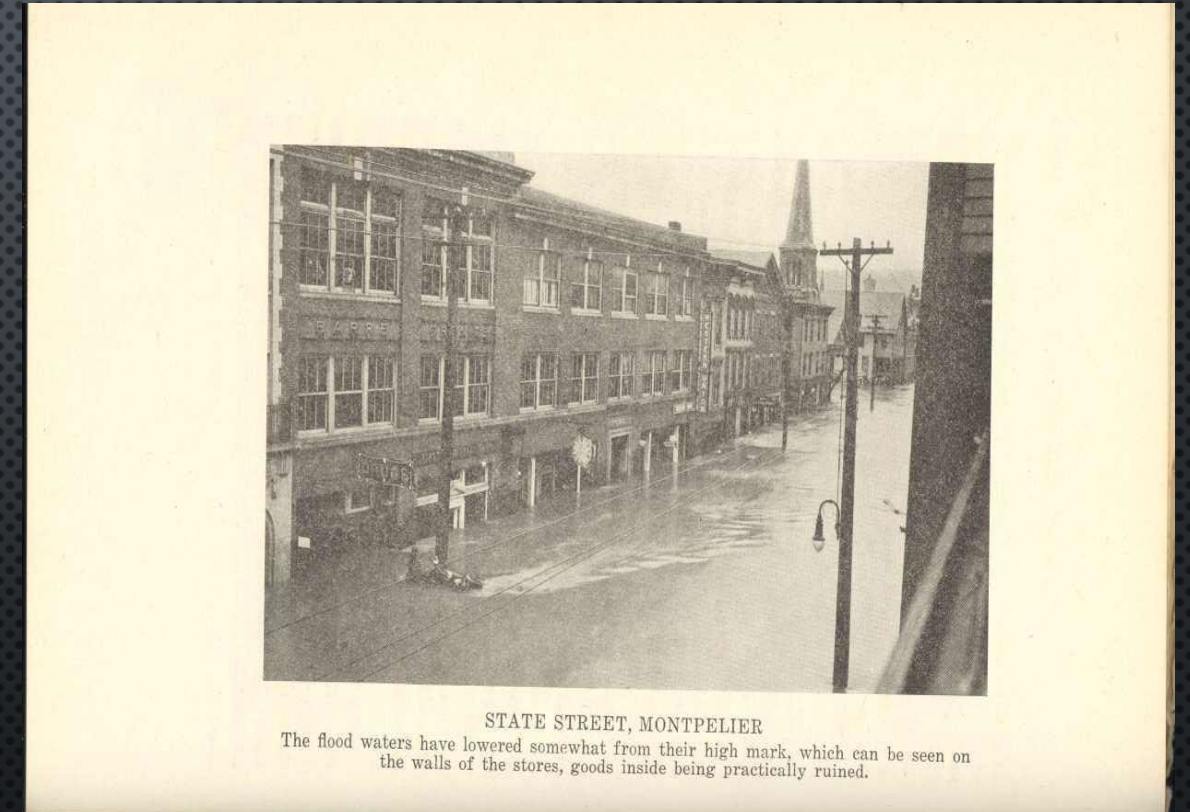
6.01

4.11





# MAIN STREET IN STATE CAPITAL 2023 AND 1927



STATE STREET, MONTPELIER  
The flood waters have lowered somewhat from their high mark, which can be seen on the walls of the stores, goods inside being practically ruined.

# BOAT RESCUE MAIN STREET STATE CAPITAL 2023 AND 1927



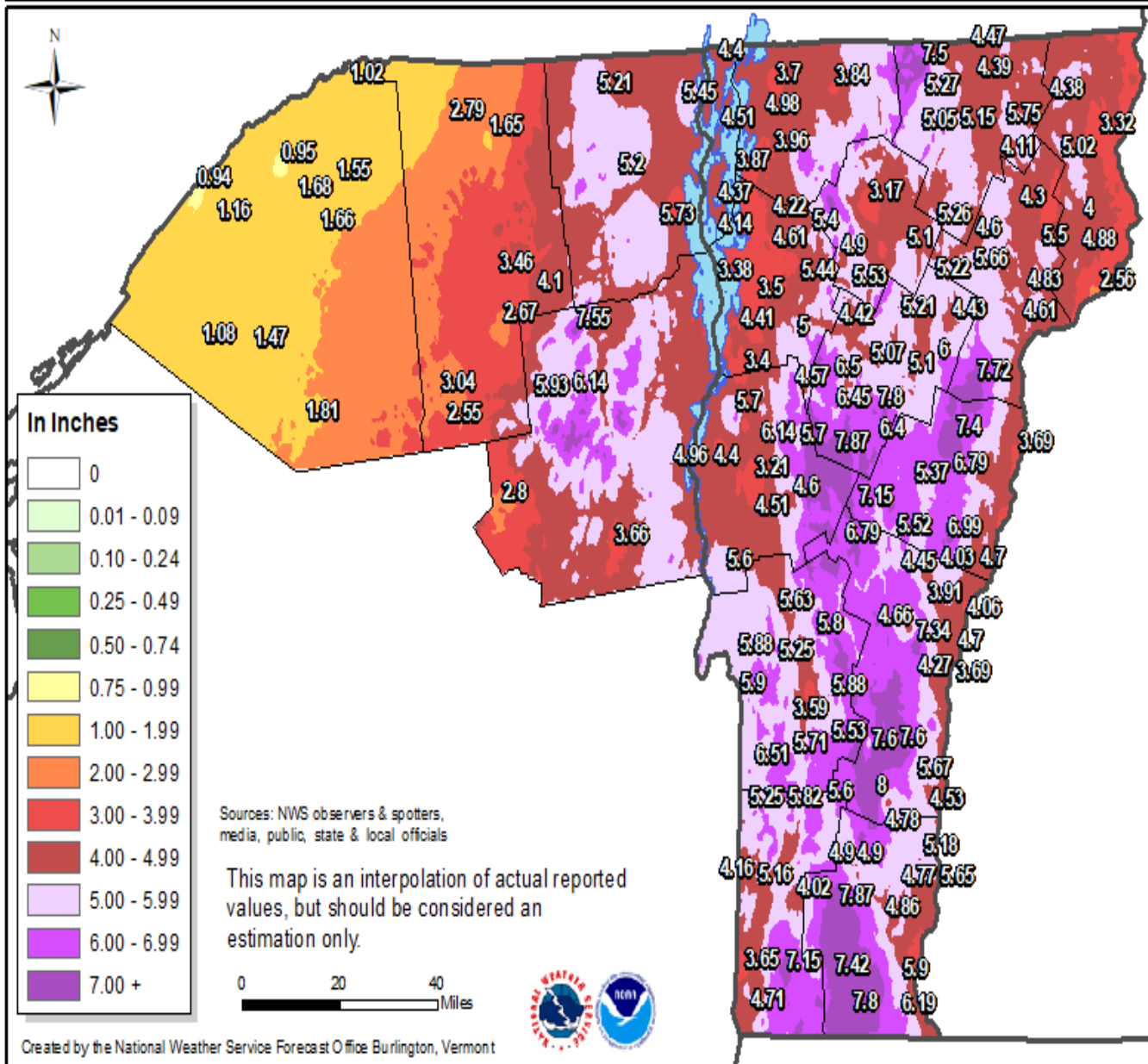
# HISTORICAL FLOODS IN VERMONT

## TROPICAL STORM IRENE – AUGUST 2011

MAY, JUNE AND JULY RAINFALL AMOUNTS 95-100% ABOVE NORMAL

- 6 FATALITIES
- DOZENS INJURED
- 70 BOAT-BASED WATER RESCUES
- 3,500 HOMES DAMAGED OR DESTROYED
- VERMONT STATE EOC EVACUATED DUE TO FLOODING
- 500 MILES OF ROADWAY AND 1,200 BRIDGES WASHED AWAY OR DAMAGED
- HUNDREDS OF MILES OF RAILROAD TRACK AND BRIDGES DAMAGED

# Tropical Storm Irene Rainfall - August 27-28, 2011



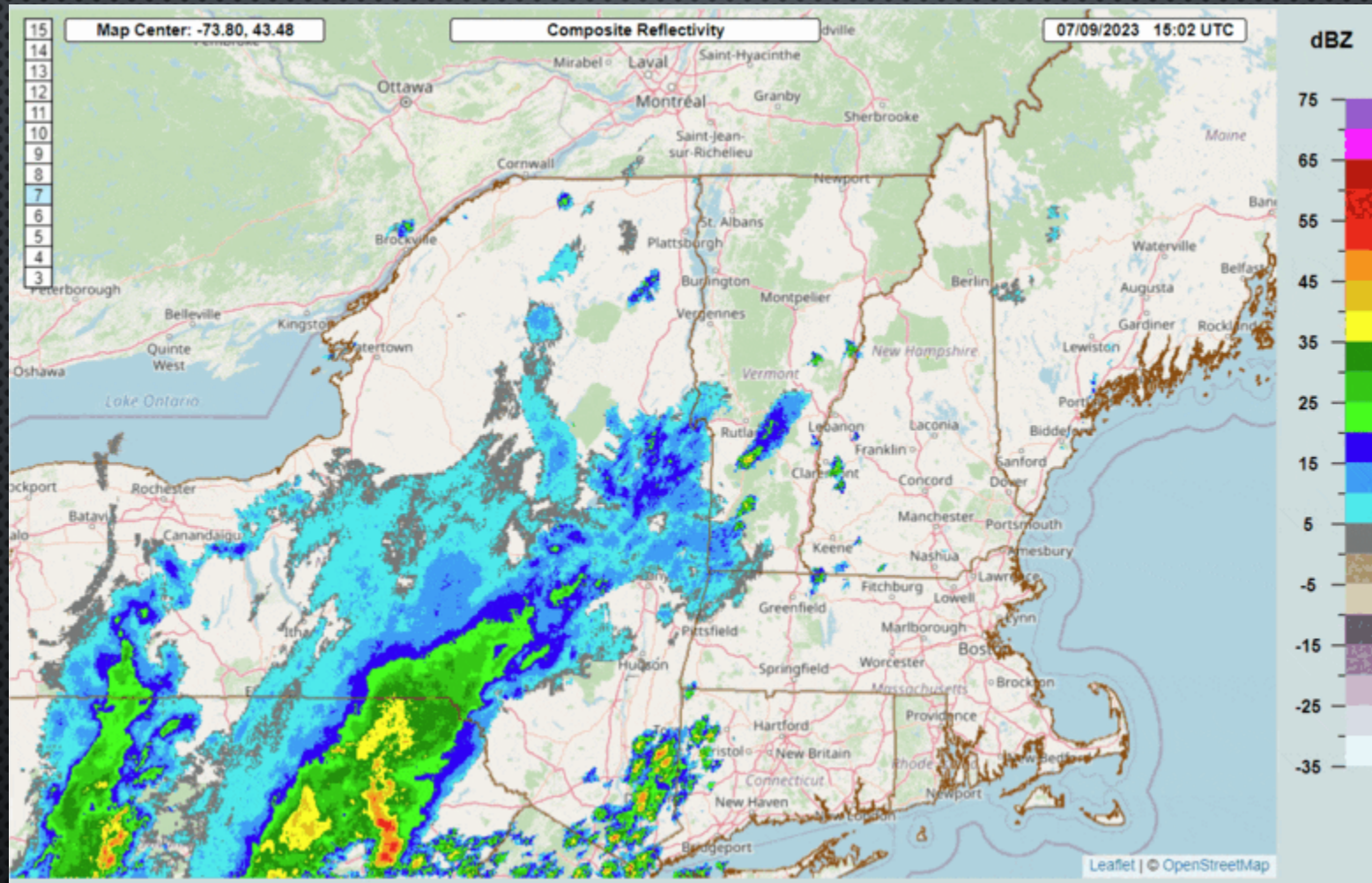


# THE EVENT

## GREAT FLOOD OF JULY 2023

- 2 FATALITIES
- 214 + BOAT-BASED RESCUES
- 167 EVACUATIONS
- HUNDREDS OF ROADS WASHED OUT
- VERMONT STATE EOC EVACUATED DUE TO FLOODING
- 25 BRIDGES WASHED AWAY
- HUNDREDS OF MILES OF RAILROAD DAMAGED OR DESTROYED

# 9 JULY 2023 THROUGH 11 JULY 2023 MOSAIC



# HYDROLOGY

## WEEKS PRIOR TO EVENT

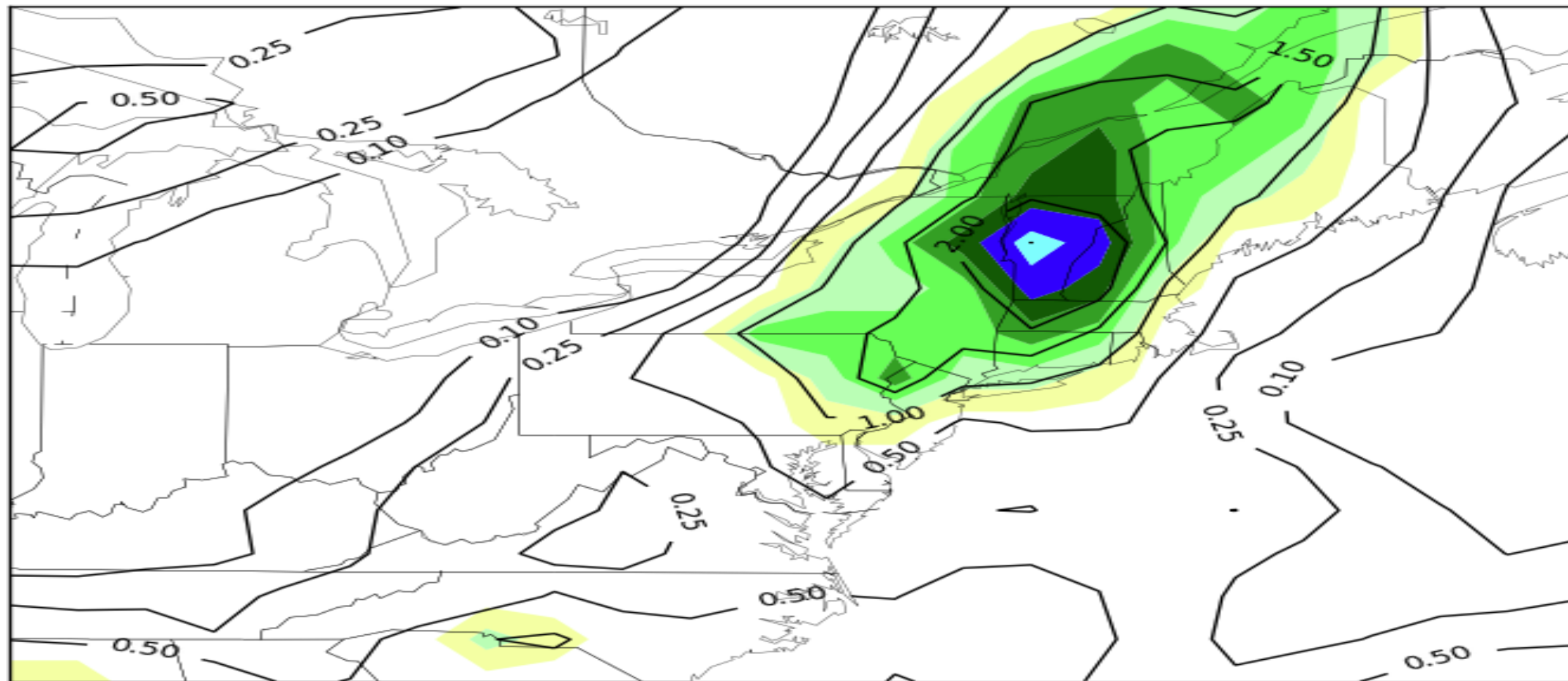
- JUNE RAINFALL 1-3" ABOVE NORM
- HIGH MOISTURE CONTENT
- INCREASED RUNOFF

## DAYS PRIOR TO EVENT

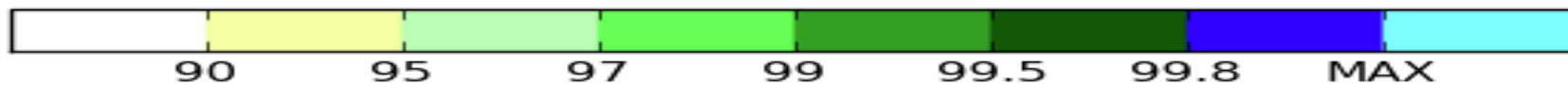
- 2.5" RAINFALL ACROSS CENTRAL VERMONT
- 4.4" IN KILLINGTON, RESULTS IN SIGNIFICANT FLASH FLOODING AND LAND SLIDES



GEFS Mean QPF (in) and M-Climate percentile  
0-48-h forecast valid  
12Z Sun Jul 09 2023 to 12Z Tue Jul 11 2023

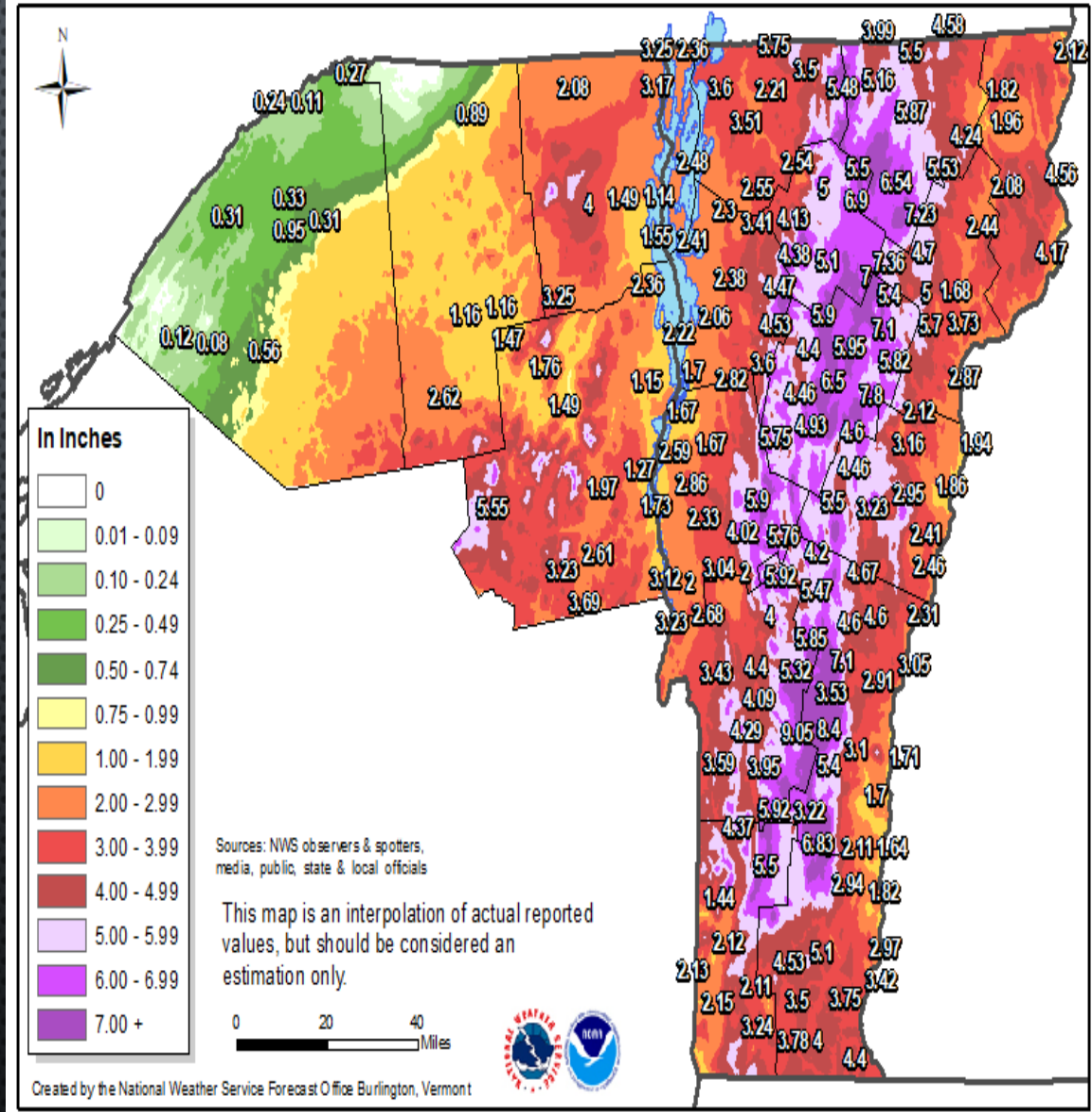


relative to GEFS reforecasts initialized  
25-May to 23-Aug (2000-2019)





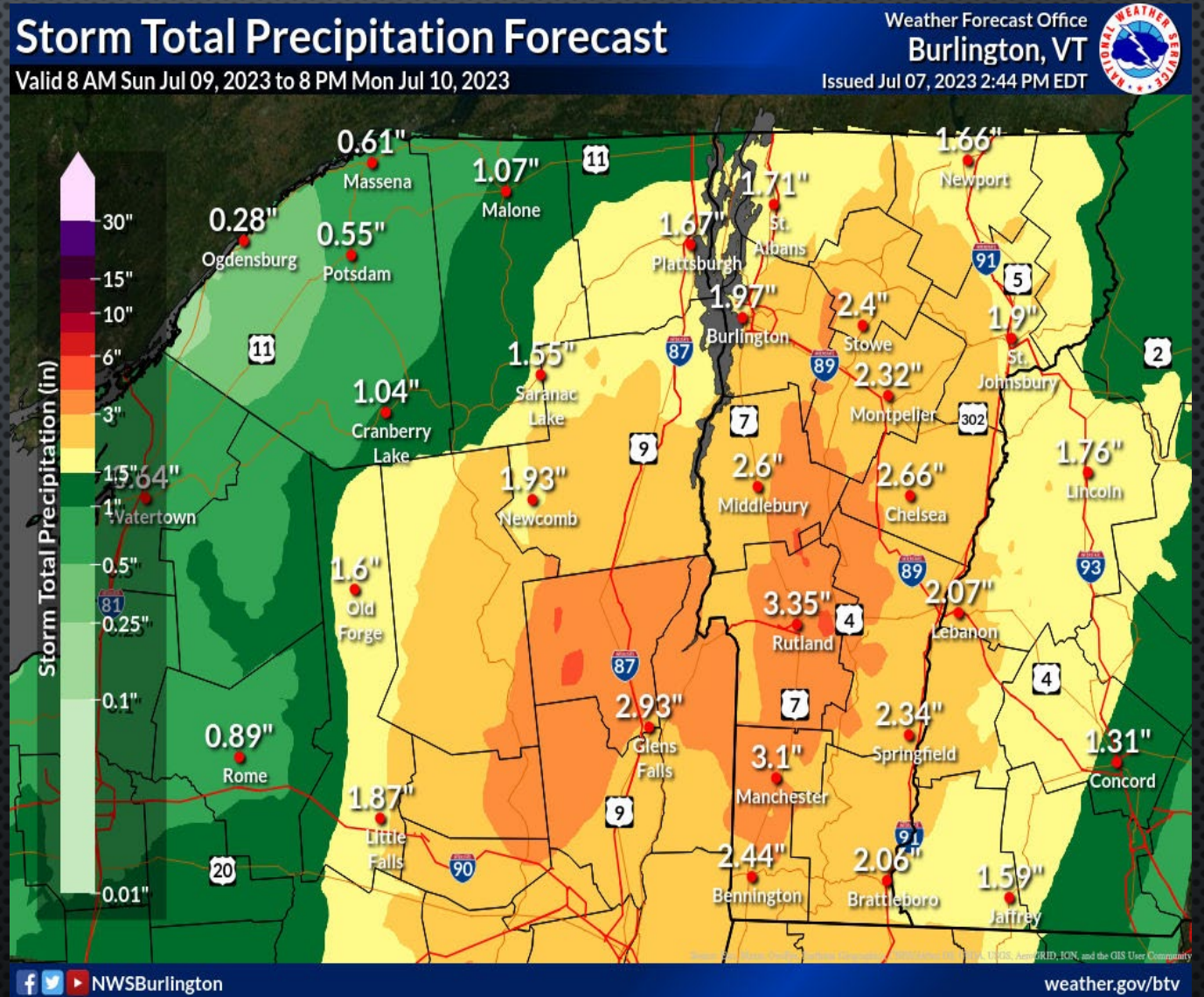
## North Country Storm Total Rainfall July 10-11, 2023



<b>Date</b>	<b>Hour</b>	<b>Event</b>
<b>July 7</b>	<b>0400</b>	<b>2+ Predicted</b>
<b>July 7</b>	<b>0900</b>	<b>2-4" Predicted</b>
<b>July 7</b>	<b>1600</b>	<b>3-5" Predicted</b>
<b>July 7</b>	<b>1600</b>	<b>20 Flash flood warnings</b>
<b>July 7</b>	<b>1630</b>	<b>4.5" Killington Landslide</b>
<b>July 7</b>	<b>1700</b>	<b>VT-TF1 Initial Activation</b>

# NWS PRECIPITATION FORECAST ISSUED

FRIDAY 7 JULY 1611  
HOURS THE SECOND OF  
NUMEROUS NWS  
FORECAST **INDICATES**  
**ADDITIONAL RAINFALL**  
**AMOUNTS OF 3-4"** FROM  
SUNDAY 9 JULY THROUGH  
MONDAY 10 JULY



# FRIDAY 7 JULY 1614 HOURS MAJOR LANDSLIDE VT ROUTE 4 TOWN OF KILLINGTON



# 7 JULY 1700 HRS VT-TF1 DEPLOYED TO KILLINGTON LANDSLIDE

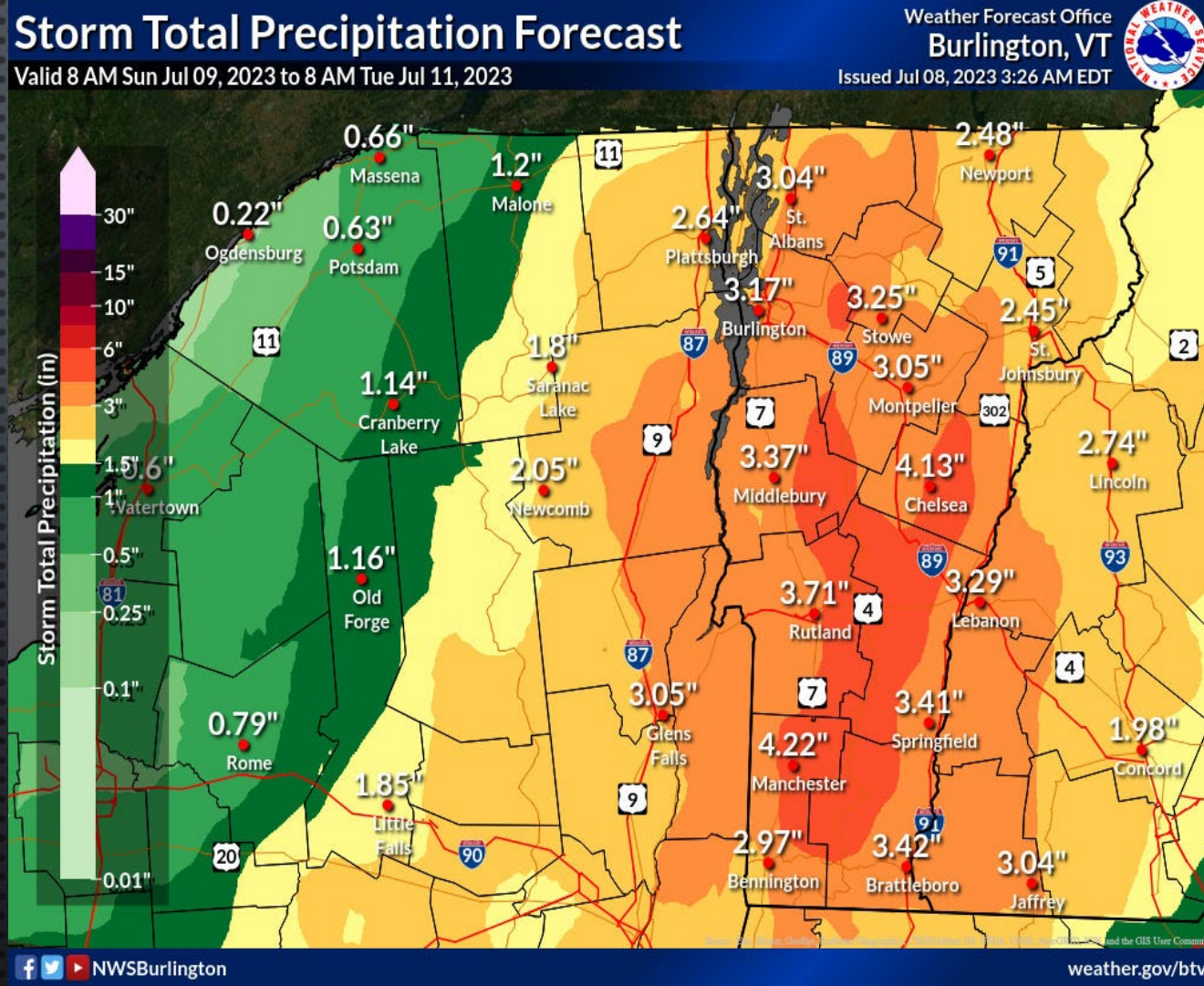
- PROGRAM MANAGER/TFL AND TWO LIVE-FIND SEARCH CANINES DEPLOYED
- KILLINGTON FIRE DEPARTMENT IC REPORTING UNWITNESSED LANDSLIDE COVERING ALL LANES OF VT ROUTE 4, 20 FT HIGH WITH LARGE BOULDERS AND TREES, APPROXIMATELY 400 FT IN LENGTH
- REQUEST FOR HEAVY EQUIPMENT MADE
- HEAVY EQUIPMENT AND CANINES WORKED THROUGH EVENING AND OVERNIGHT TO DELAYER THE SLIDE





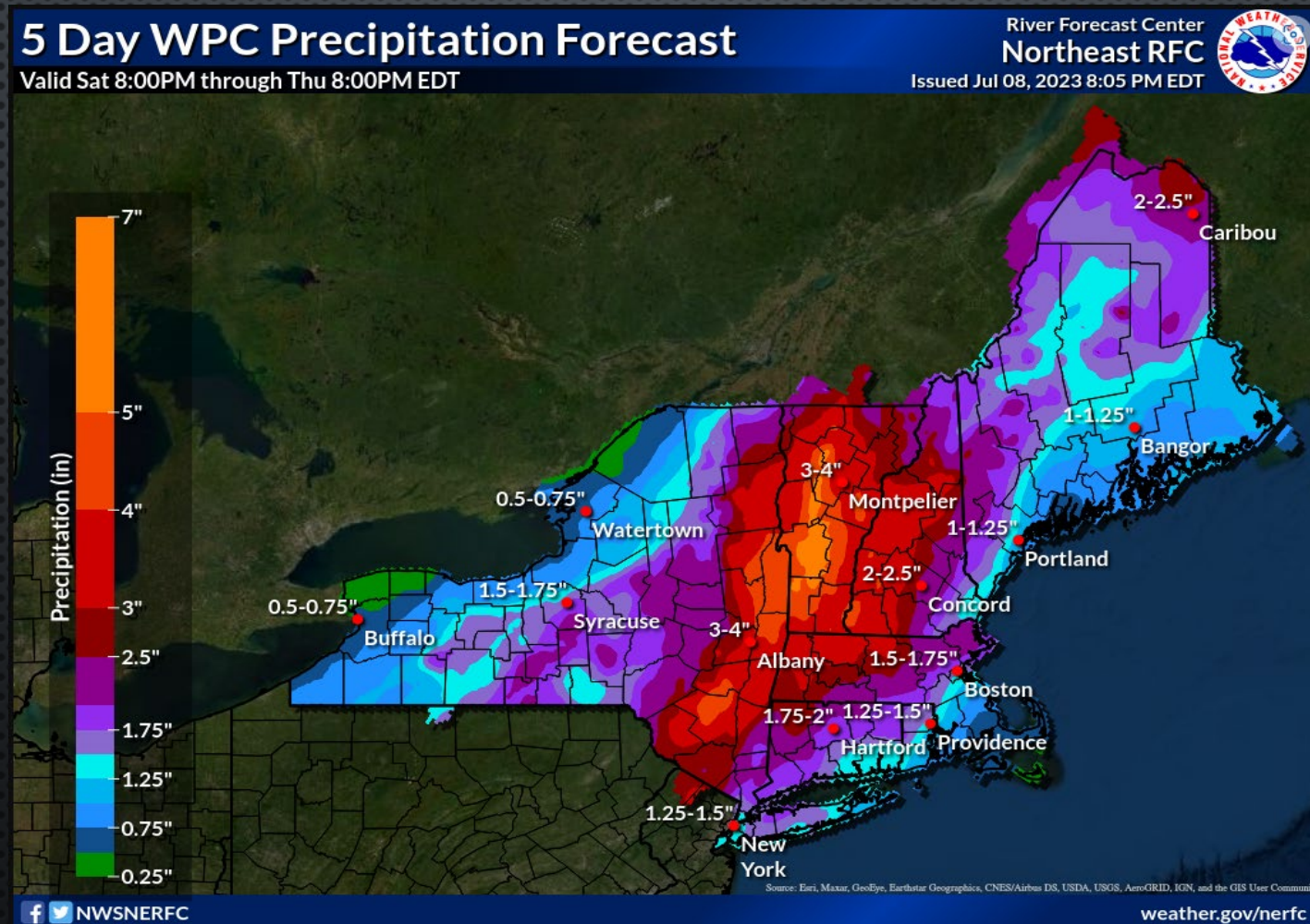


SATURDAY 8 JULY 0330  
HOURS NWS  
BURLINGTON FORECAST  
INDICATES **ADDITIONAL**  
**RAINFALL AMOUNTS OF**  
**3-5 INCHES** FROM  
SUNDAY 9 JULY  
THROUGH TUESDAY 10  
JULY

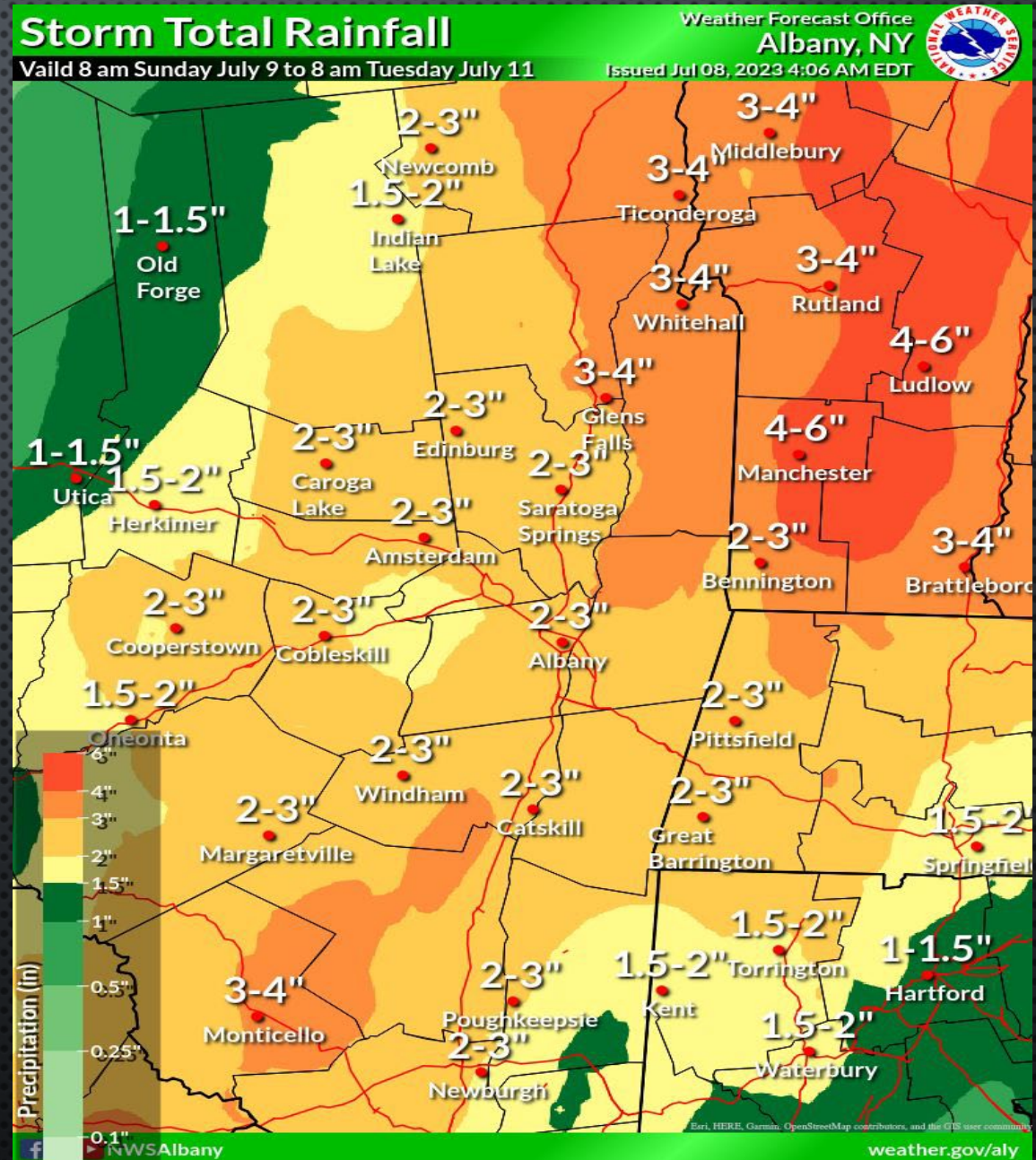


SATURDAY 8 JULY 1315 HOURS, VERMONT EMERGENCY MANAGEMENT ADVISED VT-TF1 AND 7 PARTNER SWIFTWATER TEAMS TO BE ALERTED FOR POSSIBLE ACTIVATION SUNDAY MORNING 9 JULY

SUNDAY 9 JULY 0700 HOURS, VT-TF1 LOGISTICS AND STAFF ACTIVATED TO DEPLOY TO OUR CACHE FOR PREPARATIONS

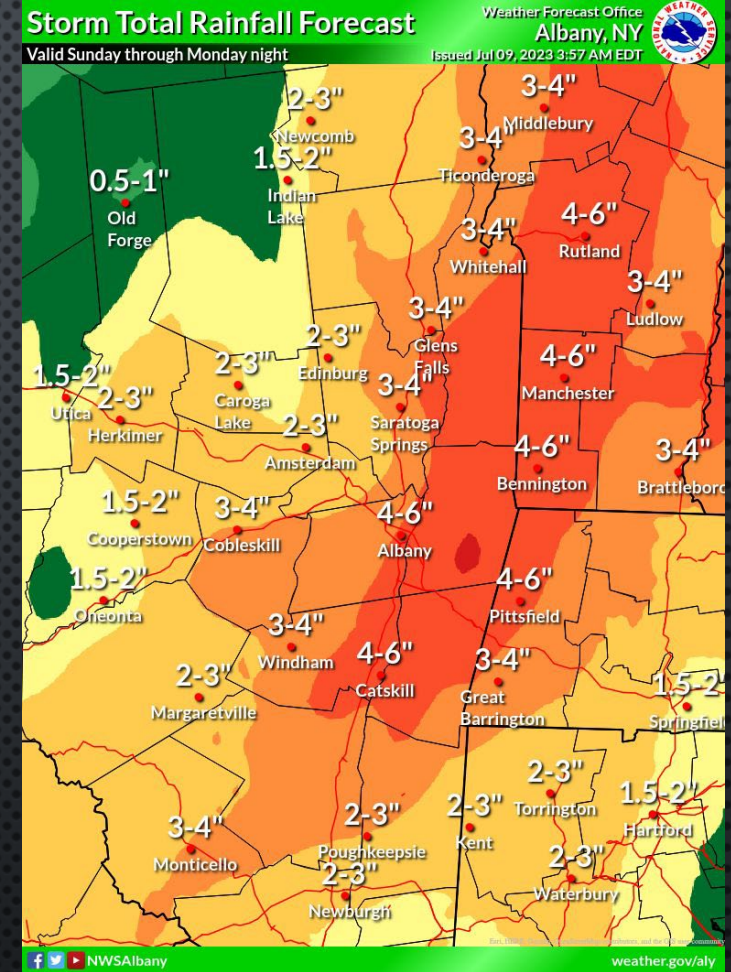
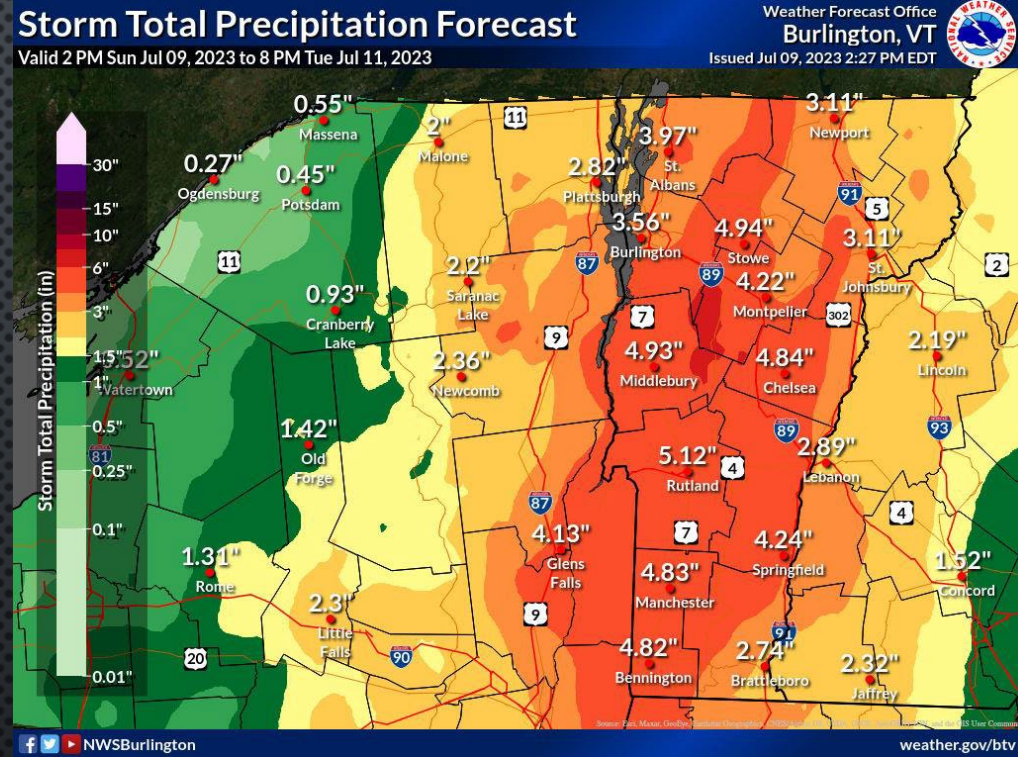


SATURDAY 8 JULY 0400 HOURS  
NWS ALBANY NY FORECAST  
INDICATES  
**ADDITIONAL RAINFALL AMOUNTS**  
**OF 4-6 INCHES** FROM SUNDAY 9  
JULY THROUGH TUESDAY 10  
JULY



- SUNDAY 9 JULY NWS BURLINGTON 1200 HOURS BRIEF INDICATES “CATASTROPHIC” FLASH FLOODING EXPECTED WITH THE STATEMENT “THIS WILL BE AS IMPACTFUL AS TROPICAL STORM IRENE”
- SUNDAY 9 JULY 1200 HOURS, VERMONT EMERGENCY MANAGEMENT AUTHORIZES ORDERS FOR EMAC OF 2- TYPE I AND 2- TYPE III SWIFTWATER TEAMS AS WELL AS ACTIVATION OF ALL AVAILABLE STATE SWIFTWATER RESOURCES.
  - 2- TYPE I SWIFTWATER FROM NORTH CAROLINA
  - 2 – TYPE III SWIFTWATER FROM CONNECTICUT (DELAYED) AND MICHIGAN
- VT-TF1 FULL ACTIVATION WITH A TYPE IV USAR WITH WATER RESCUE PACKAGE OF 5 BOATS, 3 LIVE-FIND CANINES
- 9- PARTNER MOA TYPE III SWIFTWATER TEAMS ACTIVATED

SUNDAY 9 JULY 1400  
NWS PRECIPITATION  
FORECAST **INCREASED**  
**RAINFALL AMOUNTS TO 6-8"** WITH HIGHER AMOUNTS  
POSSIBLE OVER HIGHER  
TERRAIN



# SUNDAY/MONDAY 9 & 10 JULY

- 1800 HOURS, AFTER ADDITIONAL WEATHER UPDATES, STATE EM AUTHORIZES ADDITIONAL SWIFTWATER RESOURCES AND NATIONAL GUARD AVIATION ASSETS TO BE DEPLOYED
  - 5 – HELO'S WITH HOIST CREWS
  - 2 – FEMA TYPE III USAR WITH WATER MRP, MA-TF1 AND NY-TF1
  - 2 – TYPE III SWIFTWATER TEAMS FROM THE STATE OF NEW HAMPSHIRE
  - FEMA IST AND IMT
- 1900 THROUGH 0400 HOURS, STATE EM OFFICE BEGINS RECEIVING NOTIFICATIONS OF FLASH FLOODING IN THE HEADWATERS OF TRIBUTARIES AND REPORTS OF SMALL DAMS AND DRINKING WATER RESERVOIRS OVERTOPPING. VERMONT SENDS ONE WATER RESCUE RESOURCE TO NEW HAMPSHIRE TO ASSIST WITH WATER RESCUES

At height of activation

Taskforces:

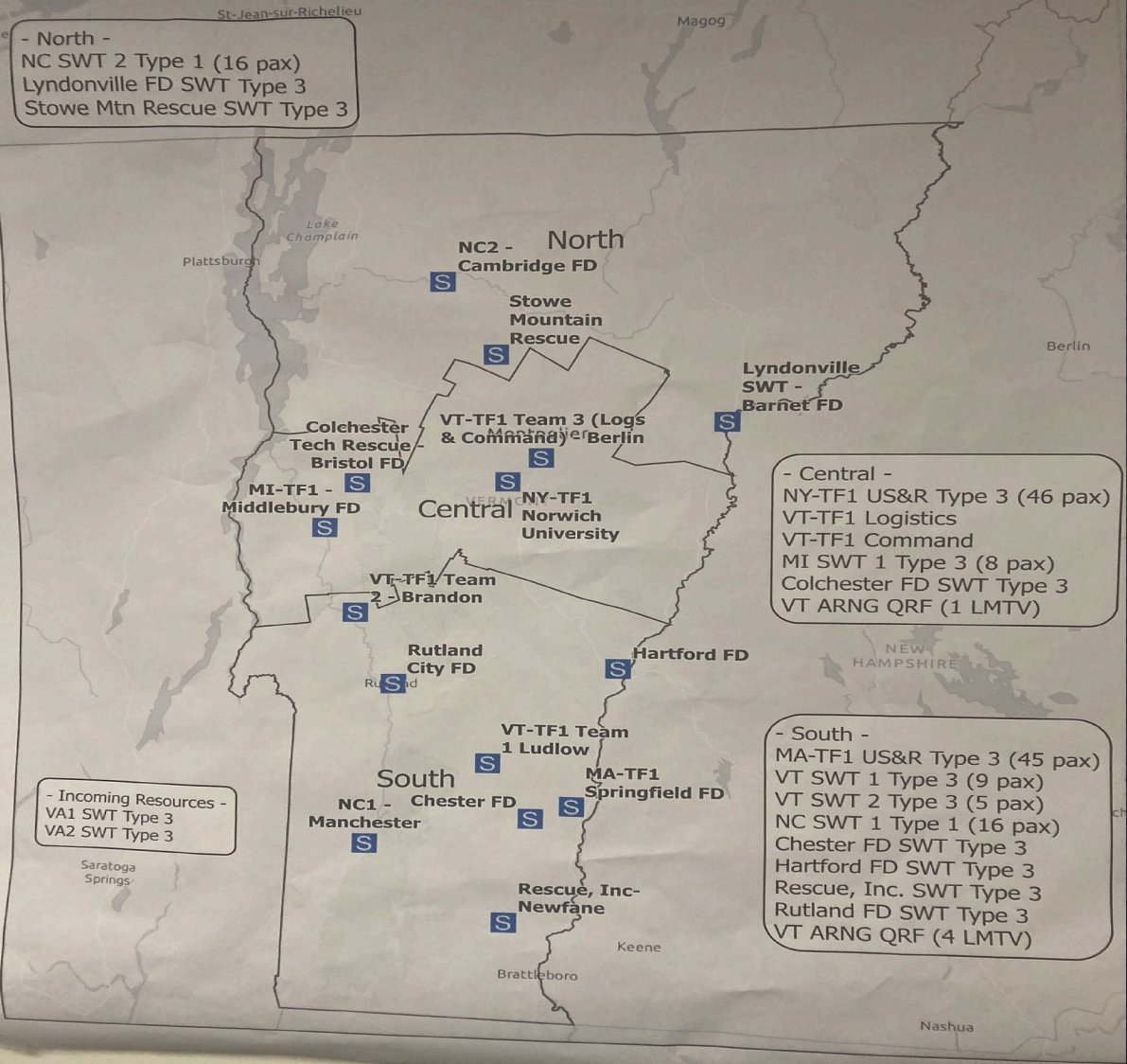
- VT-TF1 42 personnel
- MA-TF1 45 personnel
- NY-TF1 45 personnel
- MI-TF1 16 personnel
- CT-TF1 16 personnel

Swiftwater

9 Vermont State MOU SW Teams  
Plus:

- NC-1 16 personnel
- NC-2 16 personnel
- NH-1 6 personnel
- NH-2 6 personnel
- VA-1 8 personnel
- VA-2 8 personnel





- North -  
 NC SWT 2 Type 1 (16 pax)  
 Lyndonville FD SWT Type 3  
 Stowe Mtn Rescue SWT Type 3

- Central -  
 NY-TF1 US&R Type 3 (46 pax)  
 VT-TF1 Logistics  
 VT-TF1 Command  
 MI SWT 1 Type 3 (8 pax)  
 Colchester FD SWT Type 3  
 VT ARNG QRF (1 LMTV)

- Incoming Resources -  
 VA1 SWT Type 3  
 VA2 SWT Type 3

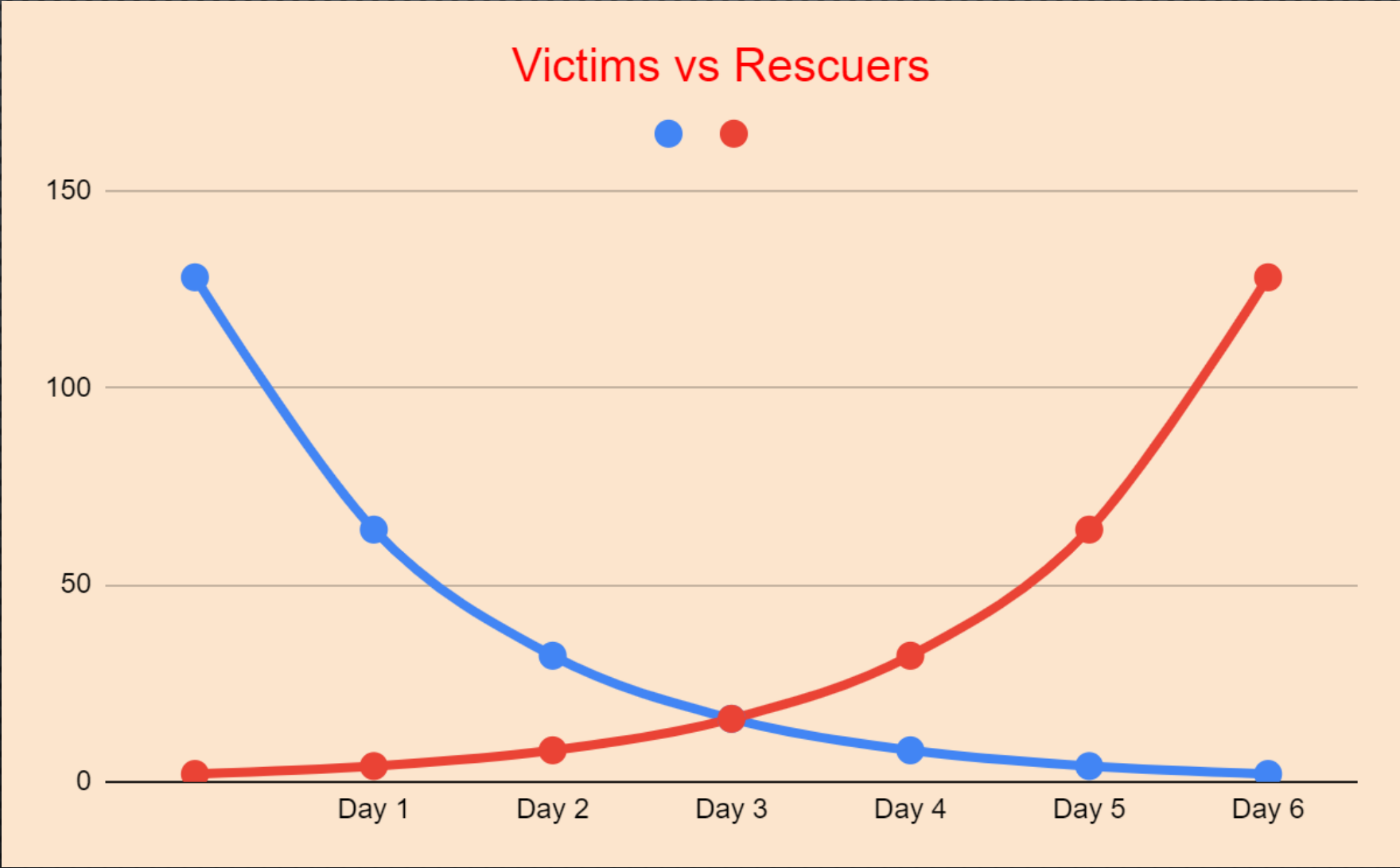
- South -  
 MA-TF1 US&R Type 3 (45 pax)  
 VT SWT 1 Type 3 (9 pax)  
 VT SWT 2 Type 3 (5 pax)  
 NC SWT 1 Type 1 (16 pax)  
 Chester FD SWT Type 3  
 Hartford FD SWT Type 3  
 Rescue, Inc. SWT Type 3  
 Rutland FD SWT Type 3  
 VT ARNG QRF (4 LMTV)



# MONDAY 10 JULY

- 0630 HRS, DOZENS OF MOUNTAIN TOWNS ARE CUT OFF DUE TO WASHOUTS, SLIDES AND SEVERE FLOODING.
- ONE VT-TF1 TEAM CUT OFF AND ISOLATED IN LUDLOW
- REPORTS OF A DAM BREACH IN DANBY W PEOPLE TRAPPED
- DOZENS OF WATER RESCUE REQUESTS BACKED UP
- 1700 HRS STATE EOC EVACUATED DUE TO RIVER FLOODING
- 1830 HRS, REPORT OF A MISSING SWIFTWATER BOAT CREW
- INTERSTATE 89 CLOSED DUE TO FLOODING AND DAMAGED BRIDGES AS WELL AS 70-80 STATE ROUTES

# RESCUE CAPABILITY VS INCIDENT CAPACITY







LUDLOW

10 JULY

FLOODING AND  
DEBRIS FLOWS



LONDONDERRY

10 JULY

WATER RESCUE  
OCCUPIED  
VEHICLE



WESTON  
10 JULY



2023-07-10 17:28:32  
-72.68582 -43.56572





2023-07-10 17:43:27  
72.67936 +43.39406



2023-07-10-17:42:23  
-72.67998 +43.39379



# WORKING ON THE RAILROAD





CAPITAL  
DISTRICT  
10 JULY



# STATE CAPITAL 10 JULY



CAPITAL  
DISTRICT  
10 JULY



WATERBURY

0400 JULY 11

WATER RESCUE  
OCCUPIED  
VEHICLE









# TUESDAY 11 JULY

0100 HOURS  
PORTIONS OF FEMA  
IST ARRIVE AND  
RELIEVE VT  
PERSONNEL. FIRST  
COMMAND/PLANNING  
RELIEF SINCE 0700  
SUNDAY JULY 9.





# TUESDAY 11 JULY

- SEVERE RIVER FLOODING IN CAPITAL DISTRICT OF MONTPELIER, BARRE, WATERBURY AND BERLIN
- 2 SWIFTWATER TEAMS REMAINED ISOLATED IN STRICKEN AREAS
- PLANS DEVELOPED FOR FIRST LIGHT SEARCH WITH AVIATION FOR HIGH PRIORITY MISSIONS
- RECORD RIVER FLOODING OCCURRING IN THREE LARGE BASINS
- OVER 120 STATE HIGHWAYS AND INTERSTATES CLOSED
- STATE EM RECEIVING REPORTS OF TWO LARGE FLOOD CONTROL DAMS AT CAPACITY AND NEARING TOP OVER AND PREPARING EMERGENCY RELEASES















# LESSONS LEARNED

- KNOW YOUR HISTORICAL FLOOD DATA
- PARTNERSHIPS START PRIOR TO DISASTERS
  - NWS
  - LOCAL AND STATE AGENCIES
  - FEDERAL PARTNERS
  - IST
- TRIAGE HIGH PRIORITY AREAS
  - GREATEST AMOUNT OF GOOD FOR THE GREATEST AMOUNT OF PEOPLE
- EMAC EARLY
- PLAN FOR THE WHAT IF'S

STAY TUNED FOR SEASON TWO OF.....

# JULY 10<sup>TH</sup>, 2024, FLOODING IN VERMONT!



# AN ALL-NEW SEASON WITH ALL NEW DAMAGE



# MIKE CANNON

USAR PROGRAM MANAGER

DIVISION OF FIRE SAFETY

VERMONT DEPARTMENT OF PUBLIC SAFETY

45 STATE DRIVE

WATERBURY, VERMONT 05671

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