

EASTERN REGION
NATIONAL WEATHER SERVICE
REPORT ON SIGNIFICANT DISASTER

FLASH FLOODS OF AUGUST 1-2, 1971
BALTIMORE (CITY) MD. AND BALTIMORE COUNTY, MD.

FOR OFFICIAL USE ONLY

Survey Committee:

- Albert S. Kachic, Chairman - Assistant Regional Hydrologist, Eastern Region
- Clarence Reynolds, Member - Meteorologist-in-Charge, WSO, Baltimore, Md.
- W. J. Moyer, Member - State Climatologist, Delaware & Maryland
- Joseph Strahl - Designated Representative, Office of Hydrology, Silver Spring, Md.

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TABLE OF CONTENTS

<u>CONTENTS</u>	<u>PAGE</u>
Abstract	1
Purpose	2
Introduction	2
NWS Operations	4
User Response	5
Casualties	6
Appendix - Attachments 1 through 9	13

A
P-3
1-12

ABSTRACT

During the evening of August 1 and early morning of August 2, 1971 scattered thunderstorms and associated precipitation caused flash flooding in Baltimore (City), Md., Baltimore County and Harford County in Maryland. This area is served by WSO, Baltimore, Md. and WSFO, Washington, D. C. which is also the River District Office (RDO).

A supplemental precipitation Survey indicated that between 5 and 12-1/2 inches of rain occurred within an eight hour period, and sixteen deaths have been attributed to the flooding which resulted. The 12-1/2 inch precipitation center and major damage area is centered around White Marsh, Md. in Baltimore County.

A review of the times of the loss of life indicate most casualties were aware of heavy rains and/or flooding but did not take the necessary precautions for their own safety.

A review of the National Weather Services operations indicate that the area was well alerted to thunderstorms and severe thunderstorms but the flood potential was not emphasized. In addition, misunderstanding of assigned service areas in the hydrologic program may have caused some problems. However the Flash Flood Alert, Watch and Warning program did not function as planned.

User response indicated that many people did not hear the latest weather forecast and warning because of their and the broadcast news media's weekend routines differ from the normal work week.

After reviewing the Operations of the National Weather Service, methods and timing of forecast and warning dissemination and timing of loss of life, six recommendations have been made for service improvement.

PURPOSE

Whenever a national disaster causes fatalities, numerous injuries and substantial property losses, a survey of the damaged area is required as outlined in National Weather Service Operations Manual, Part I, Chapter 06, titled National Disaster Surveys.

This disaster had been designated a Significant Disaster and required a regional survey team.

The National Weather Service Eastern Region team consisted of:

Chairman - Albert S. Kachic, Assistant Regional Hydrologist
Member - Clarence Reynolds, MIC, WSO, Baltimore, Md.
Member - W. J. Moyer, State Climatologist, Delaware and Maryland
Designated Representative - Joseph Strahl, Office of Hydrology

The team began their on-site survey of the damage area, August 4, 1971 and concluded the field investigation August 6, 1971.

Mr. Moyer had begun a supplemental precipitation survey on August 3, 1971 which effectively located the major areas of damages. This precipitation survey was continued while the remainder of the team interviewed local people - the State police, volunteer firemen and Civil Defense Officials.

INTRODUCTION

During the evening and early morning of August 1-2, 1971, scattered thunderstorms caused flash flooding in Baltimore (City), Md., Baltimore County and Harford County in Maryland. These thunderstorms were associated with a system that had stalled along the east coast from New England to South Carolina. This system had been causing widespread thunderstorms, since July 30 and continued to cause thunderstorms until the evening of August 4, 1971 when it was replaced by cooler and dryer air.

The August 1-2 floods closed major east coast highways for more than six hours, leaving hundreds of residents homeless, some 20,000 homes without electricity and resulting in 16 deaths. Property damage, both public and private is estimated to be approximately a million dollars.

Much of the damage and many of the casualties occurred in Baltimore City and Baltimore County in the vicinity of White Marsh, Md. and along State Route 7, U. S. 40 and Interstate 95 along Gunpowder River and its tributaries (see attachment 1). Supplemental Precipitation surveys indicated that up to 12-1/2 inches of rain fell between 6:30 PM August 1 to 2:30 AM August 2 near White Marsh, Md.* Several other locations indicate 11 plus inches. In general, the survey indicates the precipitation exceeded 5.00 inches in an eight hour period in Southeastern Baltimore County and in Baltimore (City) Md. (See Attachment 1)

Preliminary reports show that only three new crest records were set because of this rain. They were at White Marsh Run at White March, Md., Stemmers Run at Rossville, Md. and Brien Run at Stemmers Run, Md., all in the vicinity of the 12.5 inch center. Estimated time of crest at all three sites were around 11:00 PM August 1, 1971. (See Attachment 2).

NATIONAL WEATHER SERVICE OPERATIONS

All of the damages and deaths occurred in the Weather Bureau Office, Baltimore, Md. service area. The Weather Service Forecast Office is WSFO Washington which is also the River District Office for this area.

Severe and Special Weather Statements and Severe Thunderstorm Warnings had been issued and both WSO Baltimore and WSFO Washington's service area was well covered. The Patuxent radar was operating and providing timely reports of locations, tops and heights. Both Baltimore and Washington made excellent use of their Weather Radar Remote system.

WSFO Washington's "Nowcasting" program for its local service area provides practically up to the minute information on the various thunderstorm cells with regards to their condition, movement and location.

A review of WSO, Baltimore, Maryland's operations indicates the station was adequately staffed between 6:00 PM and 12 midnight, August 1. There were two men on duty with the MIC in contact with the station after 9:00 PM. At 7:45 PM, August 1, 1971, the Patuxent Radar summary indicated an area of thunderstorms and heavy rainshowers for a large area with precipitation tops to 47,000 feet 10 miles NNE of Baltimore (see attachment 3-1). At 8:00 PM WSO Baltimore issued a Special Weather Statement indicating heavy rains have occurred and more expected with some possibility of local flooding. At 8:45 PM a SEVERE THUNDERSTORM WARNING was issued by WSO Baltimore (see attachments 3-2, 3-3 and 3-4).

*All Times are Eastern Daylight Time

Earlier in the evening, the WSO requested the Maryland State Police to furnish the National Weather Service (NWS) with precipitation amounts (see attachment #4). None were significant at this time and no flooding was reported. The earliest that WSO Baltimore knew of flooding and casualties was around 7:30 - 8:00 AM, August 2.

Based upon the available information and guidance, it is judged that the WSO Baltimore handled the situation adequately. The only criticism that can be made is to the lack of any Flash Flood Watch. River Forecast Center, Harrisburg Flash Flood Guidance indicated 3.50 inches of rain required for flooding (see attachment #5).

According to the Regional Operations Manual Letters 70-30 and 70-36, the RDO is the only office authorized to issue Flash Flood Watches. These counties in Maryland are in the Washington RDO service area.

Discussion at WSFO Washington indicated that the station thought that their hydrologic service area did not extend into these river basins. The Washington river district map did not include this area.

However, the National Weather Service Operations Manual, Part E, Chapter 03 Geographical Areas of Responsibility describes the Washington RDO service area as "Potomac and Rappahannock Rivers and tributaries; local Chesapeake Bay Drainage in Maryland and Delaware (see attachment #6).

Because of this misunderstanding on hydrologic service area no Flash Flood Watch was considered in the Baltimore area.

In the WSFO service area, no Flash Flood Watches or Warnings were issued. The only mention of possible flooding was in a SEVERE WEATHER STATEMENT issued at 8:40 PM, August 1 (see attachment #7).

A review of Severe Weather Statements and or Severe Thunderstorm Warnings indicate many stations are not considering flooding possibilities. Practically all of these type of issuances request the reporting of large Hail or Damaging Winds to the nearest law enforcement agency for relay to the nearest National Weather Service Office. No mention is made of reporting floods or flash floods. (See Attachment 3-3).

USER RESPONSE

The survey team contacted and discussed the event with many private citizens in the damage area, representatives of the volunteer Fire Department, State and Local Civil Defense and with the Maryland State Police (see attachment #8).

All the people interviewed had not received or remember receiving any warning of floods. Some had heard the morning and afternoon forecasts of scattered thunderstorms but this was the same as had been heard the past two or three days.

Mr. J. Bruce Turner who had his own plastic rain gage reported that between 6:30 PM and 8:05 PM, 4.3 inches of rain fell and between 8:05 PM and 2:30 AM August 2, 7.8 inches occurred and between 2:30 AM and 4:00 PM an additional .5 inches occurred for a total of 12.6 inches in 9-1/2 hours.

The first indication of trouble the Cowenton Volunteer Fire Company had was when they received a request to rescue 5 children caught on an Island in the middle of the river. The estimated time of this rescue was around 6:00 PM Sunday, August 1.

Lt. Zepp of the Maryland State Police said they had no hint of trouble until around 5:00 PM when rescue calls began coming in. Near Joppa Town, Md. Route 7, the state police rescued 14 people.

Since it was the weekend and Sunday evening the State Disaster Control Center was not manned. They could give no time when they were notified of flooding but the Center was in operation sometime after midnight.

The City of Baltimore telephone operator became overwhelmed by calls of flooding between 8:30 and 9:00 PM. The City of Baltimore Civil Defense Director was notified around 10:00 PM and operation began after midnight. This delay was caused by numerous floods which delayed personnel in reaching their assigned posts.

Practically nobody had heard any alerts or warnings. Comments centered around the theme - it was Sunday I was watching the baseball game or out in the backyard or on a picnic, or visiting friends or there wasn't anything on radio or TV. The change in routine of the public and the radio and TV media from the normal weekday schedule to a weekend schedule causes difficulty in disseminating weather forecasts and especially warnings. Another common comment was that thunderstorms and severe thunderstorm warnings had been in the forecasts since Thursday and there was nothing to indicate that these would be any different today.

CASUALTIES

Sixteen deaths have been attributed to the floods caused by the rains on the evening of August 1 and early morning of August 2, 1971. See Attachment 9 for the names and locations of the casualties.

A review of these deaths indicate that practically every one could have been avoided since all were aware of high water, heavy rains and flooding. Numbers 1-8 (see attachment 9) occurred late in the evening of August 1. Mr. & Mrs. Drasal and Mr. & Mrs. Wood left a tavern at the bottom of a hill where Route 7 crossed the Gunpowder River. Near the crest of the hill (Bush Rd. and Route 7) the car stalled. Five volunteer firemen from the Cowenton Volunteer Fire Company and a tow truck operator came to the rescue. A line was passed around the bumper of the Drasal car and the firemen with water up to their knees (or to their waists, depending on who reported) attempted to push the car to dry ground. The tow line tore the front bumper from the car and the tow truck operator, the car and the 4 firemen were swept away. Mrs. Drasal was washed out of the car and clung to a tree where she was later rescued by State Police. The fifth fireman was also rescued.

Death No. 9 occurred along U. S. Route 40. Mr. Gunter and Mr. Williams, were travelling north to Delaware on their way home when State police stopped them. They were requested to turn away and go back. The pair decided to wait - the water rose rapidly and they could not start their car. They got out to wade to higher ground. Both were swept away by the water and only Mr. Williams was rescued by the State Police.

Death Number 14, 15 and 16 occurred at the rain swollen Loch Raven Reservoir where three adults were swimming on August 2, 1971. Mr. Schnitken was caught in a current and Mr. Berbig and Justh tried to rescue him. All three were washed away. These fatalities and their causes are similar to others that have occurred in the past in the Eastern Region. In the July 4, 1969 floods in northern Ohio over 26 deaths were attributed to flooding. More than half occurred when most people were aware of the flooding. In the floods of May 1968, in New Jersey, 8 casualties occurred, all after knowledge of the flood.

It appears that the public and even agencies dealing in rescue operations are not cognizant or aware of the force and dangers of water. The NWS or National Oceanic and Atmospheric Administration (NOAA) should prepare a brochure or training pamphlet with information similar to the Rip Tide article released by NOAA. It could give the average individual the do's and don'ts of flood safety and may be expanded for service agencies such as volunteer firemen or police, etc.

CONCLUSIONS AND RECOMMENDATIONS

1. Alerts and Warnings with regards to flash flooding were minimal. Thunderstorm statements and Severe Thunderstorm Warnings were issued and both WSO Baltimore and WSFO Washington service areas were well covered in this respect. However, the Flash Flood Alert, Watch and Warning program did not function adequately, if at all.

RECOMMENDATION: More training and hydrologic program orientation is required for meteorologists. This probably can be accomplished by more Regional Hydrologist station visits with the specific objective of providing Hydrologic orientation.

2. There appeared to be a misunderstanding of hydrologic service areas and assignment by WSFO Washington. The RFC or RDO maps are not the official publication designating authorized service areas.

RECOMMENDATION: Request all stations to review all program service areas and to be sure the entire staff participates in this review.

3. The public as well as the Radio and Television stations change their weekday routine on weekends and holidays. This change makes it more difficult to alert or warn the public through the broadcast media as well as other Federal, State and City Agencies by methods normally employed during the week.

RECOMMENDATION: More effort and better coordination be arranged between media and the National Weather Service for immediate relay of Warnings and Watches. The relay of warning and/or watches to Federal, State and City Agencies requires additional study and close coordination to solve this problem effectively.

4. Many casualties occur even though there is widespread knowledge of the event. Investigation of casualties in this flood as well as others in Eastern Region indicate that even if all of the public were warned there would be loss of life. This is especially true when the effect (floods) occur at some time after the cause (heavy rain).

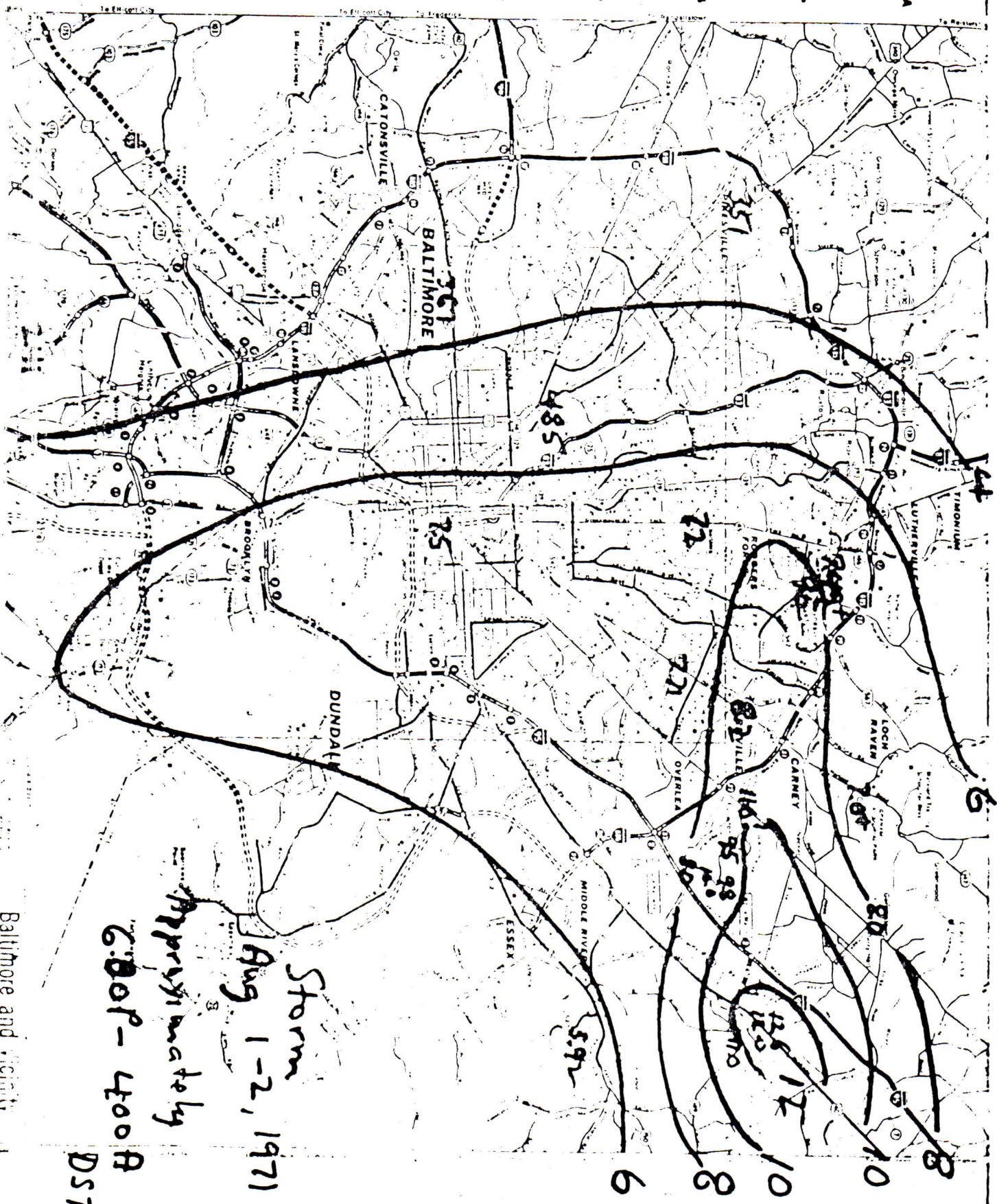
RECOMMENDATION: The NWS or NOAA should prepare a flood and flash flood brochure or pamphlet appraising the public of the effects of flood waters similar to NOAA's Rip Tide release and the Hurricane Safety Rules.

5. The Civil Defense with Corps of Engineers membership also had an investigation team in the field visiting many of the same offices and locations as the NWS Survey team.

RECOMMENDATION: The NWS should investigate the feasibility of having members assigned to the Civil Defense Survey Team in most natural disasters. Information for a comprehensive report could be gathered quickly and efficiently and at the same time provide a NOAA input into CD reports.

6. When Severe Weather Statements or Severe Thunderstorm Warnings are issued there is usually a sentence requesting the public to "REPORT LARGE HAIL OR DAMAGING WINDS - ASK THE NEAREST LAW ENFORCEMENT AGENCY TO RELAY YOUR REPORT TO THE NEAREST NATIONAL WEATHER SERVICE OFFICE." (See Attachment 3-3). No mention of flooding is made in these requested thus making it difficult to obtain proper feedback for information of flooding and the issuance of Flash Flood Warnings.

RECOMMENDATION: When Severe Weather Statements dealing with the possibility of heavy rains, Severe Thunderstorm Warnings and Flash Flood Watches and/or Warnings have been issued, flooding information should also be requested along with hail or damaging wind reports.



Storm
 Aug 1-2, 1971
 Approximately
 2:00P - 4:00P
 DST

Baltimore and vicinity

PRELIMINARY
CREST STAGE RECORDS

White Marsh Run at White Marsh, Md. DA = 7.61 Sq. Mi.

	<u>Previous Record</u>	<u>New Record</u>
Stage	6.60 ft.	14.01 ft.
Discharge	1580 cfs	Not available
Date	September 12, 19	August 1, 1971
Time		11:00 PM EDT*

Period of Record - February 1959 to present

Stemmers Run at Rossville, Md. DA = 4.94 Sq. Mi.

	<u>Previous Record</u>	<u>New Record</u>
Stage	7.86 ft.	11.33 ft.
Discharge	1720 cfs	Not available
Date	August 4, 1961	August 1, 1971
Time		11:00 PM EDT*

Period of Record - December 1958 to present

Brien Run at Stemmers Run, Md. DA = 1.97 Sq. Mi.

	<u>Previous Record</u>	<u>New Record</u>
Stage	5.03 ft.	10.75 ft.
Discharge	506 cfs	Not available
Date	September 12, 1960	August 1, 1971
Time		11:00 PM EDT*

Period of Record - May 1958 to Present

*Estimated Times - Recorders destroyed by Flood

C O P Y

C O P Y

C O P Y

ATTACHMENT 3-1

NATIONAL WEATHER SERVICE FRIENDSHIP AIRPORT AUGUST 1 1971

SPECIAL WEATHER STATEMENT 8:00PM EDT

WEATHER RADAR AT PATUXENT MARYLAND REPORTS A LARGE CELL 10 MILES
NORTHNORTH EAST OF BALTIMORE MOVING NORTHEASTWARD AT 19 MPH. HEAVY
RAIN HAS ALREADY OCCURRED IN THE BALTIMORE AREA. FURTHER HEAVY RAIN WITH SOME
LOCAL FLOODING MAY OCCUR IN BALTIMORE HARFORD AND CECIL COUNTIES UNTIL 10PM.

FIGUEROA
WSO BALTIMORE

ATTACHMENT 3-2

WSMO PATUXENT RIVER MD.
PATUXENT WEATHER RADAR SUMMARY 745PM EDT SUN AUG 1 1971
DO NOT USE AFTER 9PM EDT

THE RADAR INDICATES AN AREA OF THUNDERSTORMS AND HEAVY RAINSHOWERS
SCATTERED OVER THE EASTERN HALF OF VA. THE NORTHERN HALF OF MD.
SOUTHWESTERN AND CENTRAL NJ. AND ALONG THE SOUTHERN BORDER OF PA.
AND THE SOUTHEASTERN CORNER OF PA. MOVEMENT IS TOWARD THE NORTHEAST
AT 20 MPH. IN THE NORTH AND THE SOUTHERN PORTION IS MOVING DUE NORTH
AT 17 MPH.

AVN PCPN TOPS TO 47 THOUSAND FEET 10 MILES NNE OF BAL.

ATTACHMENT 3-3

SEVERE THUNDERSTORM WARNING

BULLETIN

SEVERE THUNDERSTORM WARNING

IMMEDIATE BROADCAST REQUESTED

NATIONAL WEATHER SERVICE BALTIMORE MARYLAND

ISSUED 845 EDT SUNDAY AUGUST 1 1971

A SEVERE THUNDERSTORM WARNING IS IN EFFECT UNTIL 1100 PM EDT FOR PERSONS
IN BALTIMORE CITY AND IN BALTIMORE ANNE ARUNDEL KENT HARFORD AND QUEEN ANNES
COUNTIES MARYLAND.

A LINE OF THUNDERSTORMS WAS INDICATED BY RADAR 10 MILES SOUTH OF BALTIMORE
MARYLAND TO 70 MILES SOUTHWEST OF WASHINGTON AT 827PM EDT. THE LINE OF THUNDE
STORMS IS MOVING TOWARD THE NORTH NORTHEAST AT 30 MPH.
IF THREATENING CONDITIONS ARE SIGHTED..BE PREPARED TO MOVE TO A PLACE OF
SAFETY. TO REPORT LARGE HAIL OR DAMAGING WINDS ASK THE NEAREST LAW ENFORCEMENT
AGENCY TO RELAY YOUR REPORT TO THE NEAREST NATIONAL WEATHER SERVICE OFFICE.

FIGUEROA
WSO BALTIMORE

C O P Y

C O P Y

C O P Y

ATTACHMENT 3-4

ALL-CLEAR BULLETIN

BULLETIN

ALL-CLEAR

IMMEDIATE BROADCAST REQUESTED

NATIONAL WEATHER SERVICE BALTIMORE MARYLAND

ISSUED 1045 PM EDT AUGUST 1 1971

THE SEVERE THUNDERSTORM WARNING FOR THE CITY OF BALTIMORE AND THE COUNTIES OF BALTIMORE ANNE ARUNDEL KENT HARFORD AND QUEEN ANNES MARYLAND HAS BEEN TERMINATED. THE LINE OF THUNDERSTORMS THAT WAS REPORTED 10 MILES SOUTH OF BALTIMORE MARYLAND AT 827PM EDT HAS WEAKENED AND IS NO LONGER A THREAT TO THE CLEARED AREA. HOWEVER SOME MODERATE TO HEAVY RAIN WITH POSSIBLE LOCAL FLOODING MAY STILL OCCUR IN THE NEXT TWO HOURS.

FIGUEROA

WSO BALTIMORE

C O P Y

C O P Y

C O P Y

PIKES TO ALL MSP UNITS

THE WEA BUR HAS ASKED US TO FURNISH THEM WITH THE AMOUNT OF RAIN THAT
HAS FALLEN IN YOUR AREAS WITHIN THE PAST FEW HOURS

DO NOT EMPTY YOUR RAIN GUAGES BUT USE THE MEASURING STICK AND GET A READING -
WEA BUR IS CODED IN SO GA - JUST AS IF IT WAS WEATHER TIME

TROOP - A -

WESTMINSTER 0.52 AND STILL RAINING FWW

WATERLOO 0.70 STILL RAINING BAYS

FREDERICK 1.62 CLDY WET NOT RAINING NLW

CUMBERLAND .23 AND STILL RAINING DLR

HAGERSTOWN 0.73 LT RAIN EHB

TROOP "C"

BEL AIR 2.00 PLUS SEVERE LIGHTING AND RAINING MJH

NORTH EAST .50 RAINING AT THIS TIME - NO FLOODING REPORTED - YATES

CONOWINGO .70 RAINING AND SEVERE LIGHTING NO FLOODING

TROOP D

EASTON NO RAIN - CLDY - NOT RAINING AT THIS TIME HEP

WALDORF 0.15 NOT RAINING AT PRESENT

LEOZQMRDTOWN NO RAIN PARTIALLY CLOUDY

ATTACHMENT 4

14

WFO HRRG ORV RIC RDU WBCC A HARC

NATIONAL WEATHER SERVICE RIVER FORECAST CENTER HARRISBURG PA.
FEDERAL-STATE RIVER FORECASTING SERVICE

FLASH FLOOD GUIDANCE - RAINFALL - INCHES

7 50 71

3 HOUR AVERAGE RAINFALL AMOUNTS NEEDED TO PRODUCE FLOODING

VA. ZONE	RAINFALL	MD. ZONE	RAINFALL
1	3.50	1	3.50
2	3.50	2	3.50
3	3.50	3	3.50
5	3.50	4	3.50
6	3.50	5	3.50
7	3.50		
9	3.50	WVA. ZONE	
RI	3.50		
RO	3.50		
LY	4.00	1	3.50

F. O. D. H. KAUFFMAN HOME PHONE 717-533-3877

END SENT HAR/RFC

11A

- San Antonio, Tex..... Guadalupe, San Antonio, and Lavaca Rivers and tributaries.
- San Francisco, Calif...California Coast Drainage from Point Delgada to Point Buchon (except rivers in the Central Valley of California).
- Seattle, Wash.....Puget Sound and Washington Coast Drainage (except the Columbia River).
- Shreveport, La.....Red River and tributaries below Denison Dam to and including Alexandria, La.; the Upper Sabine River and tributaries at and above Logansport, La.
- Sioux City, Iowa.....Missouri River and tributaries from the North Dakota-South Dakota State line to and including Sioux City, Iowa (except the James River Basin in North Dakota).
- Spokane, Wash.....Columbia River Drainage at and above Grand Coulee Dam, and left bank tributaries of the Columbia River below Grand Coulee Dam to (but not including) the Snake River.
- Tampa, Fla.....Withlacoochee and Hillsborough Rivers and tributaries.
- Topeka, Kans.....Kansas River and tributaries above Bonner Springs, Kans.; Osage River tributaries in Kansas.
- Trenton, N. J.....Delaware River Basin and coastal streams in New Jersey.
- Tulsa, Okla.....Arkansas River and tributaries below the Kansas-Oklahoma line to and including Van Buren, Ark. (except the Canadian River above Whitefield, Okla.).
- Washington, D. C.....Potomac and Rappahannock Rivers and tributaries; local Chesapeake Bay Drainage in Maryland and Delaware.
- Wichita, Kans.....Arkansas River and tributaries above the Kansas-Oklahoma State line to (but not including) the mouth of Walnut Creek below Great Bend, Kans.

Exhibit E-03-3: River District Offices and their Districts (Contd.)

A MKCC PLQVLVAND

NATIONAL WEATHER SERVICE FORECAST OFFICE WASHDC

SEVERE WEATHER STATEMENT ISSUED AT 8.40 PM EDT SUNDAY
AUGUST 1 1971

HEAVY THUNDERSTORM ACTIVITY HAS BEEN OCCURRING IN PORTIONS OF
EASTERN MARYLAND AND IN CENTRAL AND NORTHEASTERN VIRGINIA.
RAINS OF ABOUT 2 INCHES HAVE OCCURRED IN GRANT AND
BERKLEY COUNTIES WEST VIRGINIA AND 40 TO 60 MPH WINDS HAVE BEEN
REPORTED IN THE PAST FEW MINUTES IN PRINCE GEORGES COUNTY MARYLAND.

A LINE OF THUNDERSTORMS EXTENDED FROM THE
NORTHERN CHESAPEAKE BAY TO ABOUT 30 MILES EAST OF CHARLOTTESVILLE
VIRGINIA AT 8.40 PM. THE THUNDERSTORMS ARE MOVING NORTHNORTHEASTWARD
ABOUT 30 MPH.

LOCALLY STRONG GUSTY WINDS POSSIBLE HAIL AND LOCALLY HEAVY RAINS
WHICH MAY CAUSE SMALL STREAMS TO GO OUT OF BANKS ARE EXPECTED
IN PORTIONS OF NORTHEASTERN VIRGINIA EASTERN MARYLAND AND POSSIBLY
PORTIONS OF DELAWARE DURING THE NEXT 1 TO 3 HOURS.

END

ATTACHMENT 7

INFORMATION SOURCES

1. Mr. J. Bruce Turner White Marsh, Md.
2. Mr. L. Crisman Vol. Fireman - Cowenton Vol. Fire Co.
3. Mr. R. O'Brien Disaster Officer - State of Md.
Office of Civil Defense
4. Mr. Robert Osborne City of Baltimore, Civil Defense Director
5. Lt. Zepp Commander, Barracks D, Maryland State
Police, Bel Air, Md.
6. Numerous Citizens Rt. 7 & Bush Rd., White Marsh, Md.
7. Several Vol. Firemen Cowenton Vol. Fire Co.
8. Owner ~~Gunpowder~~ Cove Marina

CASUALTIES, LOCATION AND CAUSES

DEATHS

No.	NAME	AGE	LOCATION	
1	Charles Drasal	49	Rt 7 - Bean Creek	- Driver - Drasal car
2	Mr. Buck Wood		Rt 7 - Bean Creek	- Passenger Drasal car
3	Mrs. Cecilia Wood		Rt 7 - Bean Creek	- Passenger Drasal car
4	Douglas Muller	18	" " "	Volunteer fireman
5	Charles Hopwood	42	" " "	" "
6	Milton DeSombre	49	" " "	" "
7	Warren Schaeffer	21	" " "	" "
8	Richard Snyder	42	" " "	Tow Truck Operator
9	William L. Gunter	76	U. S. Rt 40	Swept away from car into Gunpower River
10	Jeffrey J. Leonard	19	Herring Run-Baltimore	Swept into storm drain
11	Lewis M. Maicicano	73	Baltimore, Md.	Electocuted in basement of home
12	Charles Schaffermann	25	Baltimore, Md.	Swept away by water attemptin to rescue children in stalled car
13	Katie Murrell	46	Baltimore, Md.	Stepped out of stalled car & swept into a storm drain
14	Frederick F. Schnitken	30	Loch Raven Reservoir	Drowned while swimming in rain swollen reservoir
15	Wayne Berbig	24	" " "	" " "
16	Harford B. Justh	26	" " "	" " "