Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE MANUAL 10-923
NOVEMBER 29, 2005

Operations and Services
Hydrologic Services Program, NWSPD 10-9

WEATHER FORECAST OFFICE HYDROLOGIC PRODUCT EXAMPLES

NOTICE: This publication is available at: http://www.nws.noaa.gov/directives/

OPR: OS31 (T. Helble) **Certified by:** OS3 (G. Austin)
Type of Issuance: Routine.

SUMMARY OF REVISIONS: This directive supersedes NWS Manual 10-923, dated February 9, 2004. The phased implementation of this directive will be as follows:

- For NWS offices participating in an operational test and evaluation (OT&E) of the flood watch and other Graphical Hazards Generator (GHG) products, Section 3 is effective May 9, 2005.
- For offices participating in the OT&Es for WarnGen and RiverPro, Sections 4 through 9 are effective June 28, 2005.
- The entire directive will be effective for all NWS offices on November 29, 2005.

The following revisions have been made to this manual:

1) Uses a revised section structure for watches, warnings, and statements to allow a sequence of products for a given hydrologic situation to be provided in the same main section - e.g., a flood statement (FLS) example is immediately after the initial flood warning (FLW).
2) Provides separate sections for flood watches for forecast points, areal flood warnings, and flood advisories for forecast points (each one with their associated follow-up products).
3) Increases the number of flood watch, flash flood warning, flash flood statement, flood warning, flood statement, and flood statement (advisories) product examples.
4) Integrates Valid Time Event Code (VTEC) into all examples of all event-based products.
5) Converts all event-based product examples to formats specified in NWSI 10-922.

Draft

Dennis H. McCarthy Date
Acting Director, Office of Climate,
Water, and Weather Services

Weather Forecast Office Hydrologic Product Examples

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1. Introduction. This directive provides examples of weather forecast office (WFO) hydrologic products described in NWS Instruction 10-922. Some WFO hydrologic products issued under a given Advanced Weather Information Processing System (AWIPS) identifier (e.g., flood statement – FLS) are used for multiple purposes. Therefore, several product examples are provided to illustrate key applications. NWS Instruction 10-922 provides flexibility to include or exclude certain items from hydrologic products, so these examples should not be taken as the only prescribed formats.

2. Hydrologic Outlook (ESF).

2.1 Example #1 - Potential Flooding From Excessive Rainfall (Near Term). This outlook issued by WFO Springfield, Missouri describes the flood potential in the three to five day time frame.

```
FGUS73 KSGF 102135
ESFSGF
MOC055-056-058-060>062-110400-

HYDROLOGIC OUTLOOK
NATIONAL WEATHER SERVICE SPRINGFIELD MO
335 PM CST FRI DEC 10 1999

...ANOTHER HEAVY RAINMAKER TO HIT THE OZARKS COULD PRODUCE FLOODING
EARLY NEXT WEEK...

OVER THE PAST COUPLE OF WEEKS...SIGNIFICANT RAINFALL HAS FALLEN
ACROSS THE OZARKS. AS A RESULT...MOST OF SOUTHWEST MISSOURI IS ALMOST
BACK TO NORMAL RAINFALL...AND IN SOME CASES ABOVE NORMAL. THROUGH
DECEMBER 10...SPRINGFIELD HAS RECEIVED 6.84 INCHES AND MANY AREAS
OF THE OZARKS HAVE RECEIVED MORE THAN EIGHT INCHES. THE NORMAL
RAINFALL FOR SPRINGFIELD IN DECEMBER IS 3.16 INCHES.

BEGINNING MONDAY AND EARLY TUESDAY...THE OZARKS WILL RECEIVE ANOTHER
SOAKING RAIN. CURRENT WEATHER MODELS INDICATE A STORM TRACK ACROSS
NORTHERN ARKANSAS AND SOUTHERN MISSOURI...BASICALLY THE SAME TRACK
TAKEN BY THE RECENT STORMS. THIS MEANS ABUNDANT GULF MOISTURE WILL
BE PULLED INTO THE STORM AND DEPOSIT UPWARDS OF ONE TO TWO INCHES
ACROSS MOST SECTIONS OF SOUTHERN MISSOURI.

FLOODING MAY OCCUR BECAUSE THE GROUND IS SATURATED FROM RECENT
RAINS. LOW WATER CROSSINGS AND SMALL STREAMS COULD SWELL TO SMALL
RAGING STREAMS OF WATER. RIVERS...MAINLY ACROSS SOUTHERN MISSOURI...
COULD RISE CLOSE TO OR ABOVE FLOOD STAGE BY NEXT TUESDAY.

THE HAZARDOUS WEATHER OUTLOOK PRODUCT WILL BE UPDATED WITH THE LATEST
INFORMATION THROUGHOUT THE WEEKEND. ANOTHER SOURCE OF CURRENT WEATHER
INFORMATION FOR SOUTHERN MISSOURI IS THROUGH OUR WEB PAGE AT
WWW.CRH.NOAA.GOV/SGF/ /LOWER CASE/

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2.2 Example #2 - Potential Snowmelt Flooding (Long Term). This outlook issued by WFO Bismarck, South Dakota describes the overall potential for snowmelt flooding in the entire hydrologic service area.

FGUS73 KBIS 251451
ESFBIS
NDC001-007-011-015-021-025-029-031-033-037-041-043-045-047-051-053-
055-057-059-065-083-085-087-089-093-103-105-101800-

HYDROLOGIC OUTLOOK
NATIONAL WEATHER SERVICE BISMARCK ND
900 AM CST FRI FEB 25 2005

...SPRING FLOOD AND WATER RESOURCES OUTLOOK NUMBER 1...

THIS OUTLOOK IS FOR FLOOD POTENTIAL FOR WEST AND CENTRAL NORTH DAKOTA AND INCLUDES THE MISSOURI AND JAMES RIVER BASIN DRAINAGE SYSTEMS.

THE RELATIVE ABSENCE OF SNOW ON THE GROUND IN WEST AND CENTRAL NORTH DAKOTA COMBINED WITH BELOW NORMAL FALL MOISTURE CONDITIONS HAS RESULTED IN LITTLE OR NO CHANCE OF FLOODING THIS SNOWMELT SEASON... EVEN IF NORMAL PRECIPITATION FOR THE NEXT FEW WEEKS IS FACTORED IN. WARM TEMPERATURES THIS WINTER HAVE ALREADY PRODUCED LIMITED RUNOFF.

SOIL CONDITIONS IN WESTERN NORTH DAKOTA ARE NORMAL TO BELOW NORMAL WHILE THE EAST HAS NORMAL TO ABOVE NORMAL SOILS.

SNOW DEPTHS IN THE JAMES BASIN GENERALLY RANGE FROM 1 TO 5 INCHES WITH 0.1 TO 0.3 INCHES OF WATER EQUIVALENT. IN THE LAKE SAKAKAWEA REGION...SNOW DEPTHS RANGE FROM 2 TO 4 INCHES AND WATER EQUIVALENTS UP TO 0.4 INCHES. THE REMAINDER OF THE REGION HAS LITTLE OR NO SNOW ON THE GROUND.

RIVERS ARE ICE-COVERED AND FLOWS BELOW AVERAGE AT THE PRESENT TIME. WHEN THE BEGIN TO BREAK UP, ICE-JAM FORMATION IS ALWAYS A POSSIBILITY.

MOUNTAIN SNOWPACK IN WYOMING AND MONTANA IS 60 TO 80% OF NORMAL.

LINGERING DRYNESS HAS LED TO DROUGHT CONDITIONS ACROSS MOST OF WESTERN NORTH DAKOTA. THE DROUGHT MONITOR HAS DESIGNATED MOST OF THE AREA AS D1...MODERATE DROUGHT WHICH AFFECTS STREAMFLOW...RESERVOIR STORAGE AND LEVELS...AND AGRICULTURE.

HTTP://WWW.DROUGHT.UNL.EDU/DM/MONITOR.HTML (LOWER CASE)

THIS OUTLOOK CONTAINS A GENERALIZED SUMMARY OF SNOWMELT FLOOD POTENTIAL. ABOVE NORMAL FUTURE SNOW ACCUMULATIONS COMBINED WITH HEAVY RAINS AND RAPID MELT WILL INCREASE THE CURRENT FLOOD POTENTIAL WHILE BELOW NORMAL FUTURE PRECIPITATION AND GRADUAL OR INTERMITTENT FREEZING AND THAWING WILL DECREASE THE MAGNITUDE OF THE CURRENT ASSESSMENT.

...ADVANCED HYDROLOGIC PREDICTION SERVICES (AHPS) ENABLE THE NATIONAL WEATHER SERVICE TO PROVIDE LONG-RANGE PROBABILISTIC RIVER OUTLOOKS...

LONG-RANGE PROBABILISTIC OUTLOOK
VALID FEBRUARY 28, 2005 - MAY 29, 2005

CLIMATE OUTLOOKS FOR NORTH DAKOTA FOR THE MONTH OF MARCH INDICATE NO DEVIATION FROM NORMAL FOR PRECIPITATION AND ABOVE NORMAL

Draft

TEMPERATURES. FOR THE PERIOD MARCH THROUGH MAY...NO DEVIATION FROM NORMAL IS EXPECTED FOR PRECIPITATION OR TEMPERATURES.

HTTP://WWW.CPC.NCEP.NOAA.GOV/PRODUCTS/FORECASTS (LOWER CASE)

BELOW IS TABLE 1 WHICH SHOWS THE PROBABILITY OF EXCEEDING FLOOD STAGE. FOR MORE DETAILS SUCH AS CHANCES OF EXCEEDING CERTAIN STAGES AT SPECIFIC LOCATIONS REFER TO TABLE 2.

TABLE 1. CHANCES OF EXCEEDING FLOOD STAGE AT SPECIFIC LOCATIONS IN THE BISMARCK HYDROLOGIC SERVICE AREA.

VALID FEBRUARY 28, 2005 THROUGH MAY 29, 2005

LOCATION	FS (FT)	CHANCE EXCEEDING FS
LITTLE MUDDY RIVER		
WILLISTON 10NE	10	20%
LITTLE MISSOURI RIVER		
MARMARTH	18	LESS THAN 10%
MEDORA	15	LESS THAN 10%
WATFORD CITY	20	LESS THAN 10%
SPRING CREEK		
ZAP	14	10%
KNIFE RIVER		
MANNING	15	LESS THAN 10%
HAZEN 1S	21	10%
HEART RIVER		
MANDAN 3W	17	LESS THAN 10%
APPLE CREEK		
MENOKEN 6W	15	20%
JAMES RIVER		
GRACE CITY 3W	12	LESS THAN 10%
LAMOURE	14	LESS THAN 10%
LUDDEN 3W	12	20%
PIPESTEM CREEK		
PINGREE 3W	9	LESS THAN 10%

IN TABLE 2 BELOW, THE 90 THROUGH 10 PERCENT COLUMNS GIVE THE CHANCE THE RIVER AT THE GIVEN LOCATION WOULD RISE ABOVE THE INDICATED STAGE LEVELS WITHIN THE NEXT 90 DAYS.

EXAMPLE: THE KNIFE RIVER AT MANNING HAS A FLOOD STAGE OF 15 FEET. IN THE NEXT 90 DAYS THERE IS A 40 PERCENT CHANCE THAT THE RIVER WILL RISE ABOVE 8.6 FEET BUT ONLY A 10 PERCENT CHANCE THAT IT WILL RISE ABOVE 11.1 FEET.

TABLE 2. CHANCES OF EXCEEDING STAGES AT SPECIFIC LOCATIONS IN THE BISMARCK HYDROLOGIC SERVICE AREA.

CHANCE OF EXCEEDING STAGES AT SPECIFIC LOCATIONS
ALL STAGES ARE IN FEET
VALID 2/28/05 - 05/29/05

LOCATION	FS (FT)	90%	80%	70%	60%	50%	40%	30%	20%	10%
LITTLE MUDDY RIVER										
WILLISTON 10NE	10	6.0	6.7	7.1	7.4	7.8	8.6	9.0	10.2	11.2
LITTLE MISSOURI RIVER										
MARMARTH ND	18	1.1	1.2	1.6	2.4	2.9	3.3	3.7	4.5	7.0

MEDORA ND	15	2.0	2.2	2.7	3.2	3.7	4.3	4.7	5.8	9.5
WATFORD CITY	20	1.1	1.9	2.6	3.3	3.6	4.2	4.4	5.0	8.2
SPRING CREEK										
ZAP ND	14	4.1	4.6	6.1	6.9	7.7	8.4	9.6	12.3	15.3
KNIFE RIVER										
MANNING	15	6.2	6.6	7.2	7.6	8.0	8.6	9.0	9.8	11.1
HAZEN ND 1S	21	2.8	3.9	5.1	6.2	8.3	10.2	13.4	17.6	23.1
HEART RIVER										
MANDAN 3W	17	0.5	0.9	1.1	1.7	2.1	3.0	4.7	6.0	9.3
APPLE CREEK										
MENOKEN 6W	15	4.7	5.3	5.6	6.4	7.8	11.0	12.6	15.1	15.8
JAMES RIVER										
GRACE CITY 3W	12	4.4	4.4	4.4	4.4	4.4	4.4	4.6	5.0	5.9
LAMOURE	14	7.3	7.3	7.3	7.3	7.4	7.5	7.6	7.7	8.6
LUDDEN 3W	12	9.6	9.6	9.6	9.7	9.9	10.1	10.4	11.4	13.2
PIPESTEM CREEK										
PINGREE 3W	9	4.8	4.8	4.8	4.8	4.8	5.0	5.1	5.4	5.6

THE NUMBERS CONTAINED IN THIS LONG-RANGE PROBABILISTIC OUTLOOK REPRESENT NATURAL FLOWS. THAT IS, FLOWS UNAFFECTED BY MAN-MADE STRUCTURES IN THE BASIN SUCH AS DIVERSION DAMS AND RESERVOIRS.

THIS LONG-RANGE PROBABILISTIC OUTLOOK CONTAINS FORECAST VALUES THAT ARE CALCULATED USING MULTIPLE SEASON SCENARIOS FROM 30 OR MORE YEARS OF CLIMATOLOGICAL DATA INCLUDING CURRENT CONDITIONS OF THE RIVER... SOIL MOISTURE… AND 30 TO 90 DAY LONG-RANGE OUTLOOKS OF TEMPERATURE AND PRECIPITATION. BY PROVIDING A COMPLETE RANGE OF PROBABILITIES... THE LEVEL OF RISK ASSOCIATED WITH LONG-RANGE PLANNING DECISIONS CAN BE DETERMINED. THESE PROBABILISTIC FORECASTS ARE PART OF THE NATIONAL WEATHER SERVICE'S ADVANCED HYDROLOGIC PREDICTION SERVICE.

THIS OUTLOOK IS ALSO PRESENTED AS GRAPHS OF STAGE, FLOW, AND VOLUME...AND AS WEEKLY PROBABILITIES OF THE 90-DAY PERIOD...AS WELL AS EXPLANATIONS THAT HELP IN INTERPRETATION. THESE OUTLOOKS ARE AVAILABLE FROM THE NWS BISMARCK AHPS PAGE ON THE INTERNET AT:

WWW.CRH.NOAA.GOV/BIS/AHPS (LOWER CASE)

CURRENT RIVER CONDITIONS FOR ALL 13 RIVER FORECAST POINTS IN THE SOURIS RIVER BASIN ARE ALSO AVAILABLE ON OUR WEB SITE. 5-DAY FORECASTS WHEN THE RIVER AT A FORECAST POINT IS NEAR FLOOD ARE ALSO AVAILABLE FOR ALL BASINS.

THE NEXT SPRING FLOOD AND WATER RESOURCES OUTLOOK WILL BE ISSUED ON FRIDAY MARCH 11TH 2005.

IF YOU HAVE ANY QUESTIONS, CONTACT THE NWS AT 701-250-4495.

VISIT OUR HOME PAGE AT HTTP://WWW.CRH.NOAA.GOV/BIS (LOWER CASE) FOR MORE WEATHER AND FLOOD INFORMATION.

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2.3 <u>Example #3 - Spring Ice Breakup Outlook (Long Term)</u>. This outlook issued by the Alaska Pacific River Forecast Center (RFC) describes the expected spring ice breakup on Alaska rivers. Note: the practice of issuing the ESF product at an RFC only exists in the Alaska Region.

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FGAK78 PACR 270000
ESFAK
AKZALL-092200-

HYDROLOGIC OUTLOOK
NWS ALASKA PACIFIC RIVER FORECAST CENTER ANCHORAGE AK
300 PM AST FRI MAR 26 2004

...SPRING BREAKUP OUTLOOK FOR ALASKA...

THE FLOOD POTENTIAL FROM SNOWMELT AND ICE JAMS THIS SPRING BREAKUP
SEASON THROUGHOUT ALASKA IS CURRENTLY RATED AS AVERAGE. THIS FORECAST
IS BASED ON CURRENT BELOW NORMAL TO NORMAL SNOWPACK AND ICE THICKNESS
BEING REPORTED OVER MOST OF ALASKA.

ICE - MARCH 1 ICE THICKNESS DATA ARE AVAILABLE FOR A LIMITED NUMBER
OF OBSERVING SITES IN ALASKA. MEASUREMENTS INDICATE THAT ICE
THICKNESS IS NEAR NORMAL OR THINNER THAN NORMAL IN MOST LOCATIONS.
ALL YUKON RIVER ICE MEASUREMENTS ARE THINNER THAN NORMAL AND
MEASUREMENTS ON THE KUSKOKWIM RIVER ARE AT OR BELOW NORMAL. AMONG A
FEW SCATTERED LOCATIONS WITH THICKER THAN NORMAL ICE IS THE KOYUKUK
RIVER AT BETTLES THAT HAS 4-FT THICK ICE WHICH REPRESENTS A INCREASE
OF 30% OVER NORMAL CONDITIONS. FREEZING CONDITIONS DEVELOPED LATE
OVER MUCH OF ALASKA FOLLOWED BY RELATIVELY NORMAL TEMPERATURES
THROUGH JANUARY. THE RATE OF ICE GROWTH WAS INHIBITED BY THE
INSULATION PROVIDED BY SNOWFALL SOON AFTER FREEZEUP. A FEW WARM
PERIODS IN FEBRUARY SLOWED ICE GROWTH IN THE SOUTHERN HALF OF ALASKA.
SNOW - AN ANALYSIS OF THE MARCH 1 SNOWPACK BY THE NATURAL RESOURCES
CONSERVATION SERVICE (NRCS) INDICATES NEAR NORMAL TO BELOW NORMAL
SNOWPACK THROUGH MOST OF ALASKA. MEASUREMENTS OF ABOVE NORMAL SNOWPACK
WERE REPORTED AT LOW ELEVATIONS ON THE NORTHERN KENAI PENINSULA AND AT
SCATTERED LOCATIONS IN THE LOWER AND UPPER YUKON BASINS...PORCUPINE
BASIN...FORTYMILE BASIN...COPPER RIVER BASIN...AND THE NORTHERN
PANHANDLE. AREAS OF BELOW NORMAL MEASUREMENTS INCLUDE THE UPPER
KUSKOKWIM BASIN...SUSITNA BASIN...UPPER COPPER BASIN...LOWER TANANA
BASIN...AND THE SOUTHERN PANHANDLE. ALTHOUGH THESE AREAS REPORTED BELOW
NORMAL SNOWPACK...THERE IS STILL ENOUGH SNOW IN MOST AREAS TO PRODUCE
SIGNIFICANT SNOWMELT RUNOFF PEAKS IF SUBJECTED TO A RAPID WARMING
PATTERN. WARM WEATHER IN FEBRUARY CAUSED SOME LOSS OF SNOWPACK IN LOW
ELEVATION LOCATIONS IN SOUTHERN COASTAL AREAS.

FOR MORE DETAILS ON THE MARCH 1 SNOWPACK...PLEASE REFER TO THE
VARIOUS SNOW GRAPHS OPTIONS AT THE APRFC WEB SITE AT
HTTP://APRFC.ARH.NOAA.GOV /ALL LOWER CASE/ OR ON THE NRCS WEB SITE
AT HTTP://AMBCS.ORG /ALL LOWER CASE/ AND SELECTING SNOWPACK REPORTS
OR SNOWPACK MAPS.

WEATHER - MOST OF ALASKA WAS WARMER THAN NORMAL DURING FEBRUARY BUT HAS
RETURNED TO MORE SEASONAL TEMPERATURES DURING MARCH. THE GREATEST
FACTOR IN DETERMINING THE SEVERITY OF BREAKUP REMAINS THE WEATHER
DURING APRIL AND MAY. THE SPRING OUTLOOK FOR THE APRIL THROUGH JUNE
PERIOD CALLS FOR A GREATER LIKELIHOOD OF ABOVE NORMAL TEMPERATURES FOR
ALL OF ALASKA EXCEPT THE NORTH SLOPE. THE OUTLOOK FOR APRIL INDICATES NO
TENDENCY FOR ABOVE OR BELOW NORMAL TEMPERATURES IN ALASKA. THUS IT SEEMS
UNLIKELY THAT THE ANTICIPATED WARM WEATHER WILL DEVELOP EARLY IN THE
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APRIL TO JUNE PERIOD. IF THE WEATHER REMAINS RELATIVELY COOL IN APRIL AND
EARLY MAY FOLLOWED BY RAPID WARMING DURING MAY...THE MAJORITY OF SNOWMELT
VOLUME WILL REACH THE STREAMS OVER A SHORT TIME PERIOD INCREASING THE
PEAK IN STREAMFLOW AND THEREFORE INCREASING THE CHANCE OF ICE JAMS. FOR
MORE INFORMATION ON THE OUTLOOKS FOR THIS SPRING PLEASE REFER TO THE
CLIMATE PREDICTION CENTER WEB SITE AT
HTTP://WWW.CPC.NCEP.NOAA.GOV/PRODUCTS/FORECASTS /ALL LOWER CASE/.

THE FLOOD POTENTIAL IS DESCRIBED BELOW...

 FLOOD POTENTIAL    DEFINITION
 ---------------------------------------------------------------------
 BELOW AVERAGE..............  COMMUNITIES THAT FLOOD NEARLY EVERY YEAR MAY
                              EXPERIENCE MINOR FLOODING OF LOW LYING AREAS

 AVERAGE....................  COMMUNITIES PRONE TO SNOWMELT OR ICE JAM FLOODS
                              SHOULD EXPECT SIMILAR CONDITIONS THIS YEAR

 ABOVE AVERAGE..............  SEVERAL COMMUNITIES ARE VERY LIKELY TO FLOOD
                              AND THE EXTENT OF FLOODING MAY BE SUBSTANTIAL

FOR MORE DETAIL AND TO SEE A FLOOD POTENTIAL MAP...ICE THICKNESS MAP
...SNOWPACK MAP...AND OTHER BREAKUP INFORMATION...REFER TO OUR WEB
SITE AT HTTP://APRFC.ARH.NOAA.GOV/PRODUCTS/GBRKUP.PHP /ALL LOWER
CASE/ IF YOU HAVE ANY COMMENTS OR QUESTIONS REGARDING THIS
STATEMENT...PLEASE EMAIL US AT BECKY.PERRY@NOAA.GOV

THE NEXT SPRING BREAKUP OUTLOOK IS SCHEDULED FOR APRIL 9 2004.

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3. Flood Watch and Associated Follow-up Products (FFA).

3.1 Example #1 - Flood Watch. Situation – A storm system is approaching the WFO Blacksburg, VA area from the south. Models and Hydrometeorological Prediction Center (HPC) guidance indicate that the storm could produce moderate to heavy rain over an extended period and forecasters see the potential for flooding, but at this time they cannot predict with certainty which rivers and streams are threatened. The WFO issues a flood watch for zones in Virginia and North Carolina at 2:52 a.m. on Tuesday May 27, 2003.

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WGUS61 KRNK 270652
FFARNK

URGENT - IMMEDIATE BROADCAST REQUESTED
FLOOD WATCH
NATIONAL WEATHER SERVICE BLACKSBURG VA
252 AM EDT TUE MAY 27 2003

NCZ003>006-019-020-VAZ022>024-032>035-043>047-058-059-271300-
/O.NEW.KRNK.FA.A.0002.030527T1400Z-030528T0800Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
AMHERST-APPOMATTOX-BEDFORD-BOTETOURT-BUCKINGHAM-CAMPBELL-CASWELL-
CHARLOTTE-FRANKLIN-HALIFAX-HENRY-PATRICK-PITTSYLVANIA-ROANOKE-
ROCKBRIDGE-ROCKINGHAM-STOKES-SUNNY-WILKES-YADKIN-
252 AM EDT TUE MAY 27 2003
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...FLOOD WATCH IN EFFECT FROM 10 AM THIS MORNING TO WEDNESDAY
MORNING...

THE NATIONAL WEATHER SERVICE IN BLACKSBURG HAS ISSUED A

* FLOOD WATCH FOR PARTS OF SOUTHWESTERN VIRGINIA AND NORTHWEST
  NORTH CAROLINA

* FROM 10 AM THIS MORNING TO WEDNESDAY MORNING

* LOW PRESSURE IS EXPECTED TO STRENGTHEN OVER THE CAROLINAS AND MOVE
  EAST THIS AFTERNOON AS A POTENT UPPER DISTURBANCE OVER KENTUCKY
  MOVES OVER THE SOUTHERN APPALACHIANS. AS A RESULT RAIN IS EXPECTED
  TO REDEVELOP AND BECOME HEAVY AT TIMES ALONG AND EAST OF THE BLUE
  RIDGE LATER THIS MORNING AND THIS AFTERNOON.

* LOWER PORTIONS OF THE DAN AND ROANOKE RIVERS ARE ALREADY IN OR NEAR
  FLOOD DUE TO HEAVY RAINFALL SUNDAY...AND ADDITIONAL RAINFALL COULD
  EASILY CAUSE SHARP RISES ON THESE RIVERS. AREA CREEKS AND STREAMS
  ARE ALSO RUNNING HIGH AND COULD FLOOD WITH MORE HEAVY RAIN.

REMEMBER...A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT
IMMINENT IN THE WATCH AREA.

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Notes and Explanations -
(1) The forecaster believes the flood threat starts at 10 a.m. on Tuesday, May 27, 2003 (1400Z). Therefore, the Event Beginning Date/Time group is 030527T1400Z and the beginning time/day phrase used in the second bullet is "10 AM THIS MORNING."
(2) The forecaster wants the watch to be valid until 4 a.m. Wednesday, May 28, 2003 (800Z). Therefore, the Event Ending Date/Time group is 030528T0800Z and the ending time/day phrase used in the second bullet is the general phrase "WEDNESDAY MORNING."

3.2 <u>Example #2 - Flood Watch: Follow-up With Cancellation, Extension in Area, and Continuation Segments</u>. Situation - WFO Blacksburg had issued a flood watch for zones in Virginia and North Carolina at 2:52 a.m. on Tuesday May 27, 2003 (see section 3.1). Later in the morning, models and HPC guidance indicted the storm track will be further west, so at 8:00 a.m. a forecaster decides to add new zones to the watch in North Carolina, Virginia, West Virginia and cancel the watch for some zones in the eastern part of the original watch area. This would call for issuance of a product with three segments as follows:

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WGUS61 KRNK 271200
FFARNK

URGENT - IMMEDIATE BROADCAST REQUESTED
FLOOD WATCH
NATIONAL WEATHER SERVICE BLACKSBURG VA
800 AM EDT TUE MAY 27 2003

...FLOOD WATCH AREA SHIFTED WESTWARD WITH FLOODING NOW POSSIBLE IN
SOUTHWESTERN VIRGINIA...EASTERN WEST VIRGINIA AND NORTHWEST NORTH
CAROLINA UNTIL TOMORROW MORNING...
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NCZ005-006-VAZ044>047-058-059-271300-
/O.CAN.KRNK.FA.A.0002.030527T1400Z-030528T0800Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
APPOMATTOX-BUCKINGHAM-CAMPBELL-CHARLOTTE-CASWELL-HALIFAX-
PITTSYLVANIA-ROCKINGHAM-
800 AM EDT TUE MAY 27 2003

...FLOOD WATCH IS CANCELLED...

THE FLOOD WATCH HAS BEEN CANCELLED. LOW PRESSURE CONTINUES TO
STRENGTHEN OVER THE CAROLINAS AS AN UPPER DISTURBANCE THAT TRIGGERED
HEAVY RAIN OVER KENTUCKY IS STARTING TO MOVE IN OVER THE SOUTHERN
APPALACHIANS. HOWEVER...THE HEAVIEST RAINFALL IS NOW EXPECTED TO
OCCUR FURTHER WEST ALONG BOTH SIDES OF THE BLUE RIDGE THIS MORNING AND
THIS AFTERNOON. THEREFORE...THE FLOOD WATCH IS BEING CANCELLED FOR
THOSE COUNTIES FARTHER EAST FROM THE BLUE RIDGE.

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NCZ001-002-018-VAZ011>018-020-WVZ044-045-272000-
/O.EXA.KRNK.FA.A.0002.030527T1400Z-030528T0800Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
ALLEGHANY-ASHE-BATH-CARROLL-CRAIG-FLOYD-GILES-GRAYSON-GREENBRIER-
MONROE-MONTGOMERY-PULASKI-WATAUGA-WYTHE-
800 AM EDT TUE MAY 27 2003

...FLOOD WATCH IN EFFECT FROM THIS 10 AM MORNING TO WEDNESDAY
MORNING...

THE NATIONAL WEATHER SERVICE IN BLACKSBURG HAS EXPANDED THE

* FLOOD WATCH TO INCLUDE THE APPALACHIAN REGIONS OF VIRGINIA...WEST
  VIRGINIA AND NORTH CAROLINA

* FROM THIS 10 AM THIS MORNING TO WEDNESDAY MORNING

* LOW PRESSURE CONTINUES TO STRENGTHEN OVER THE CAROLINAS AS A POTENT
  UPPER DISTURBANCE THAT TRIGGERED HEAVY RAIN OVER KENTUCKY IS
  STARTING TO MOVE OVER THE SOUTHERN APPALACHIANS. HOWEVER...THE
  HEAVIEST RAINFALL IS NOW EXPECTED TO OCCUR ALONG BOTH SIDES OF THE
  BLUE RIDGE THIS MORNING AND THIS AFTERNOON. THEREFORE...THE FLOOD
  WATCH IS BEING EXTENDED INTO AREAS ALONG AND WEST OF THE BLUE RIDGE.

* AREA CREEKS AND STREAMS ARE RUNNING HIGH AND COULD FLOOD WITH MORE
  HEAVY RAIN.

REMEMBER...A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT
IMMINENT IN THE WATCH AREA.

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NCZ003-004-019-020-VAZ022>024-032>035-043-272000-
/O.CON.KRNK.FA.A.0002.030527T1400Z-030528T0800Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
AMHERST-BEDFORD-BOTETOURT-FRANKLIN-HENRY-PATRICK-ROANOKE-
ROCKBRIDGE-STOKES-SUNNY-WILKES-YADKIN-
800 AM EDT TUE MAY 27 2003

...FLOOD WATCH REMAINS IN EFFECT FROM 10 AM THIS MORNING TO
WEDNESDAY MORNING...
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Draft

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THE FLOOD WATCH CONTINUES FOR

* SOUTHWESTERN VIRGINIA AND NORTHWEST NORTH CAROLINA

* FROM 10 AM THIS MORNING TO WEDNESDAY MORNING

* LOW PRESSURE CONTINUES TO STRENGTHEN OVER THE CAROLINAS AS A POTENT
  UPPER DISTURBANCE THAT TRIGGERED HEAVY RAIN OVER KENTUCKY IS
  STARTING TO MOVE OVER THE SOUTHERN APPALACHIANS. THE HEAVIEST
  RAINFALL IS NOW EXPECTED BE CENTERED OVER THE BLUE RIDGE THIS
  MORNING AND THIS AFTERNOON. THEREFORE...THE FLOOD WATCH CONTINUES
  ALONG THE WESTERN SLOPES OF THE BLUE RIDGE.

* ADDITIONAL RAINFALL COULD CAUSE RISES ON THE UPPER REACHES OF THE
  DAN AND ROANOKE RIVERS RIVERS. AREA CREEKS AND STREAMS ARE ALSO
  RUNNING HIGH AND COULD FLOOD WITH MORE HEAVY RAIN.

REMEMBER...A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT
IMMINENT IN THE WATCH AREA.

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Notes and Explanations:
(1) A cancellation segment (CAN) is used to remove the zones from the area for which a flood watch no longer applies.
(2) An extension in area segment (EXA) is used for the new zones now being covered by the multi-segmented flood watch.
(3) A continuation segment (CON) is used for the zones in the original watch that will continue to be covered in the multi-segmented flood watch.
(4) All three segments in this product have the same event tracking number.
(5) This product is being issued at 8:00 a.m. (1200Z), which is still two hours before the event beginning time provided in this and the original product (10:00 a.m. or 1400Z), so the Event Beginning Date/Time for all three segments remains the same as the initial flood watch (030527T1400Z) and "10 AM THIS MORNING" is still used in the second bullet of segments 2 and 3.
(6) All three segments, including the cancellation segment, use the same date and time in the Event Ending Date/Time group - i.e., 4 a.m. on May 28th (030528T0800Z).

3.3 <u>Example #3 – Flash Flood Watch</u>. Situation: A storm system is moving into the WFO Springfield, MO area from the west. Using HPC QPF and RFC guidance, forecasters conclude that flash flooding could occur. However, the specific locations that could experience flash flooding cannot be predicted with certainty. At 3:00 a.m. (900Z) on Wednesday, March 19, 2003, a flash flood watch is issued for seven zones in southwestern Missouri.

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WGUS63 KFGF 190900
FFASGF

URGENT - IMMEDIATE BROADCAST REQUESTED
FLOOD WATCH
NATIONAL WEATHER SERVICE SPRINGFIELD MO
300 AM CST WED MAR 19 2003

MOZ066-077-088-093-094-101-102-191500-
/O.NEW.KSGF.FF.A.0002.030319T1500Z-030320T2200Z/
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/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BARRY-BARTON-JASPER-LAWRENCE-MCDONALD-NEWTON-VERNON-
300 AM CST WED MAR 19 2003

...FLASH FLOOD WATCH IN EFFECT FROM 9 AM THIS MORNING TO THURSDAY
AFTERNOON...

THE NATIONAL WEATHER SERVICE IN SPRINGFIELD HAS ISSUED A

* FLASH FLOOD WATCH FOR SOUTHWESTERN MISSOURI

* FROM 9 AM THIS MORNING TO THURSDAY AFTERNOON

* A STRONG STORM SYSTEM MOVING NORTHEAST ACROSS THE CENTRAL PLAINS
  WILL CONTINUE TO PUMP MOISTURE NORTHWARD FROM THE GULF OF MEXICO.
  A LARGE BAND OF RAIN AND THUNDERSTORMS WILL CONTINUE TO ROTATE
  NORTHWESTWARD AROUND THIS UPPER LOW. MODERATE TO HEAVY RAIN AND
  OCCASIONAL THUNDERSTORMS ASSOCIATED WITH THIS BAND WILL CONTINUE
  OVER THE WATCH AREA MUCH OF TODAY. WIDESPREAD RAINFALL AMOUNTS OF
  1 TO 2 INCHES ARE LIKELY IN THE WATCH AREA TODAY...WITH LOCALLY
  HEAVIER AMOUNTS OF 3 OR MORE INCHES POSSIBLE.

REMEMBER...A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT
IMMINENT IN THE WATCH AREA. PERSONS IN SOUTHWESTERN MISSOURI SHOULD
BE AWARE OF THE POSSIBILITY FOR HEAVY RAINFALL AND FLASH FLOODING...
CHECK YOUR PREPAREDNESS REQUIREMENTS...ESPECIALLY IF YOU HAVE
INTERESTS ALONG RIVERS IN THE AREA. KEEP INFORMED...AND BE READY FOR
ACTION IF FLOODING IS OBSERVED OR IF A FLASH FLOOD WARNING IS ISSUED.
STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE
TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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Notes and Explanations:
(1) The forecaster believes the flood threat starts at 9:00 a.m. on Wednesday, March 19, 2003 (1500Z). Therefore, the Event Beginning Date/Time group is 030319T1500Z and the beginning time/day phrase used in the second bullet is "9 AM THIS MORNING."
(2) The forecaster wants the watch to be valid until 4:00 p.m. Thursday, March 20 (2200Z). Therefore, the Event Ending Date/Time group is 030320T2200Z and the ending time/day phrase used in the second bullet is "THURSDAY AFTERNOON."

3.4 <u>Example #4 – Flash Flood Watch: Follow-up With Extension in Time and Extension In Area Segments</u>. Situation: Six hours after the initial flash flood watch was issued, forecasters at WFO Springfield, MO observe that the approaching storm will cover a wider area and have a longer duration than originally anticipated. At 9:00 a.m. on Wednesday, March 19, they issue a flash flood watch which expands coverage into three zones in southeastern Kansas and extends the event expiration time by eight hours from 4:00 p.m. Thursday afternoon to midnight.

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WGUS63 KFGF 191500
FFASGF

URGENT - IMMEDIATE BROADCAST REQUESTED
FLOOD WATCH
NATIONAL WEATHER SERVICE SPRINGFIELD MO
900 AM CST WED MAR 19 2003
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...AREA OF POSSIBLE FLASH FLOODING EXPANDED INTO FAR SOUTHEASTERN
KANSAS AND PERIOD OF THREAT EXTENDED UNTIL LATE THURSDAY NIGHT...

MOZ066-077-088-093-094-101-102-192100-
/O.EXT.KSGF.FF.A.0002.000000T0000Z-030321T0600Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BARRY-BARTON-JASPER-LAWRENCE-MCDONALD-NEWTON-VERNON-
900 AM CST WED MAR 19 2003

...FLASH FLOOD WATCH EXTENDED UNTIL LATE THURSDAY NIGHT...

THE NATIONAL WEATHER SERVICE IN SPRINGFIELD HAS EXTENDED THE

* FLASH FLOOD WATCH

* UNTIL LATE THURSDAY NIGHT

* A STRONG STORM SYSTEM MOVING NORTHEAST ACROSS THE CENTRAL PLAINS
  CONTINUES TO DRAW MOISTURE NORTHWARD FROM THE GULF OF MEXICO. RAIN
  AND A FEW THUNDERSTORMS ARE BEGINNING TO MOVE INTO THE SOUTHERN
  PART OF THE WATCH AREA. HEAVY RAIN IS NOW POSSIBLE INTO TONIGHT...
  WITH LOCALIZED AMOUNTS OF 1 TO 2 INCHES POSSIBLE IN THE WATCH
  AREA.  EVEN HEAVIER AMOUNTS OF 3 OR MORE INCHES COULD STILL OCCUR.

A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT
IN THE WATCH AREA. PERSONS IN SOUTHWESTERN MISSOURI SHOULD BE AWARE OF
OF THE POSSIBILITY FOR HEAVY RAINFALL AND FLASH FLOODING...CHECK YOUR
PREPAREDNESS REQUIREMENTS...ESPECIALLY IF YOU HAVE INTERESTS ALONG
SMALL RIVERS AND STREAMS IN THE AREA. KEEP INFORMED...AND BE READY FOR
ACTION IF FLOODING IS OBSERVED OR IF A FLASH FLOOD WARNING IS ISSUED.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE
TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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KSZ073-097-101-192100-
/O.EXB.KSGF.FF.A.0002.000000T0000Z-030321T0600Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BOURBON-CHEROKEE-CRAWFORD-
900 AM CST WED MAR 19 2003

...FLASH FLOOD WATCH IN EFFECT UNTIL LATE THURSDAY NIGHT...

THE NATIONAL WEATHER SERVICE IN SPRINGFIELD HAS EXPANDED THE

* FLASH FLOOD WATCH TO INCLUDE FAR SOUTHEASTERN KANSAS

* UNTIL LATE THURSDAY NIGHT

* A STRONG STORM SYSTEM MOVING NORTHEAST ACROSS THE CENTRAL PLAINS
  CONTINUES TO DRAW MOISTURE NORTHWARD FROM THE GULF OF MEXICO. RAIN
  AND A FEW THUNDERSTORMS ROTATING AROUND THIS LOW ARE BEGINNING TO
  MOVE INTO THE SOUTHERN PART OF THE WATCH AREA. HEAVY RAIN MAY
  AFFECT AREAS FURTHER WEST INTO SOUTHEASTERN KANSAS AND LAST INTO
  TONIGHT. LOCAL AMOUNTS OF 1 TO 2 INCHES ARE POSSIBLE IN THE WATCH
  AREA...WITH 3 OR MORE INCHES STILL POSSIBLE IN SOME LOCATIONS.

A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT
IN THE WATCH AREA. BE AWARE OF THE POSSIBILITY FOR HEAVY RAINFALL
AND FLASH FLOODING...CHECK YOUR PREPAREDNESS REQUIREMENTS...
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Draft

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ESPECIALLY IF YOU HAVE INTERESTS ALONG SMALL RIVERS AND STREAMS IN
THE AREA. KEEP INFORMED...AND BE READY FOR ACTION IF FLOODING IS
OBSERVED OR IF A FLASH FLOOD WARNING IS ISSUED.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE
TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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Notes and Explanations:

(1) The new zones being added to the flash flood watch are handled in an EXB (extended in both area and time) segment and the zones in the original flood watch are handled in an EXT (extended in time) segment.

(2) The event beginning time in the original flash flood watch was 9:00 a.m. Since this follow-up product is being issued at 9:00 a.m., the event is considered to have already begun and the Event Beginning Date/Time groups for both segments is coded with ten zeros (000000T0000Z). Therefore, no beginning time/day phrases are used in the headlines and second bullets of the EXB and EXT segments.

(3) The forecaster wants to extend the valid time by eight hours to midnight (0600Z). Therefore, the Event Ending Date/Time group is 030321T0600Z and the ending time/day phrase used is "LATE THURSDAY NIGHT."

3.5 <u>Example #5: Flash Flood Watch (Short and Long Zone Names)</u>. Situation: A forecaster at WFO Albuquerque, NM notes a line of thunderstorms has formed and is moving across the state. Observations, models, and HPC guidance indicate conditions are favorable for flash flooding, but the nature of the storm makes it difficult to predict with certainty whether the rainfall will persist and where flooding could occur, so a flash flood watch is issued for the day over a wide area.

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WGUS65 KABQ 281555
FFAABQ

URGENT - IMMEDIATE BROADCAST REQUESTED
FLOOD WATCH
NATIONAL WEATHER SERVICE ALBUQUERQUE NM
955 AM MDT SAT OCT 28 2000

...FLASH FLOODING POSSIBLE IN THE EAST CENTRAL PLAINS AND SOUTHEAST
NEW MEXICO TODAY...

NMZ006-012-013-018>021-282200-
/O.NEW.KABQ.FF.A.0015.001028T1555Z-001028T2200Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
HARDING COUNTY-CONCHAS LAKE/GUADALUPE COUNTY-QUAY COUNTY-
DE BACA COUNTY-CHAVES COUNTY PLAINS-ROOSEVELT COUNTY-CURRY COUNTY-
955 AM MDT SAT OCT 28 2000

...FLASH FLOOD WATCH IN EFFECT UNTIL THIS AFTERNOON...

THE NATIONAL WEATHER SERVICE IN ALBUQUERQUE HAS ISSUED A

* FLASH FLOOD WATCH FOR THE EAST CENTRAL PLAINS AND SOUTHEAST AREAS
  OF NEW MEXICO
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* UNTIL THIS AFTERNOON

* AT 950 AM MDT...WELL DEFINED LINE OF STRONG THUNDERSTORMS WAS
  MOVING SLOWLY EASTWARD ACROSS PARTS OF EASTERN NEW MEXICO. THE LINE
  CURRENTLY EXTENDS FROM WESTERN CHAVES TO NORTHEAST DE BACA INTO
  EASTERN SAN MIGUEL AND HARDING COUNTIES. THE LINE OF THUNDERSTORMS
  WILL GRADUALLY MOVE EASTWARD AS THE UPPER LEVEL STORM SYSTEM BEGINS
  TO MOVE INTO NORTHEAST NEW MEXICO LATER TODAY.

* SOUTHERLY WINDS...AT THE SURFACE AND ALOFT...ARE CREATING AN
  ENVIRONMENT FAVORABLE FOR TRAINING OF THUNDERSTORMS OVER THE
  EASTERN PORTIONS OF NEW MEXICO. SOME OF THE STRONGER STORMS COULD
  PRODUCE RAINFALL RATES BETWEEN 1 TO 2 INCHES AN HOUR.

A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT
IN THE WATCH AREA.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE
TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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Notes and Explanation:

(1) The forecaster wants the watch to start immediately because the line of thunderstorms has already formed, so the Event Beginning Date/Time (001028T1555Z) is the same as the product issuance date/time (9:55 a.m. on Saturday, Oct 28, 2000).

(2) Note how the highly variable topography in New Mexico necessitates the use of more terrain-oriented names for some zones such as "Chaves County Plains," while other zones correspond one-to-one with counties.

3.6 <u>Example #6: Flash Flood Watch (Long Zone Names)</u>. Situation: A storm system with heavy rainfall is moving into southern California. Because it is difficult to predict where and if flash flood-causing rainfall will occur, forecasters at WFO San Diego, CA issue a flash flood watch is issued for the night and next day over most of the county warning area.

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WGUS66 KSGX 120342
FFASGX

URGENT - IMMEDIATE BROADCAST REQUESTED
FLOOD WATCH
NATIONAL WEATHER SERVICE SAN DIEGO CA
745 PM PST TUE FEB 11 2003

...FLASH FLOODING POSSIBLE OVER SOUTHERN CALIFORNIA UNTIL THURSDAY
MORNING...

CAZ042-043-048-050-055>058-061-062-121200-
/O.NEW.KSGX.FF.A.0003.030212T0345Z-030213T1200Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
ORANGE COUNTY COASTAL AREAS-SAN DIEGO COUNTY COASTAL AREAS-
SAN BERNARDINO AND RIVERSIDE COUNTY VALLEYS-THE INLAND EMPIRE-
SAN DIEGO COUNTY VALLEYS-SAN BERNARDINO COUNTY MOUNTAINS-RIVERSIDE
COUNTY MOUNTAINS-SANTA ANY MOUNTAINS AND FOOTHILLS-SAN DIEGO COUNTY
MOUNTAINS-COACHELLA VALLEY-SAN DIEGO COUNTY DESERTS-
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745 PM PST TUE FEB 11 2003

...FLASH FLOOD WATCH IN EFFECT UNTIL THURSDAY MORNING...

THE NATIONAL WEATHER SERVICE IN SAN DIEGO HAS ISSUED A

* FLASH FLOOD WATCH FOR SAN DIEGO AND ORANGE COUNTIES...THE INLAND
  EMPIRE...THE COACHELLA VALLEY AND THE MOUNTAINS AND DESERTS OF
  SAN BERNARDINO AND RIVERSIDE COUNTIES

* UNTIL THURSDAY MORNING

* A LARGE STORM SOUTHWEST OF SAN DIEGO WILL CONTINUE TO FEED
  MOISTURE INTO SOUTHERN CALIFORNIA TONIGHT AND WEDNESDAY. AS THE
  STORM MOVES NORTHEAST RAIN WILL INCREASE ACROSS THE AREA...WITH
  HEAVY RAIN LIKELY WEDNESDAY. RAINFALL RATES OF 1/2 INCH PER HOUR
  OR MORE WILL PRODUCE STREET FLOODING...AND MAY ALSO BRING SMALL
  CREEKS AND STREAMS TO BANKFULL.

A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT
IN THE WATCH AREA.

THE HEAVY RAINS WILL INCREASE THE THREAT OF MUDSLIDES AND FLOODING IN
AND BELOW THE BURN AREAS. RESIDENTS IN THESE AREAS SHOULD MAKE
PREPARATIONS FOR FLOODING AND BE PREPARED TO MOVE TO HIGHER GROUND IF
HEAVY RAINS DEVELOP.  STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL
MEDIA OR CABLE TELEVISION FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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Notes and Explanations:

(1) The forecaster wants the watch to start immediately because the storm system is already moving on shore, so the Event Beginning Date/Time (030212T0345Z) is the same as the product issuance date/time (7:45 p.m. on Tuesday, Feb 11, 2003).

(2) Note how the highly variable topography in Southern California necessitates the use of more terrain-oriented zone names such as “San Bernardino County Mountains.”

3.7 <u>Example #7: Flood Watch (Long Zone Names)</u>. Situation: A large area of moderate rainfall is occurring over the coast range portion of the WFO Portland, OR county warning area. Under current antecedent conditions, RFC guidance indicates that this heavily forested area can absorb about two inches of rainfall without significant flooding. QPFs indicate that heavier rainfall could occur in a few areas, so the forecaster knows that there is some potential for flooding. Therefore, a flood watch is issued until 11:00 p.m. Saturday evening.

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WGUS66 KPQR 220131
FFAPQR

URGENT - IMMEDIATE BROADCAST REQUESTED
FLOOD WATCH
NATIONAL WEATHER SERVICE PORTLAND OR
530 PM PST FRI MAR 21 2003
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ORZ001>004-006>008-WAZ021-220700-
/O.NEW.KPQR.FA.A.0007.030322T0130Z-030323T0700Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
NORTH OREGON COAST-CENTRAL OREGON COAST-COAST RANGE OF NORTHWEST
OREGON-CENTRAL COAST RANGE OF WESTERN OREGON-GREATER PORTLAND
METRO AREA-CENTRAL WILLAMETTE VALLEY-SOUTH WILLAMETTE VALLEY-
SOUTH WASHINGTON COAST-
530 PM PST FRI MAR 21 2003

...FLOOD WATCH IN EFFECT UNTIL SATURDAY NIGHT...

THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A

* FLOOD WATCH FOR THE WILLAMETTE TRIBUTARIES DRAINING THE NORTHWEST
  OREGON COAST RANGE AND THE COASTAL RIVERS AND STREAMS OF SOUTHWEST
  WASHINGTON AND NORTHWEST OREGON

* UNTIL SATURDAY NIGHT

* RAIN CONTINUES TO FALL THIS EVENING OVER THE COAST AND COAST RANGE
  OF SOUTHWEST WASHINGTON AND NORTHWEST OREGON...AND WILL CONTINUE TO
  BE HEAVY AT TIMES TONIGHT.

* SEVERAL OF THE RIVERS AND STREAMS DRAINING THE COAST RANGE IN
  NORTHWEST OREGON AND SOUTHWEST WASHINGTON MAY RISE TO FLOOD STAGE
  TONIGHT OR SATURDAY. ALONG THE COASTAL SLOPES THE STREAMS MOST AT
  RISK FOR FLOODING INCLUDE THE NEHALEM...WILSON...SILETTE AND
  SIUSLAW RIVERS. STREAMS AT RISK FOR FLOODING DRAINING THE EAST
  SLOPES OF THE COAST RANGE INTO THE WILLAMETTE RIVER INCLUDE THE
  LUCKIAMUTE...MARYS AND UPPER TULATIN RIVERS.

A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT IN THE
WATCH AREA.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE
TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS. STAGE
FORECASTS FOR RIVERS IN THE WATCH AREA SHOULD BE MONITORED. THESE
STAGE FORECASTS ARE BASED ON OBSERVED AND FORECAST RAINFALL AND
TEMPERATURES. IF ACTUAL RAINFALL AND TEMPERATURES VARY FROM THE
FORECAST VALUES...THE RIVER STAGE WILL VARY ACCORDINGLY. RIVER
FORECASTS ALSO INCLUDE CURRENT AND PLANNED RESERVOIR RELEASES.
FOR THE LATEST RIVER STAGES AND FORECASTS...VISIT OUR WEB PAGE AT
WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO /LOWER CASE/.

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J. DOE
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Notes and Explanations:

(1) The forecaster wants the watch to start immediately because the rainfall has already started, so the Event Beginning Date/Time (030322T0130Z) is the same as the product issuance date/time (5:30 p.m. on Friday, Mar 21, 2003).

(2) Note how more terrain-oriented zone names such as “Coast Range of Northwest Oregon” are used because of the mountainous topography in coastal Oregon and Washington.

(3) Note the highly specific description of the areas and streams with the potential for flooding.

3.8 Example #8 - Flood Watch: Follow-up (Long Zone Names). Five and a half hours after the initial flood watch was issued, forecasters at WFO Portland, OR issued a flood watch to update the original watch.

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WGUS66 KPQR 220700
FFAPQR

FLOOD WATCH
NATIONAL WEATHER SERVICE PORTLAND OR
1100 PM PST FRI MAR 21 2003

ORZ001>004-006>008-WAZ021-221300-
/O.CON.KPQR.FA.A.0007.000000T0000Z-030323T0700Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
NORTH OREGON COAST-CENTRAL OREGON COAST-COAST RANGE OF NORTHWEST
OREGON-CENTRAL COAST RANGE OF WESTERN OREGON-GREATER PORTLAND METRO
AREA-CENTRAL WILLAMETTE VALLEY-SOUTH WILLAMETTE VALLEY-SOUTH
WASHINGTON COAST-
1100 PM PST FRI MAR 21 2003

...FLOOD WATCH REMAINS IN EFFECT UNTIL SATURDAY NIGHT...

THE FLOOD WATCH CONTINUES FOR

* THE WILLAMETTE TRIBUTARIES DRAINING THE NORTHWEST OREGON COAST
  RANGE AND THE COASTAL RIVERS AND STREAMS OF SOUTHWEST WASHINGTON
  AND NORTHWEST OREGON

* UNTIL SATURDAY NIGHT

* MODERATE RAIN CONTINUES TO FALL THIS EVENING OVER THE WATCH AREA
  WITH A FEW HEAVIER AREAS ON THE COASTAL SLOPES. SO FAR ALL MAJOR
  RIVERS AND STREAMS DRAINING THE COAST RANGE IN NORTHWEST OREGON AND
  SOUTHWEST WASHINGTON ARE BELOW FLOOD STAGE...BUT STILL SHOULD BE
  MONITORED CLOSELY FOR THE POSSIBILITY OF FLOODING SHOULD RAINFALL
  EXCEED THE CURRENTLY FORECAST VALUES.

A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT IN THE
WATCH AREA.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE
TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS. THE
LATEST RIVER STAGES AND FORECASTS CAN BE MONITORED AT
WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO /LOWER CASE/.

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J. DOE
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3.9 Example #9 - Flood Watch: Expiration (Long Zone Names). The rain has moved east of the WFO Portland area and rivers remained below flood stage, so forecasters issue a final product to announce expiration of the flood watch at 11:00 p.m. on Saturday, March 22.

Draft

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WGUS66 KPQR 230700
FFAPQR

FLOOD WATCH
NATIONAL WEATHER SERVICE PORTLAND OR
1100 PM PST SAT MAR 22 2003

ORZ001>004-006>008-WAZ021-230715-
/O.EXP.KPQR.FA.A.0007.000000T0000Z-030323T0700Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
NORTH OREGON COAST-CENTRAL OREGON COAST-COAST RANGE OF NORTHWEST
OREGON-CENTRAL COAST RANGE OF WESTERN OREGON-GREATER PORTLAND
METRO AREA-CENTRAL WILLAMETTE VALLEY-SOUTH WILLAMETTE VALLEY-
SOUTH WASHINGTON COAST-
1100 PM PST SAT MAR 22 2003

...FLOOD WATCH IS NO LONGER IN EFFECT...

THE FLOOD WATCH FOR THE WILLAMETTE TRIBUTARIES DRAINING THE
NORTHWEST OREGON COAST RANGE AND THE COASTAL RIVERS AND STREAMS OF
SOUTHWEST WASHINGTON AND NORTHWEST OREGON HAS BEEN ALLOWED TO
EXPIRE.

MODERATE TO HEAVY RAIN FELL OVERNIGHT ALONG THE COAST AND IN THE
COAST RANGE OF SOUTHWEST WASHINGTON AND NORTHWEST OREGON...BUT
REMAINED WITHIN THE RANGE OF FORECAST VALUES. THIS ALLOWED ALL RIVERS
AND STREAMS IN THE WATCH AREA TO REMAIN BELOW FLOOD STAGE. RIVERS
WILL STILL BE AT HIGH LEVELS FOR THE NEXT FEW DAYS BUT GRADUALLY
RECEDE UNTIL THE NEXT STORM ARRIVES THIS TUESDAY.

THE LATEST STAGES AND FORECASTS FOR RIVERS AND STREAMS CAN BE FOUND
AT OUR WEB PAGE AT WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO
/LOWER CASE/.

$$

J. DOE
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4. Flood Watch for Forecast Points.

4.1 Example #1 - Flood Watch for Three Forecast Points (FFA) NCEP models and HPC guidance indicate the possibility of three to four inches of rainfall over the southwest corner of Wisconsin. Local emergency managers have requested that WFO Milwaukee/ Sullivan provide point-specific flood watches for the Milwaukee River when significant flooding is possible but not certain enough to meet the "imminent" criteria for issuance of flood warnings. At about 11:20 a.m. on January 25, forecasters issue a flood watch for three forecast points.
d

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WGUS63 KMKE 251721
FFAMKE

URGENT - IMMEDIATE BROADCAST REQUESTED
FLOOD WATCH
NATIONAL WEATHER SERVICE MILWAUKEE/SULLIVAN WI
1121 AM CST TUE JAN 25 2005

...THE NATIONAL WEATHER SERVICE IN MILWAUKEE HAS ISSUED A FLOOD
WATCH FOR THE FOLLOWING LOCATIONS ON THE MILWAUKEE RIVER IN
SOUTHEAST WISCONSIN...
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```
  MILWAUKEE RIVER AT WAUBEKA AFFECTING OZAUKEE COUNTY
  MILWAUKEE RIVER AT CEDARBURG AFFECTING OZAUKEE COUNTY
  MILWAUKEE RIVER AT MILWAUKEE AFFECTING MILWAUKEE COUNTY

.THE COMBINATION OF CURRENT CONDITIONS AND A POSSIBLE THREE TO FOUR
INCHES OF RAINFALL LATE THIS AFTERNOON MAY SEND THE MILWAUKEE RIVER
ABOVE ITS FLOOD STAGE WITHIN THE NEXT 48 HOURS. THESE WATCHES WILL
BE IN EFFECT UNTIL THEY ARE CANCELLED OR REPLACED WITH A WARNING OR
ADVISORY.

A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT.

THE LATEST STAGES AND FORECASTS FOR RIVERS AND STREAMS CAN BE FOUND
AT OUR WEB PAGE AT HTTP://WWW.CRH.NOAA.GOV/CGI-BIN/AHPS.CGI?MKX
/LOWER CASE/.

WIZ060-252321-
/O.NEW.KMKE.FL.A.0001.050125T1721Z-050127T1800Z/
/WAUW3.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/
OZAUKEE-
INCLUDING THE CITIES OF WAUBEKA...FREDONIA AND SAUKVILLE
1121 AM CST TUE JAN 25 2005

THE NATIONAL WEATHER SERVICE IN MILWAUKEE HAS ISSUED A
* FLOOD WATCH FOR
  MILWAUKEE RIVER AT WAUBEKA
* UNTIL 1200 PM THURSDAY
* AT 10 AM CST THE STAGE WAS...4.5 FEET
* MINOR FLOODING IS POSSIBLE
* BANKFULL STAGE IS 8.5 FEET
* FLOOD STAGE IS...9.5 FEET
* FORECAST...IF CURRENT PRECIPITATION FORECASTS HOLD...FLOOD STAGE
  MAY BE REACHED AT ABOUT 800 PM TONIGHT AND THE RIVER MAY CREST AT
  ABOUT 10.0 FEET AT 200 AM WEDNESDAY.

$$

WIZ060-252321-
/O.NEW.KMKE.FL.A.0002.050125T1721Z-050127T1800Z/
/CEDW3.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/
OZAUKEE-
INCLUDING THE CITIES OF GRAFTON...CEDARBURG...THIENSVILLE AND MEQUON
1121 AM CST TUE JAN 25 2005

THE NATIONAL WEATHER SERVICE IN MILWAUKEE HAS ISSUED A
* FLOOD WATCH FOR
  MILWAUKEE RIVER AT CEDARBURG
* UNTIL 1200 PM THURSDAY
* AT 10 AM CST THE STAGE WAS...7.2 FEET
* MINOR FLOODING IS POSSIBLE
* BANKFULL STAGE IS...10.0 FEET
* FLOOD STAGE IS...11.0 FEET
* FORECAST...IF CURRENT PRECIPITATION FORECASTS HOLD...FLOOD STAGE
  MAY BE REACHED AT ABOUT 500 AM WEDNESDAY AND THE RIVER MAY CREST
  AT ABOUT 11.5 FEET AT ABOUT 900 AM WEDNESDAY.

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Draft

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WIZ060-252321-
/O.NEW.KMKE.FL.A.0003.050125T1721Z-050127T1800Z/
/MEEW3.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/
MILWAUKEE-
INCLUDING THE CITY OF MILWAUKEE
1121 AM CST TUE JAN 25 2005

THE NATIONAL WEATHER SERVICE IN MILWAUKEE HAS ISSUED A
* FLOOD WATCH FOR
  MILWAUKEE RIVER AT MILWAUKEE
* UNTIL 1200 PM THURSDAY
* AT 10 AM CST THE STAGE WAS...2.5 FEET
* MINOR FLOODING IS POSSIBLE
* BANKFULL STAGE IS 6.0 FEET
* FLOOD STAGE IS...7.0 FEET
* FORECAST...IF CURRENT PRECIPITATION FORECASTS HOLD...FLOOD STAGE
  MAY BE REACHED AT ABOUT 500 PM WEDNESDAY AND THE RIVER MAY CREST
  AT ABOUT 7.2 FEET AT ABOUT 900 PM WEDNESDAY

$$

&& TABULAR FORECAST INFORMATION

RIVER FORECASTS ARE AVAILABLE FOR SOME BUT NOT ALL RIVER GAGING
LOCATIONS. IN THIS AREA...A RIVER FORECAST COVERS 7 DAYS AND TAKES
INTO ACCOUNT PREDICTED PRECIPITATION FOR THE FIRST 24 HOURS.

(STAGES
 IN FT.)       BANK-   LATEST            FORECAST STAGES
         FLOOD FULL   OBSERVED       .......FOR 7 AM........
LOCATION STAGE STAGE STAGE/TIME    WED  THU  FRI  SAT  SUN  MON  TUE

WAUBEKA    9.5  8.5  4.6  1000 AM  8.5  5.9  4.8  4.6  4.5  4.5  4.5
CEDARBURG 11.0 10.0  7.36 0615 AM 11.4  9.0  8.1  7.6  7.5  7.4  7.4
MILWAUKEE  7.0  6.5  2.5  1000 AM  2.6  6.9  5.8  5.0  4.3  3.7  3.2

...BELOW IS PREDICTED PRECIPITATION INFORMATION...

(CEDW3) PREDICTED 6-HOUR RAINFALL AMOUNTS
CEDARBURG: 7 AM-1 PM   0.00
CEDARBURG: 1 PM-7 PM   3.00
CEDARBURG: 7 PM-1 AM   0.50
CEDARBURG: 1 AM-7 AM   0.00

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Note and Explanation:-

(1) Note how dependence of forecast stages on forecast precipitation is clearly indicated.

5. <u>Flash Flood Warning (FFW) and Associated Follow-up Products (FFS)</u>.

5.1 <u>Example #1 - Flash Flood Warning (FFW)</u>. Situation - radar shows thunderstorms with heavy rain moving northwest across central Long Island, NY. WFO New York City/Upton forecasters, using the flash flood monitoring and prediction system, note the likelihood of flash flooding in small streams in southwest Suffolk County and decide to issue a flash flood warning at 12:55 p.m. EDT (1655Z). The resulting product is the most common type of flash flood warning issued by the NWS - a flash flood warning for an area.

```
WGUS51 KOKX 141655
FFWOKX
NYC103-142000-
/O.NEW.KOKX.FF.W.0005.000814T1655Z-000814T2000Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED
FLASH FLOOD WARNING
NATIONAL WEATHER SERVICE NEW YORK NY
1255 PM EDT MON AUG 14 2000

THE NATIONAL WEATHER SERVICE IN UPTON HAS ISSUED A

* FLASH FLOOD WARNING FOR
  SOUTHWEST SUFFOLK COUNTY IN SOUTHEASTERN NEW YORK STATE

* UNTIL 400 PM EDT

* AT 1254 PM NATIONAL WEATHER SERVICE DOPPLER RADAR INDICATED
  THUNDERSTORMS MOVING NORTHWEST TOWARD THE WARNED AREA. RAINFALL
  RATES FROM 2 TO 3 INCHES PER HOUR WILL CAUSE FLASH FLOODING OF
  LOW LYING AND POOR DRAINAGE AREAS. THE HEAVY RAINS SHOULD END BY
  200 PM EDT AND IT WILL TAKE ANOTHER HOUR OR TWO FOR THE FLOODING
  TO DISSIPATE.

DO NOT DRIVE YOUR VEHICLE INTO AREAS WHERE THE WATER COVERS THE
ROADWAY. VEHICLES CAUGHT IN RISING WATER SHOULD BE ABANDONED. MOVE
TO HIGHER GROUND IMMEDIATELY.

REPORT SEVERE WEATHER TO THE NEAREST LAW ENFORCEMENT AGENCY. THEY
WILL RELAY YOUR REPORT TO THE NATIONAL WEATHER SERVICE FORECAST
OFFICE IN UPTON.

LAT...LON 4153 7264 4131 7255 4138 7190 4159 7198

$$
```

Notes and Explanations:-

(1) In flash flood warnings, the Event Beginning Date/Time is always the same as the product issuance time, so in this case the former (000814T1655Z) corresponds to 1255 p.m. EDT on Monday, August 14, 2000.

(2) Note how that even though forecaster predicts the end of heavy rain by 2:00 p.m., she allows another two hours for the flash flooding to dissipate. Therefore, the Event Ending Date/Time is 000814T2000Z (4:00 p.m. on Monday, August 14 2000).

5.2 Example #2 – Flash Flood Statement: Follow-up to Flash Flood Warning (FFS).

Situation - 35 minutes after the flash flood warning was issued for Suffolk County, the forecaster at WFO Upton issues a flash flood statement to provide updated information on the event.

```
WGUS71 KOKX 141730
FFSOKX

FLASH FLOOD STATEMENT
NATIONAL WEATHER SERVICE NEW YORK NY
130 PM EDT MON AUG 14 2000
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NYC103-142000-
/O.CON.KOKX.FF.W.0005.000000T0000Z-000814T2000Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
SUFFOLK-
130 PM EDT MON AUG 14 2000

...THE FLASH FLOOD WARNING REMAINS IN EFFECT FOR SOUTHWEST SUFFOLK
COUNTY IN SOUTHEASTERN NEW YORK STATE UNTIL 400 PM EDT...

AT 130 PM EDT...WEATHER SERVICE DOPPLER RADAR INDICATED A CLUSTER OF
THUNDERSTORMS PRODUCING VERY HEAVY RAIN IN AN AREA FROM BRENTWOOD
WEST TO DEER PARK AND NORTH TO ABOUT INTERSTATE 495. THUNDERSTORMS
ARE MOVING NORTH TOWARDS HUNTINGTON STATION AND LLOYD POINT. RADAR
ESTIMATES INDICATE 2 INCHES HAVE FALLEN. LAW ENFORCEMENT OFFICERS IN
THE AREA REPORT SEVERAL ROADS ARE COVERED WITH WATER AND ARE
TEMPORARILY IMPASSIBLE.

DO NOT DRIVE YOUR VEHICLE INTO AREAS WHERE THE WATER COVERS THE
ROADWAY. VEHICLES CAUGHT IN RISING WATER SHOULD BE ABANDONED. MOVE
TO HIGHER GROUND IMMEDIATELY.

REPORT SEVERE WEATHER TO THE NEAREST LAW ENFORCEMENT AGENCY. THEY
WILL RELAY YOUR REPORT TO THE NATIONAL WEATHER SERVICE IN UPTON.

LAT...LON 4153 7264 4131 7255 4138 7190 4159 7198

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5.3 Example #3 – Flash Flood Statement: Cancellation of Flash Flood Warning (FFS).

Situation – A half hour before the flash flood warning was scheduled to expire, WFO Upton issues a flash flood statement to cancel the warning and summarize reported impacts.

```
WGUS71 KOKX 141930
FFSOKX

FLASH FLOOD STATEMENT
NATIONAL WEATHER SERVICE NEW YORK NY
330 PM EDT MON AUG 14 2000

NYC103-141945-
/O.CAN.KOKX.FF.W.0005.000000T0000Z-000814T2000Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
SUFFOLK-
330 PM EDT MON AUG 14 2000

...THE FLASH FLOOD WARNING HAS BEEN CANCELLED FOR SOUTHWEST SUFFOLK
COUNTY IN NEW YORK...

NATIONAL WEATHER SERVICE DOPPLER RADAR INDICATES THAT THE
THUNDERSTORMS HAVE MOVED WELL OUT OF THE AREA AND INTO THE LONG
ISLAND SOUND. NO HEAVY RAINFALL HAS OCCURRED IN THE WARNING AREA
FOR OVER AN HOUR. THE MOST SERIOUS FLOODING OCCURRED ON JEFFERSON
AVENUE NEAR THE BRENTWOOD COUNTRY CLUB WHERE SEVERAL HOMES WERE
FLOODED AND A BRIDGE WAS DAMAGED. WATER WAS REPORTED OVER THE
ROADWAY AT SEVERAL LOCATIONS IN DEER PARK AND HUNTINGTON STATION.
FLOODING HAS SUBSIDED AND THE FLOOD THREAT NO LONGER EXISTS...
BUT PONDING OF WATER ON ROADWAYS MAY CONTINUE AT A FEW LOCATIONS
AS FLOOD WATERS RECEDE.
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Draft

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REMAIN CAUTIOUS WHEN DRIVING IN LOW LYING AREAS...AND REPORT ANY
FLOODED ROADWAYS TO THE NEAREST LAW ENFORCEMENT AGENCY. THEY WILL RELAY
YOUR REPORT TO THE NATIONAL WEATHER SERVICE FORECAST OFFICE IN UPTON.

LAT...LON 4153 7264 4131 7255 4138 7190 4159 7198

$$
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Note and Explanation:
(1) Note how even though the warning is being cancelled a half hour early at 3:30 p.m. (1930Z), the time indicated in the Event Ending Date/Time is still 2000Z.

5.4 <u>Example #4 – Flash Flood Warning for a Three-County Area (FFW)</u>. Situation - radar shows a slow moving band of heavy rainfall moving east across north central Ohio. WFO Cleveland forecasters note the likelihood of flash flooding in portions of Lorain, Medina, and Summit Counties and decide to issue a flash flood warning at 3:15 a.m. EDT (715Z).

```
WGUS51 KCLE 210715
FFWCLE
OHC093-103-153-211200-
/O.NEW.KCLE.FF.W.0017.040521T0715Z-040521T1200Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN – EAS ACTIVATION REQUESTED
FLASH FLOOD WARNING
NATIONAL WEATHER SERVICE CLEVELAND OH
315 AM EDT FRI MAY 21 2004

THE NATIONAL WEATHER SERVICE IN CLEVELAND HAS ISSUED A

* FLASH FLOOD WARNING FOR...
  LORAIN COUNTY IN NORTH CENTRAL OHIO
  MEDINA COUNTY IN NORTHEAST OHIO
  SUMMIT COUNTY IN NORTHEAST OHIO

* UNTIL 800 AM EDT

* AT 304 AM EDT WEATHER SERVICE RADAR INDICATED THUNDERSTORMS WITH
  HEAVY RAINS IN THE AREA. WITH THE GROUND NEARLY SATURATED...FLOODING
  IS LIKELY.

NEVER DRIVE OR WALK INTO FLOODED AREAS.

LAT...LON 4113 8224 4130 8238 4117 8147 4097 8147

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5.5 <u>Example #5 – Flash Flood Statement: Follow up to Flash Flood Warning With Cancellation and Continuation Segments (FFS)</u>. Situation – at 4:30 a.m., radar shows that the band of heavy rainfall has shifted eastward in north central Ohio. WFO Cleveland forecasters decide to cancel the flash flood warning in Lorain County and continue the flash flood warning in the two counties that are further east - Medina and Summit.

Draft

```
WGUS71 KCLE 210830
FFSCLE

FLASH FLOOD STATEMENT
NATIONAL WEATHER SERVICE CLEVELAND OH
430 AM EDT FRI MAY 21 2004

OHC093-210845-
/O.CAN.KCLE.FF.W.0017.000000T0000Z-040521T1200Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
LORAIN-
430 AM EDT FRI MAY 21 2004

...THE FLASH FLOOD WARNING HAS BEEN CANCELLED FOR LORAIN COUNTY IN
NORTH CENTRAL OHIO...

AT 425 AM EDT WEATHER SERVICE RADAR INDICATED THUNDERSTORMS HAVE
MOVED EASTWARD OUT OF THE COUNTY AND FLASH FLOODING HAS SUBSIDED.
SOME MINOR FLOODING WAS REPORTED ON HIGHWAY 18 JUST EAST OF
WELLINGTON...BUT IT QUICKLY SUBSIDED.

DO NOT DRIVE WHERE WATER COVERS THE ROAD. WATER DEPTH MAY BE TOO
GREAT TO ALLOW YOUR CAR...TRUCK OR SPORT UTILITY VEHICLE TO CROSS
SAFELY.

LAT...LON 4108 8198 4125 8198 4117 8147 4097 8147

$$

OHC103-153-211200-
/O.CON.KCLE.FF.W.0017.000000T0000Z-030521T1200Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
MEDINA-SUMMIT-
430 AM EDT FRI MAY 21 2004

...A FLASH FLOOD WARNING REMAINS IN EFFECT FOR MEDINA AND SUMMIT
COUNTIES UNTIL 800 AM EDT...

THUNDERSTORMS WITH HEAVY RAIN HAVE CAUSED FLOODING IN PORTIONS OF
MEDINA AND SUMMIT COUNTIES THIS MORNING. RADAR ESTIMATES INDICATED
FROM 1 TO 2 INCHES HAD FALLEN FROM ABOUT 200 AM THROUGH 420 AM. THIS
CAUSED FLOODING ON LAUREL ROAD IN BRUNSWICK WHERE TWO HOMES WERE
FLOODED. FLOODING WAS ALSO REPORTED ON NORTH CARPENTER ROAD.
ADDITIONAL FLOODING IS LIKELY IN OTHER LOCATIONS ACROSS THE AREA.

DO NOT TO DRIVE WHERE WATER COVERS THE ROAD. WATER DEPTH MAY BE TOO
GREAT TO ALLOW YOUR CAR...TRUCK OR SPORT UTILITY VEHICLE TO CROSS
SAFELY.

LAT...LON 4108 8198 4125 8198 4117 8147 4097 8147

$$
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Notes and Explanations:
(1) The first segment cancels the warning for one county (Lorain) and the second segment continues the warning for the other two counties in the original warning (Medina and Summit)
(2) Note how the product expiration time in the UGC line for the CAN segment (845Z) indicates that it is to be purged 15 minutes after product issuance, while the product expiration time in the UGC line for the CON segment is the same as the Event Ending Time (1200Z).

Draft

(3) Note the new Lat/Lon polygon coordinates for the revised warning area, which are repeated in both the CAN and CON segments.

5.6 <u>Example #6 - Flash Flood Warning: Dam Failure (FFW)</u>. Situation - At 10 a.m. CDT, WFO Goodland receives a report from the U.S. Bureau of Reclamation that Bonny Dam is failing due to an expanding leak at the base of the dam. Bonny Dam is an earth fill structure on the South Fork Republican River, just upstream from the Colorado/Kansas state line. Because the river below the dam flows northeast, the warning must cover a town in eastern Colorado, a town in the northwest corner of Kansas, and two towns in southwest Nebraska.

```
WGUS53 KGLD 221508
FFWGLD
COC125-KSC023-NEC057-087-230015-
/O.NEW.KGLD.FF.W.0003.020422T1508Z-020423T0015Z/
/00000.U.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED
FLASH FLOOD WARNING
NATIONAL WEATHER SERVICE GOODLAND KS
1008 AM MDT MON APR 22 2002

THE NATIONAL WEATHER SERVICE IN GOODLAND HAS ISSUED A

* FLASH FLOOD WARNING FOR THE SOUTH FORK REPUBLICAN RIVER BELOW
  FAILING BONNY DAM... INCLUDING THE FOLLOWING DOWNSTREAM
  LOCATIONS...

  SOUTHEASTERN YUMA COUNTY IN NORTHEAST COLORADO
  THIS INCLUDES THE CITY OF HALE
  CHEYENNE COUNTY IN NORTHWEST KANSAS
  THIS INCLUDES THE CITY OF ST FRANCIS
  SOUTHEASTERN DUNDY COUNTY IN SOUTHWEST NEBRASKA
  THIS INCLUDES THE CITY OF BENKELMAN
  WESTERN HITCHCOCK COUNTY IN SOUTHWEST NEBRASKA
  THIS INCLUDES THE CITY OF STRATTON

* UNTIL 615 PM MDT /715 PM CDT/

* AT 1000 AM MDT /11 AM CDT/ NATIONAL WEATHER SERVICE AND THE UNITED
  STATES BUREAU OF RECLAMATION REPORTS THAT BONNY DAM HAS FAILED...
  MASSIVE FLASH FLOODING IS DEVELOPING BELOW THE DAM DUE TO RAPID
  EROSION OF THE STRUCTURE.

* THE ESTIMATED TIME FOR THE LEADING EDGE OF THE FLOOD WAVE TO REACH
  HALE IS 1030 AM MDT...FOR ST. FRANCIS 1248 PM MDT...
  FOR BENKELMAN 338 PM MDT AND FOR STRATTON 6 PM MDT.

MOVE FAR AWAY FROM THE SOUTH FORK REPUBLICAN RIVER AND DO NOT STAY IN
AREAS SUBJECT TO FLOODING WHEN WATER BEGINS RISING. THIS IS A VERY
DANGEROUS SITUATION BELOW BONNY DAM. ALL PEOPLE LIVING ALONG OR
LOCATED NEAR THE SOUTH FORK REPUBLICAN AND REPUBLICAN RIVERS SHOULD
BEGIN EVACUATION...AND MOVE TO HIGHER GROUND IMMEDIATELY.

LAT...LON 3868 10233 3871 10187 3909 10187 3904 10209 3903 10234

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Draft

Notes and Explanations:
(1) In flash flood warnings which include point-specific hydrologic forecast information or provide information on flash flooding which is not the direct result of heavy precipitation (e.g, a dam failure), the flood severity code in the H-VTEC string is set to "U" if the flood severity is unknown.

5.7 <u>Example #7 - Flash Flood Statement: Follow up to Flash Flood Warning For A Dam Failure (FFS)</u>. Situation - Bonny Dam failed 30 minutes ago and the WFO provides updated information on the downstream moving flood wave with a single-segment flash flood statement.

```
WGUS73 KGLD 221638
FFSGLD

FLASH FLOOD STATEMENT
NATIONAL WEATHER SERVICE GOODLAND KS
1038 AM MDT MON APR 22 2002

COC125-KSC023-NEC057-087-230015-
/O.CON.KGLD.FF.W.0003.000000T0000Z-020423T0015Z/
/00000.U.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/
YUMA CO-CHEYENNE KS-DUNDY NE-HITCHCOCK NE-
1038 AM MDT MON APR 22 2002

...THE FLASH FLOOD WARNING DUE TO FAILURE OF BONNY DAM REMAINS IN
EFFECT ALONG THE SOUTH FORK REPUBLICAN RIVER IN NORTHEAST COLORADO
NORTHWEST KANSAS AND SOUTHWEST NEBRASKA...

THE FLOOD WAVE CAUSED BY FAILURE OF BONNY DAM REACHED THE TOWN OF
HALE COLORADO AT 1030 AM MDT. LOCAL POLICE REPORTED A 30 TO 40
FOOT HIGH FLOOD WAVE SWEEPING THROUGH THE TOWN...CAUSING NEAR TOTAL
DAMAGE TO ALL STRUCTURES AT LOWER ELEVATIONS NEAR THE RIVER.

THE ESTIMATED TIME FOR THE LEADING EDGE OF THE FLOOD WAVE TO REACH
ST. FRANCIS KS IS 1248 PM MDT...FOR BENKELMAN NE 338 PM MDT AND FOR
STRATTON NE ABOUT 600 PM MDT.

THE NEXT DOWNSTREAM RESERVOIR...SWANSON RESERVOIR BEHIND TRENTON
DAM IN HITCHCOCK COUNTY NEBRASKA...HAS BEEN VERY LOW DUE TO THE
RECENT DROUGHT. AUTHORITIES BELIEVE THAT TRENTON DAM WILL BE ABLE TO
CONTAIN THE FLOOD WATERS FROM FAILED BONNY DAM...SO FAILURE OF
TRENTON DAM IS NOT A THREAT AT THIS TIME. HOWEVER...WATER RELEASES
HAVE BEEN STARTED FROM TRENTON DAM TO ENSURE THE SAFETY OF THE DAM.
THEREFORE RIVER LEVELS WILL BE A FOOT OR SO HIGHER THAN THEY HAVE
BEEN IN THE SOUTH FORK REPUBLICAN RIVER BELOW TRENTON DAM AND IN THE
REPUBLICAN RIVER BELOW WHERE THE TWO RIVERS JOIN.

THIS IS A VERY DANGEROUS SITUATION BELOW BONNY DAM! MOVE FAR AWAY
FROM THE SOUTH FORK REPUBLICAN RIVER AND DO NOT STAY IN AREAS SUBJECT
TO FLOODING WHEN WATER BEGINS RISING. ALL PEOPLE LIVING ALONG OR
LOCATED NEAR THE SOUTH FORK REPUBLICAN RIVER SHOULD EVACUATE...
AND MOVE TO HIGHER GROUND IMMEDIATELY!

LAT...LON 3868 10233 3871 10187 3909 10187 3904 10209 3903 10234

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Draft

5.8 Example #8 - Flash Flood Warning Including Observations and Forecasts for a Forecast Point (FFW). Situation - radar shows heavy precipitation training over the Kansas City area, with a maximum over the Brush Creek watershed. Forecasters at WFO Kansas City/ Pleasant Hill know that a storm with this rainfall amount, intensity, and areal coverage will cause flash flooding on Brush Creek in the Kansas City Plaza area, and the WFO site-specific application is executed to confirm this. A flash flood warning is issued which includes point-specific forecast information at the end after the standard flash flood warning bullets.

```
WGUS53 KEAX 092349
FFWEAX
MOC095-100200-
/O.NEW.KEAX.FF.W.0007.010809T2349Z-010810T0445Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED
FLASH FLOOD WARNING
NATIONAL WEATHER SERVICE KANSAS CITY/PLEASANT HILL MO
649 PM CDT THU AUG 9 2001

THE NATIONAL WEATHER SERVICE IN PLEASANT HILL HAS ISSUED A

* FLASH FLOOD WARNING FOR
  JACKSON COUNTY IN WEST CENTRAL MISSOURI
  SPECIFICALLY FOR BRUSH CREEK AT WARD PARKWAY IN KANSAS CITY MO

* UNTIL 1145 PM CDT

* AT 649 PM CDT...RADAR ESTIMATED 3 TO 4 INCHES OF RAIN HAS FALLEN
  OVER THE BRUSH CREEK WATERSHED SINCE LATE THIS AFTERNOON.

* RUNOFF FROM THIS RAINFALL WILL CAUSE BRUSH CREEK AT WARD PARKWAY
  TO RISE ABOVE FLOOD STAGE...AND THREATEN TO LIFE AND PROPERTY.

MOTORISTS ARE REMINDED NOT TO DRIVE WHERE WATER COVERS THE ROAD.
WATER DEPTH MAY BE TOO GREAT TO ALLOW YOUR CAR...TRUCK OR SUV TO
CROSS SAFELY.

LAT...LON 3901 9456 3887 9439 3889 9426 3902 9413 3918 9432

&& FORECAST FOR SPECIFIC LOCATION IN THE FLASH FLOOD WARNING AREA...
KWPM7

FOR BRUSH CREEK AT WARD PARKWAY...
* AT 600 PM THE LATEST STAGE WAS...43 FEET.
* MODERATE FLOODING IS FORECAST
* FLOOD STAGE IS...47 FEET
* FORECAST...FLOOD STAGE WILL BE REACHED AT ABOUT 730 PM. A MAXIMUM
  STAGE OF 49 FEET IS EXPECTED AT ABOUT 830 PM. THE CREEK WILL FALL
  BELOW FLOOD STAGE AT ABOUT 1145 PM.
* AT 48 FEET...WARD PARKWAY AND JOHNSON DRIVE NEAR THE WARD PARKWAY
  BRIDGE ARE UNDER WATER. ALSO...OTHER BRIDGES AND ROADS UPSTREAM AND
  DOWNSTREAM OF THE PLAZA FEDERAL FLOOD CONTROL PROJECT ARE FLOODED.


$$
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Draft

5.9 <u>Example #9 – Flash Flood Statement: Follow-up to Flash Flood Warning Including Observations and Forecasts for a Forecast Point (FFS)</u>. Situation - eleven minutes after the initial flash flood warning was issued, an updated observation for the Brush Creek stream gage has been received, so a flash flood statement is issued to follow-up the warning.

```
WGUS73 KEAX 100000
FFSEAX

FLASH FLOOD STATEMENT
NATIONAL WEATHER SERVICE KANSAS CITY/PLEASANT HILL MO
700 PM CDT THU AUG 9 2001

MOC095-100200-
/O.CON.KEAX.FF.W.0007.000000T0000Z-010810T0445Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
JACKSON-
700 PM CDT THU AUG 9 2001

...A FLASH FLOOD WARNING REMAINS IN EFFECT UNTIL 1145 PM CDT FOR
JACKSON COUNTY...SPECIFICALLY FOR BRUSH CREEK AT WARD PARKWAY IN
KANSAS CITY MISSOURI.

RAINFALL HAS ENDED OVER THE BRUSH CREEK WATERSHED...WITH TOTALS
REACHING 4 INCHES IN PRAIRIE VILLAGE KANSAS. RUNOFF WILL WORK ITS
WAY DOWN BRUSH CREEK THROUGH TONIGHT...WITH HIGHEST FLOWS DURING THE
NEXT THREE HOURS.

MOTORISTS ARE REMINDED NOT TO DRIVE WHERE WATER COVERS THE ROAD.
WATER DEPTH MAY BE TOO GREAT TO ALLOW YOUR CAR...TRUCK OR SPORT
UTILITY VEHICLE TO CROSS SAFELY.

LAT...LON 3901 9456 3887 9439 3889 9426 3902 9413 3918 9432

&&  FORECAST FOR SPECIFIC LOCATION IN THE FLASH FLOOD WARNING AREA...
KWPM7

FOR BRUSH CREEK AT WARD PARKWAY...
* AT 700 PM THE LATEST STAGE WAS...46 FEET.
* MODERATE FLOODING IS FORECAST
* FLOOD STAGE IS...47 FEET
* FORECAST...FLOOD STAGE WILL BE REACHED AT ABOUT 730 PM. A MAXIMUM
  STAGE OF 49 FEET IS EXPECTED AT ABOUT 830 PM. THE CREEK WILL FALL
  BELOW FLOOD STAGE AT ABOUT 1145 PM
* AT 48 FEET...WARD PARKWAY AND JOHNSON DRIVE NEAR THE WARD PARKWAY
  BRIDGE ARE UNDER WATER. IN ADDITION...OTHER BRIDGES AND ROADS
  UPSTREAM AND DOWNSTREAM OF THE PLAZA FEDERAL FLOOD CONTROL PROJECT
  ARE FLOODED.

$$
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6. <u>Flood Warning For Forecast Points (FLW) and Associated Follow-up Products (FLS)</u>.

6.1 <u>Example #1 - Flood Warning for Forecast Points: Initial Issuance (FLW)</u>. Situation - At 12:00 noon on Friday April 6, WFO Newport/Morehead City issues a new flood warning for three forecast points in its HSA.

```
WGUS42 KMHX 061600
FLWMHX

BULLETIN - IMMEDIATE BROADCAST REQUESTED
FLOOD WARNING
NATIONAL WEATHER SERVICE NEWPORT/MOREHEAD CITY NC
1200 PM EDT FRI APR 6 2001

...THE NATIONAL WEATHER SERVICE IN NEWPORT HAS ISSUED A FLOOD WARNING
FOR THE FOLLOWING RIVERS IN NORTH CAROLINA...

  NEUSE RIVER AT KINSTON AFFECTING CRAVEN AND LENOIR COUNTIES
  TAR RIVER AT GREENVILLE AFFECTING PITT COUNTY
  ROANOKE RIVER NEAR WILLIAMSTON AFFECTING MARTIN COUNTY

.HEAVY RAINFALL LAST NIGHT IN EASTERN NORTH CAROLINA HAS CAUSED THE
ALREADY HIGH NEUSE...TAR...AND ROANOKE RIVERS TO RISE NEAR OR ABOVE
FLOOD STAGE. THESE RIVERS RISE AND FALL VERY SLOWLY...SO MINOR
FLOODING WILL PERSIST ALONG THEM FOR SEVERAL DAYS.

NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED
AREAS. THE WATER MAY BE TOO DEEP TO ALLOW FOR SAFE PASSAGE.

ADDITIONAL INFORMATION IS AVAILABLE AT
HTTP://AHPS.ERH.NOAA.GOV/CGI-BIN/AHPS.CGI?MHX /LOWER CASE/

THE NEXT STATEMENT WILL BE ISSUED THIS EVENING AT 1000 PM.

NCC049-107-070200-
/O.NEW.KMHX.FL.W.0001.010407T1300Z-000000T0000Z/
/KINN7.1.ER.010407T1300Z.010412T0100Z.000000T0000Z.NO/
1200 PM EDT FRI APR 6 2001

THE NATIONAL WEATHER SERVICE IN NEWPORT HAS ISSUED A
* FLOOD WARNING FOR
  NEUSE RIVER AT KINSTON
* FROM SATURDAY MORNING UNTIL FURTHER NOTICE
* AT 9 AM EDT FRIDAY THE STAGE WAS... 13.5 FEET
* MINOR FLOODING IS FORECAST
* FLOOD STAGE IS...14.0 FEET
* FORECAST...FLOOD STAGE WILL BE REACHED AT 900 AM SATURDAY. MAXIMUM
  STAGE WILL BE 15.0 FEET AT 900 PM EDT WEDNESDAY. THE RIVER MAY REMAIN
  ABOVE FLOOD STAGE FOR SEVERAL WEEKS. THE EXACT FLOOD DURATION IS
  DIFFICULT TO PREDICT DUE TO THE VERY SLOW RISE AND FALL TIMES FOR
  THIS RIVER.
* AT 14 FEET...WATER WILL BEGIN TO OVERFLOW INTO LOWLANDS ADJACENT
  TO THE NEUSE RIVER.

$$

NCC147-070200-
/O.NEW.KMHX.FL.W.0002.010406T1600Z-010410T1000Z/
/PGVN7.1.ER.010406T0400Z.010408T1200Z.010410T1000Z.NO/
1200 PM EDT FRI APR 6 2001

THE NATIONAL WEATHER SERVICE IN NEWPORT HAS ISSUED A
* FLOOD WARNING FOR
  TAR RIVER AT GREENVILLE
* UNTIL TUESDAY MORNING
* AT 1100 AM EDT FRIDAY THE STAGE WAS...14.9 FEET
* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST
```

Draft

```
* FLOOD STAGE IS...13.0 FEET
* FORECAST...MAXIMUM STAGE WILL BE 16.0 FEET AT 800 AM SUNDAY. THE
  RIVER WILL FALL BELOW FLOOD STAGE AT 600 AM TUESDAY
* AT 16 FEET...WIDESPREAD LOW LAND FLOODING ADJACENT TO THE TAR
  RIVER OCCURS. FARMLAND WILL BEGIN TO FLOOD ACROSS PITT COUNTY.

$$

NCC117-070200-
/O.NEW.KMHX.FL.W.0003.010407T0000Z-000000T0000Z/
/WLLN7.1.ER.010407T0000Z.010410T0000Z.000000T0000Z.NO/
1200 PM EDT FRI APR 6 2001

THE NATIONAL WEATHER SERVICE IN NEWPORT HAS ISSUED A
* FLOOD WARNING FOR
  ROANOKE RIVER NEAR WILLIAMSTON
* FROM FRIDAY EVENING UNTIL FURTHER NOTICE
* AT 900 AM EDT FRIDAY THE STAGE WAS...9.8 FEET
* MINOR FLOODING IS FORECAST
* FLOOD STAGE IS 10.0 FEET
* FORECAST...FLOOD STAGE WILL BE REACHED AT 800 PM FRIDAY. FORECAST
  MAXIMUM STAGE IS 10.6 FEET AT 800 PM MONDAY. THE RIVER MAY REMAIN
  ABOVE FLOOD STAGE FOR A WEEK OR MORE. THE EXACT FLOOD DURATION IS
  DIFFICULT TO PREDICT DUE TO THE VERY SLOW RISE AND FALL TIMES FOR
  THIS RIVER.
* AT 10 FEET...MINOR LOWLAND FLOODING ADJACENT TO THE ROANOKE RIVER
  WILL BEGIN.

$$
```

Notes and Explanations:

(1) Each segment has its own event tracking number. This makes it easy to issue and track updates, cancellations, etc. for each forecast point in subsequent products.

(2) Kinston was forecast to go above flood stage at 9 a.m. EDT Saturday April 7 and Williamston was forecast to go above flood stage at 8 p.m. EDT Friday April 6, so their respective Event Beginning Date/Times were (010407T1300Z) and (010407T0000Z). These same times were entered for the Flood Begin Date/Times in the H-VTEC string for each point.

(3) For Greenville, the flood warning was issued after the fact – i.e., the river was already above flood stage at time of issuance – so the Event Beginning Date/Time in the P-VTEC string was set to the time of product issuance (010406T1600Z,see NWSI 10-1703, section 4.2.6). However, the Flood Begin Date/Time in the H-VTEC string was set to the actual time flooding started (assume gauge showed it was 12 hours earlier at 12 a.m. midnight on April 6 = 010406T0400Z).

(4) Maximum stages for Kinston, Greenville, and Williamston were forecast to occur at 9 p.m. Wednesday, 8 a.m. Sunday, and 8 p.m. Monday respectively, so the Flood Crest Date/Times in the corresponding H-VTEC strings were 010412T0100Z, 010408T1200Z, and 010410T0000Z.

(5) For Kinston and Williamston, the end time of the flood (i.e., time below flood stage) was unknown at the time of product issuance. Therefore, the Event Ending Date/Time in the P-VTEC string and the Flood End Date/Time in the H-VTEC string were set to 000000T0000Z for both points and the second bullet for these points reads “UNTIL FURTHER NOTICE.”

(6) For Greenville, the river was forecast to go back below flood stage at 6 a.m. on Tuesday April 10, 2001, so the Event Ending Date/Time in the P-VTEC string and the Flood End Date/Time in the H-VTEC string were set to 010410T1000Z and the second bullet reads “UNTIL TUESDAY MORNING.”

Draft

6.2 Example #2 - Flood Statement: Follow-up to Flood Warning For Forecast Points (FLS). Situation - At 10 p.m. on April 6, WFO Newport/Morehead City issues a flood statement to follow up the flood warning issued ten hours earlier.

```
WGUS82 KMHX 070200
FLSMHX

FLOOD STATEMENT
NATIONAL WEATHER SERVICE NEWPORT/MOREHEAD CITY NC
1000 PM EDT FRI APR 6 2001

...THE FLOOD WARNING CONTINUES FOR THE FOLLOWING RIVERS IN
NORTH CAROLINA...

  NEUSE RIVER AT KINSTON AFFECTING CRAVEN AND LENOIR COUNTIES
  TAR RIVER AT GREENVILLE AFFECTING PITT COUNTY
  ROANOKE RIVER NEAR WILLIAMSTON AFFECTING MARTIN COUNTY

.LAST NIGHTS HEAVY RAINFALL HAS CAUSED THE NEUSE...TAR...AND ROANOKE
RIVERS TO RISE SLIGHTLY ABOVE FLOOD STAGE. MINOR FLOODING WILL
PERSIST ALONG THESE RIVERS FOR SEVERAL DAYS.

NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED
AREAS. THE WATER MAY BE TOO DEEP TO ALLOW FOR SAFE PASSAGE.

ADDITIONAL INFORMATION IS AVAILABLE AT
HTTP://AHPS.ERH.NOAA.GOV/CHI-BIN/AHPS.CGI?MHX /LOWER CASE/

THE NEXT STATEMENT WILL BE ISSUED SATURDAY MORNING AT 1000 AM EDT.

NCC049-107-071400-
/O.CON.KMHX.FL.W.0001.010407T1300Z-000000T0000Z/
/KINN7.1.ER.010407T1300Z.010412T0100Z.000000T0000Z.NO/
1000 PM EDT FRI APR 6 2001

THE FLOOD WARNING CONTINUES FOR
  NEUSE RIVER AT KINSTON
* FROM SATURDAY MORNING UNTIL FURTHER NOTICE
* AT 900 PM EDT FRIDAY THE STAGE WAS... 13.7 FEET
* MINOR FLOODING IS FORECAST
* FLOOD STAGE IS...14.0 FEET
* FORECAST...FLOOD STAGE WILL BE REACHED AT 900 AM EDT SATURDAY.
  MAXIMUM STAGE WILL BE 15.0 FEET AT 900 PM EDT WEDNESDAY. THE RIVER
  MAY REMAIN ABOVE FLOOD STAGE FOR SEVERAL WEEKS. THE EXACT FLOOD
  DURATION IS DIFFICULT TO PREDICT DUE TO THE VERY SLOW RISE AND FALL
  TIMES FOR THIS RIVER.
* AT 14 FEET...WATER WILL BEGIN TO OVERFLOW INTO LOWLANDS ADJACENT
  TO THE NEUSE RIVER.

$$

NCC147-071400-
/O.CON.KMHX.FL.W.0002.000000T0000Z-010410T1000Z/
/PGVN7.1.ER.010406T0400Z.010408T1200Z.010410T1000Z.NO/
1000 PM EDT FRI APR 6 2001

THE FLOOD WARNING CONTINUES FOR
  TAR RIVER AT GREENVILLE
* UNTIL TUESDAY MORNING
```

Draft

```
* AT 900 PM EDT FRIDAY THE STAGE WAS...15.3 FEET
* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST
* FLOOD STAGE IS...13.0 FEET
* FORECAST...MAXIMUM STAGE WILL BE 16.0 FEET AT 800 AM EDT SUNDAY.
  THE RIVER WILL FALL BELOW FLOOD STAGE AT 600 AM EDT TUESDAY.
* AT 16 FEET...WIDESPREAD LOW LAND FLOODING ADJACENT TO THE TAR
  RIVER OCCURS. FARMLAND WILL BEGIN TO FLOOD ACROSS PITT COUNTY.

$$

NCC117-071400-
/O.CON.KMHX.FL.W.0003.000000T0000Z-000000T0000Z/
/WLLN7.1.ER.010407T0000Z.010410T0000Z.000000T0000Z.NO/
1000 PM EDT FRI APR 6 2001

THE FLOOD WARNING CONTINUES FOR
  ROANOKE RIVER NEAR WILLIAMSTON
* UNTIL FURTHER NOTICE
* AT 900 PM EDT FRIDAY THE STAGE WAS...10.0 FEET
* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST
* FLOOD STAGE IS 10.0 FEET
* FORECAST...MAXIMUM STAGE WILL BE 10.6 FEET AT 800 PM EDT MONDAY. THE
  RIVER MAY REMAIN ABOVE FLOOD STAGE FOR A WEEK OR MORE. THE EXACT
  FLOOD DURATION IS DIFFICULT TO PREDICT DUE TO THE VERY SLOW RISE
  AND FALL TIMES FOR THIS RIVER.
* AT 10 FEET...MINOR LOWLAND FLOODING ADJACENT TO THE ROANOKE RIVER
  WILL BEGIN.

$$
```

Notes and Explanations:

(1) For Kinston, the Event Beginning Date/Time in the P-VTEC string is still 010407T1300Z because flood stage has not yet been reached there. For Greenville and Williamston, the Event Beginning Date/Times in the P-VTEC strings are 000000T0000Z because the product is being issued to provide updated information after the event has already begun at these points.

(2) Since the forecast times for the flood at all three forecast points have not changed, all other Date/Times are unchanged from the initial flood warning product.

(3) For Williamston, " MINOR FLOODING IS OCCURRING" has been added to the third bullet because flood stage was reached there.

6.3 <u>Example #3 - Flood Statement: Continuation of Flood Warning for Two Forecast Points, Cancellation of Flood Warning for One Forecast Point (FLS)</u>. Situation - At 10 p.m. Monday evening on April 9th (3 ½ days since the initial flood warning), Greenville has fallen below flood stage a bit earlier than expected, and the full forecast for Williamston is now known (i.e., models now show the time when the river will fall below flood stage). However, the Event Ending Date/Time is still beyond the forecast period for Kinston. The following product cancels the flood warning for Greenville and continues the flood warning for Kinston and Williamston.

```
WGUS82 KMHX 100200
FLSMHX

FLOOD STATEMENT
NATIONAL WEATHER SERVICE NEWPORT/MOREHEAD CITY NC
1000 PM EDT MON APR 9 2001
```

```
...THE FLOOD WARNING CONTINUES FOR THE FOLLOWING RIVERS IN
NORTH CAROLINA...

  NEUSE RIVER AT KINSTON AFFECTING CRAVEN AND LENOIR COUNTIES
  ROANOKE RIVER NEAR WILLIAMSTON AFFECTING MARTIN COUNTY

...THE FLOOD WARNING IS CANCELLED FOR THE FOLLOWING RIVER IN NORTH
CAROLINA...

  TAR RIVER AT GREENVILLE AFFECTING PITT COUNTY

.THE TAR RIVER HAS DROPPED BELOW FLOOD STAGE WHILE THE NEUSE AND
ROANOKE RIVERS ARE SLOWLY FALLING.

NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED
AREAS.

ADDITIONAL INFORMATION IS AVAILABLE AT
HTTP://AHPS.ERH.NOAA.GOV/CHI-BIN/AHPS.CGI?MHX /LOWER CASE/

THE NEXT STATEMENT WILL BE ISSUED TUESDAY MORNING AT 1000 AM EDT.

NCC147-100215-
/O.CAN.KMHX.FL.W.0002.000000T0000Z-010410T1000Z/
/PGVN7.1.ER.010406T0500Z.010408T1300Z.010410T0000Z.NO/
1000 PM EDT MON APR 9 2001

THE FLOOD WARNING IS CANCELLED FOR
  TAR RIVER AT GREENVILLE
* AT 900 PM EDT MONDAY THE STAGE WAS...12.9 FEET
* FLOOD STAGE IS...13.0 FEET
* FELL BELOW FLOOD STAGE AT 800 PM MONDAY
* FORECAST...A SLOW DECLINE SHOULD CONTINUE...WITH THE RIVER
  FALLING TO 12 FEET BY 800 PM WEDNESDAY.

$$

NCC049-107-101400-
/O.CON.KMHX.FL.W.0001.000000T0000Z-000000T0000Z/
/KINN7.1.ER.010407T1300Z.010412T0100Z.000000T0000Z.NO/
1000 PM EDT MON APR 9 2001

THE FLOOD WARNING CONTINUES FOR
  NEUSE RIVER AT KINSTON
* UNTIL FURTHER NOTICE
* AT 900 PM EDT MONDAY THE STAGE WAS... 14.6 FEET
* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST
* FLOOD STAGE IS...14.0 FEET
* FORECAST...MAXIMUM STAGE WILL BE 15.1 FEET AT 900 PM EDT WEDNESDAY.
  THE RIVER MAY REMAIN ABOVE FLOOD STAGE FOR 1 TO 2 WEEKS. THE EXACT
  FLOOD DURATION IS DIFFICULT TO PREDICT DUE TO THE VERY SLOW RISE
  AND FALL TIMES FOR THIS RIVER.
* AT 14 FEET...WATER OVERFLOWS INTO LOWLANDS ADJACENT TO THE NEUSE
  RIVER.

$$

NCC117-101400-
/O.EXT.KMHX.FL.W.0003.000000T0000Z-010413T0200Z/
/WLLN7.1.ER.010407T0000Z.010410T0000Z.010413T0200Z.NO/
1000 PM EDT MON APR 9 2001
```

Draft

```
...FLOOD WARNING NOW EXPECTED TO END THURSDAY EVENING...

THE FLOOD WARNING CONTINUES FOR
  ROANOKE RIVER NEAR WILLIAMSTON
* UNTIL THURSDAY EVENING
* AT 900 PM EDT MONDAY THE STAGE WAS...10.5 FEET
* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST
* FLOOD STAGE IS 10.0 FEET
* FORECAST...THE RIVER HAS PEAKED AND WILL BEGIN A SLOW FALL...
  FALLING BELOW FLOOD STAGE THURSDAY EVENING
* AT 10 FEET...MINOR LOWLAND FLOODING ADJACENT TO THE ROANOKE RIVER
  OCCURS.

$$
```

Notes and Explanations:

(1) For Greenville, the event had been forecast to end at 1000Z on April 10, but when this product was issued at 0200Z on April 10, the river had already fallen below flood stage two hours before product issuance. Therefore, the time the event was originally forecasted to end (010410T1000Z) is used in the Event Ending Date/Time of the P-VTEC string and the time that the river actually fell below flood stage (010410T0000Z) is used in the Flood End Date/Time of the H-VTEC string (see NWSI 10-1703, Section 4.2.7).

(2) The third segment (Roanoke River at Williamston) illustrates a special case – an event ending time is being forecast for the first time for a long-duration flood at a location for which previous FLS products used ten zeros for the Event Ending Date/Time in the P-VTEC string. The river is now forecast to fall below flood stage at about 10 p.m. on Thursday evening April 12 (0200Z on April 13). Therefore, the third segment uses the EXT action code instead of CON and its format is otherwise the same as a continuation segment, except a special headline is used to announce that an ending time has been determined and the Event Ending Date/Time in the P-VTEC string and the Flood End Date/Time in the H-VTEC string now have an actual date and time instead of ten zeros. After this special EXT segment is issued, the next flood statement for this forecast point product would revert to using a CON segment until the flood ends, unless the event ending time changes again, which would require the process to be repeated.

6.4 Example #4 - Flood Warning for Forecast Points: Initial Issuance (FLW).

Situation - an unexpectedly intense rainfall occurs overnight just to the east of Des Moines, IA. At 10:30 a.m. on Friday May 9, WFO Des Moines issues a new flood warning for three forecast points.

```
WGUS43 KDMX 091530
FLWDMX

BULLETIN - IMMEDIATE BROADCAST REQUESTED
FLOOD WARNING
NATIONAL WEATHER SERVICE DES MOINES IA
1030 AM CDT FRI MAY 9 2003

...THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A FLOOD
WARNING FOR THE FOLLOWING RIVERS IN CENTRAL IOWA...

  RACCOON RIVER AT VAN METER
  RACCOON RIVER AT DES MOINES FLEUR DRIVE
  DES MOINES RIVER AT DES MOINES SE 6TH
```

```
AFFECTING THE FOLLOWING COUNTIES IN IOWA...DALLAS AND POLK.

.OVERNIGHT RAINS OF 1 TO 1.5 INCHES ACROSS THE RACCOON RIVER BASIN
HAVE PRODUCED A QUICK RISE ON THE RIVER. MODERATE FLOODING IS
FORECAST TO OCCUR ON THE RACCOON AND MINOR FLOODING ON THE DES MOINES
RIVER. THE CREST ON THE RACCOON WILL BE SATURDAY MORNING IN DES MOINES.

NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED
AREAS. STAY TUNED TO DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO.

ADDITIONAL INFORMATION IS AVAILABLE AT
WWW.CRH.NOAA.GOV/DMX/AHPS

THE NEXT STATEMENT WILL BE ISSUED AT 1000 PM FRIDAY EVENING.

IAC049-100300-
/O.NEW.KDMX.FL.W.0011.030509T1530Z-030512T0300Z/
/VNMI4.1.ER.030509T0400Z.030509T0900Z.030512T0300Z.NO/
1030 AM CDT FRI MAY 9 2003

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A
* FLOOD WARNING FOR
  RACCOON RIVER AT VAN METER
* UNTIL SUNDAY EVENING
* AT 900 AM CDT FRIDAY THE STAGE WAS... 16.4 FEET
* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST
* FLOOD STAGE IS...13.0 FEET
* FORECAST...THE RIVER WILL FALL BELOW FLOOD STAGE SUNDAY EVENING.
  FLOOD STAGE WAS REACHED AT 1100 PM THURSDAY NIGHT AND THE RIVER
  CRESTED AT 16.5 FEET 400 AM FRIDAY MORNING.
* AT 16.0 FEET...THE UTICA TRAIL ROAD SOUTHWEST OF BOONVILLE AND
  SOUTH OF COUNTY ROAD F90 BEGINS TO FLOOD

$$

IAC153-100300-
/O.NEW.KDMX.FL.W.0012.030509T1530Z-030512T0900Z/
/DEMI4.2.ER.030509T0900Z.030510T0900Z.030512T0900Z.NO/
1030 AM CDT FRI MAY 9 2003

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A
* FLOOD WARNING FOR
  RACCOON RIVER AT DES MOINES FLEUR DRIVE
* UNTIL MONDAY MORNING
* AT 900 AM CDT FRIDAY THE STAGE WAS...13.9 FEET
* MINOR FLOODING IS OCCURRING AND MODERATE FLOODING IS FORECAST
* FLOOD STAGE IS...12.0 FEET
* FORECAST...THE RIVER WILL CREST AT 15.1 FEET AT 400 AM SATURDAY
  MORNING AND FALL BELOW FLOOD STAGE AT 400 AM MONDAY MORNING.
* AT 15 FEET...FLOODING OCCURS OVER MUCH OF SOUTHWEST 28TH STREET
  BETWEEN VALLEY DRIVE AND THE RAILROAD TRACKS.

$$

IAC153-100300-
/O.NEW.KDMX.FL.W.0013.030509T2100Z-030510T2100Z/
/DESI4.1.ER.030509T2100Z.030510T0300Z.030510T2100Z.NO/
1030 AM CDT FRI MAY 9 2003
```

Draft

```
THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A
* FLOOD WARNING FOR
  DES MOINES RIVER AT DES MOINES SE 6TH
  FROM THIS AFTERNOON UNTIL SATURDAY AFTERNOON
* AT 900 AM EDT FRIDAY THE STAGE WAS...23.7 FEET
* MINOR FLOODING IS FORECAST
* FLOOD STAGE IS 24.0 FEET
* FORECAST...FLOOD STAGE WILL BE REACHED AT 400 PM FRIDAY. THE RIVER
  WILL REMAIN NEAR FLOOD STAGE UNTIL MID-AFTERNOON SATURDAY.
* AT 24 FEET...WEST RIVERSIDE DRIVE IS FLOODED.

$$
```

Notes and Explanations:

(1) Both Raccoon River forecast points were already in flood when the product was issued – so the Event Beginning Date/Time in the P-VTEC strings for each point is set to the current product issuance time – i.e., 030509T1530Z. However, the Event Beginning Date/Time in the H-VTEC strings is set to the actual time flooding started at each point (assume 11 p.m. May 8 = 030509T0400Z for Raccoon River at Van Meter and 4 a.m. May 9 = 030509T0900Z for Raccoon River at Des Moines Fleur Drive).

(2) The forecaster expects the flood warnings at Van Meter, Des Moines Fleur Drive, and Des Moines SE 6th to be in effect until 10 p.m. Sunday evening, 4 a.m. Monday morning, and 4 p.m. Saturday morning respectively. Therefore, the corresponding time/day phrase used for these points in the second bullet is "Sunday evening," "Monday morning," and "Saturday afternoon."

6.5 Example #5 - Flood Statement – Flood Statement: Continuation of Flood Warning for Two Forecast Points, Cancellation of Flood Warning for One Forecast Point (FLS).

Situation - At 10:00 p.m. on Friday May 9, WFO Des Moines issues a flood statement to follow up the previously issued flood warning for three forecast points in its HSA.

```
WGUS83 KDMX 100300
FLSDMX

FLOOD STATEMENT
NATIONAL WEATHER SERVICE DES MOINES IA
1000 PM CDT FRI MAY 9 2003

...THE NATIONAL WEATHER SERVICE IN DES MOINES IS CONTINUING THE
FLOOD WARNING FOR THE FOLLOWING RIVERS IN CENTRAL IOWA...

  RACCOON RIVER AT VAN METER
  RACCOON RIVER AT DES MOINES FLEUR DRIVE

AFFECTING THE FOLLOWING COUNTIES IN IOWA...DALLAS AND POLK.

THE FLOOD WARNING IS CANCELLED FOR...

  DES MOINES RIVER AT DES MOINES SE 6TH

AFFECTING THE FOLLOWING COUNTY IN IOWA...POLK.

.FLOODING CAUSED BY THE RAINS THURSDAY NIGHT AND FRIDAY MORNING
CONTINUES ON THE LOWER END OF THE RACCOON RIVER.
```

```
NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED
AREAS. STAY TUNED TO DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO.

ADDITIONAL INFORMATION IS AVAILABLE AT
WWW.CRH.NOAA.GOV/DMX/AHPS

THE NEXT STATEMENT WILL BE ISSUED SATURDAY MORNING.

IAC049-101500-
/O.CON.KDMX.FL.W.0011.000000T0000Z-030512T0300Z/
/VNMI4.1.ER.030509T0400Z.030509T0900Z.030512T0300Z.NO/
1000 PM CDT FRI MAY 9 2003

THE FLOOD WARNING CONTINUES FOR
  RACCOON RIVER AT VAN METER
* UNTIL SUNDAY EVENING
* AT 900 PM CDT FRIDAY THE STAGE WAS... 15.9 FEET
* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST
* FLOOD STAGE IS...13.0 FEET
* FORECAST...THE RIVER WILL CONTINUE TO RECEDE STEADILY AND FALL
  BELOW FLOOD STAGE SUNDAY EVENING. FLOOD STAGE WAS REACHED AT 11 PM
  THURSDAY NIGHT AND CRESTED AT 16.5 FEET 400 AM FRIDAY MORNING.
* AT 16.0 FEET...THE UTICA TRAIL ROAD SOUTHWEST OF BOONVILLE AND
  SOUTH OF COUNTY ROAD F90 BEGINS TO FLOOD

$$

IAC153-101500-
/O.CON.KDMX.FL.W.0012.000000T0000Z-030512T0900Z/
/DEMI4.2.ER.030509T0900Z.030510T0900Z.030512T0900Z.NO/
1000 PM CDT FRI MAY 9 2003

THE FLOOD WARNING CONTINUES FOR
  RACCOON RIVER AT DES MOINES FLEUR DRIVE
* UNTIL MONDAY MORNING
* AT 900 PM CDT FRIDAY THE STAGE WAS...14.3 FEET
* MINOR FLOODING IS OCCURRING AND MODERATE FLOODING IS FORECAST
* FLOOD STAGE IS...12.0 FEET
* FORECAST...THE RIVER WILL CREST AT 15.1 FEET AT 400 AM SATURDAY
  MORNING AND FALL BELOW FLOOD STAGE AT 400 AM MONDAY MORNING.
* AT 15 FEET...FLOODING OCCURS OVER MUCH OF SOUTHWEST 28TH STREET
  BETWEEN VALLEY DRIVE AND THE RAILROAD TRACKS.

$$

IAC153-100400-
/O.CAN.KDMX.FL.W.0013.000000T0000Z-030510T2100Z/
/DESI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.NO/
1000 PM EDT FRI MAY 9 2003

THE FLOOD WARNING IS CANCELLED FOR
  DES MOINES RIVER AT DES MOINES SE 6TH
* AT 900 PM CDT FRIDAY THE STAGE WAS...23.8 FEET
* FLOOD STAGE IS 24.0 FEET
* FORECAST...THE RIVER WILL STAY BELOW FLOOD STAGE THROUGH THE
  CURRENT EVENT AND GRADUALLY RECEDE TO 23.5 FEET BY MONDAY MORNING
* AT 24 FEET...WEST RIVERSIDE DRIVE IS FLOODED.

$$
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Draft

Notes and Explanations:
(1) Even though VTEC rules call for cancellation segments to go before continuation segments, the segment canceling the flood warning for Des Moines SE 6th occurs after the continuation segments for Van Meter and Des Moines Fleur Drive. This is because Des Moines SE 6th is downstream from Van Meter and Des Moines Fleur Drive and the WFO wants its flood products to reflect this upstream to downstream hierarchy.
(2) Note how the H-VTEC string has been zeroed out for Des Moines SE 6th. This is because the river never reached flood stage at that forecast point, so the forecaster decided to cancel the flood warning for that location.

6.6 Example #6 - Flood Warning for Forecast Points: Initial Issuance (FLW).

Situation – Overnight heavy rainfall in southwest Washington near the mouth of the Columbia River has elevated flows on the lower Cowlitz River. At the same time, the lower Columbia River is expected to slightly exceed flood stage due to high tides. At 10:00 a.m. on Tuesday, December 5, WFO Portland, Oregon issues a flood warning for three forecast points.

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WGUS46 KPQR 051800
FLWPQR

BULLETIN - IMMEDIATE BROADCAST REQUESTED
FLOOD WARNING
NATIONAL WEATHER SERVICE PORTLAND OR
1000 AM PST TUE DEC 5 2000

...THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A FLOOD
WARNING FOR THE FOLLOWING RIVERS IN SOUTHWEST WASHINGTON...

  COWLITZ RIVER AT CASTLE ROCK AFFECTING COWLITZ COUNTY
  COWLITZ RIVER AT KELSO AFFECTING COWLITZ COUNTY
  COLUMBIA RIVER AT LONGVIEW AFFECTING COWLITZ AND COLUMBIA COUNTIES

.OVERNIGHT RAINS OF 2 TO 4 INCHES IN SOUTHWEST OREGON COUPLED WITH
1 TO 2 INCHES FORECAST FOR TODAY WILL PRODUCE FLOODING ON THE LOWER
COWLITZ RIVER. A SEPARATE MINOR FLOODING PROBLEM EXISTS ON THE TIDAL
COLUMBIA DUE TO ALREADY HIGH FLOWS MOVING DOWN THE RIVER COUPLED
WITH HIGH TIDES.

RIVER STAGE FORECASTS ARE BASED ON OBSERVED AND FORECAST RAINFALL
AND TEMPERATURES. IF ACTUAL RAINFALL AND TEMPERATURES VARY FROM THE
FORECAST VALUES...THE RIVER STAGE WILL VARY ACCORDINGLY. NATIONAL
WEATHER SERVICE RIVER FORECASTS INCLUDE CURRENT AND PLANNED
RESERVOIR RELEASES.

FOR THE LATEST RIVER STAGES AND FORECASTS VISIT OUR WEB
PAGE AT: WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO/ /LOWER CASE/

THE NEXT STATEMENT WILL BE ISSUED AT 1000 PM THIS EVENING.

WAC015-060600-
/O.NEW.KPQR.FL.W.0077.001207T1000Z-001208T1400Z/
/CASW1.1.ER.001207T1000Z.001207T1800Z.001208T1400Z.NO/
COWLITZ-
INCLUDING THE CITY OF CASTLE ROCK
1000 AM PST TUE DEC 5 2000
```

Draft

```
THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A
* FLOOD WARNING FOR
  COWLITZ RIVER AT CASTLE ROCK
* FROM LATE WEDNESDAY NIGHT UNTIL FRIDAY MORNING
* AT 800 AM PST TUESDAY THE STAGE/FLOW WAS...46.8 FEET / 59000 CFS
* MINOR FLOODING IS FORECAST
* FLOOD STAGE/FLOW IS...48.0 FEET / 65000 CFS
* FORECAST...THE RIVER IS EXPECTED TO RISE THROUGH THE NIGHT...
  REACHING FLOOD STAGE AROUND 200 AM THURSDAY. IT WILL CONTINUE TO
  RISE THROUGH THE MORNING HOURS AND CREST NEAR 51.5 FEET LATE
  THURSDAY MORNING AND REMAIN ABOVE FLOOD STAGE THROUGH THE DAY.
* ABOVE 51 FEET...EXPECT FLOODING OF BUILDINGS AND RESIDENTIAL AREAS
  WEST OF THE RIVER IN THE VICINITY OF CASTLE ROCK. ALSO...EXPECT
  WIDESPREAD FLOODING OF LOW LYING PASTURE AND FARMLAND.

$$

WAC015-060600-
/O.NEW.KPQR.FL.W.0078.001207T1400Z-001208T1800Z/
/KELW1.1.ER.001207T1400Z.001207T2200Z.001208T1800Z.NO/
COWLITZ-
INCLUDING THE CITIES OF KELSO AND LONGVIEW
1000 AM PST TUE DEC 5 2000

THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A
* FLOOD WARNING FOR
  COWLITZ RIVER AT KELSO
* FROM THURSDAY MORNING UNTIL FRIDAY MORNING
* AT 900 AM PST TUESDAY THE STAGE/FLOW WAS...20.2 FEET / 90000 CFS
* MINOR FLOODING IS FORECAST
* FLOOD STAGE/FLOW IS...21.5 FEET / 100000 CFS
* FORECAST...THE RIVER IS EXPECTED TO RISE THROUGH THE NIGHT AND
  WEDNESDAY...REACHING FLOOD STAGE AROUND 600 AM THURSDAY. IT WILL
  CONTINUE TO RISE THROUGH THE MORNING HOURS AND CREST NEAR 25.0 FEET
  EARLY THURSDAY AFTERNOON AND REMAIN ABOVE FLOOD STAGE THROUGH THE
  DAY.
* ABOVE 24.5 FEET...FLOODING OF A FEW RESIDENTIAL AREAS IN THE KELSO
  VICINITY BEGINS. ALSO...EXPECT WIDESPREAD FLOODING OF PASTURE LAND
  AND LOW LYING ROADS.

$$

ORC009-WAC015-060600-
/O.NEW.KPQR.FL.W.0079.001206T0300Z-001207T1600Z/
/LOPW1.1.FT.001206T0300Z.001207T1400Z.001207T1600Z.NO/
COWLITZ-COLUMBIA-
INCLUDING THE CITIES OF LONGVIEW AND RAINER
1000 AM PST TUE DEC 5 2000

THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A
* FLOOD WARNING FOR
  COLUMBIA RIVER AT LONGVIEW
* FROM THIS EVENING UNTIL THURSDAY MORNING
* AT 800 AM PST TUESDAY THE STAGE WAS...9.8 FEET
* MINOR FLOODING IS FORECAST
* FLOOD STAGE IS...12.0 FEET
* FORECAST...THE RIVER IS EXPECTED TO CREST NEAR 12.0 FEET AROUND
  700 PM THIS EVENING...AND AT 12.5 FEET AROUND 600 AM THURSDAY...
  CORRESPONDING WITH HIGH TIDES AT LONGVIEW.
```

Draft

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* ABOVE 12.0 FEET...EXPECT MINOR FLOODING OF UN-LEVEED LOW LYING
  FARMLAND NEAR THE COLUMBIA.

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Notes and Explanations:

(1) Note that the observation and flood stage bullets include both stage and flow.

(2) The Columbia River at Longview is expected to have two peaks above flood stage, coinciding with tidal maximums. The Event Beginning Date/Time and Flood Begin Date/Time for this segment correspond to when flood stage is exceeded before the first peak and the Event Ending Date/Time and Flood End Date/Time correspond to when the river is expected to drop below flood stage after the second peak.

(3) Note how segments include the optional county/city name lines below the H-VTEC strings.

6.7 Example #7 - Flood Warning for Forecast Points: Flood Category Increase (FLW).

Situation – Very heavy rains over the southwest Washington during the morning of December 5 have greatly increased surface runoff in the lower Cowlitz basin. At 4:00 p.m. on , December 5 (6 hours after the initial flood warning), a flood warning is issued for Castle Rock and Kelso to announce an increase in forecast flood severity from minor to major flooding.

```
WGUS46 KPQR 060000
FLWPQR

BULLETIN - IMMEDIATE BROADCAST REQUESTED
FLOOD WARNING
NATIONAL WEATHER SERVICE PORTLAND OR
400 PM PST TUE DEC 5 2000

...FORECAST FLOODING CHANGED FROM MINOR TO MAJOR SEVERITY AND
INCREASED IN DURATION FOR THE FOLLOWING LOCATIONS ON THE
COWLITZ RIVER...

  COWLITZ RIVER AT CASTLE ROCK AFFECTING COWLITZ COUNTY
  COWLITZ RIVER AT KELSO AFFECTING COWLITZ COUNTY

.VERY HEAVY RAINS OF 3 TO 4 INCHES SINCE EARLY THIS MORNING WILL
INCREASE THE SEVERITY OF FLOODING ON THE LOWER COWLITZ RIVER.

RIVER STAGE FORECASTS ARE BASED ON OBSERVED AND FORECAST RAINFALL
AND TEMPERATURES. IF ACTUAL RAINFALL AND TEMPERATURES VARY FROM THE
FORECAST VALUES...THE RIVER STAGE WILL VARY ACCORDINGLY. NATIONAL
WEATHER SERVICE RIVER FORECASTS INCLUDE CURRENT AND PLANNED
RESERVOIR RELEASES.

FOR THE LATEST RIVER STAGES AND FORECASTS VISIT OUR WEB
PAGE AT: WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO/ /LOWER CASE/

THE NEXT STATEMENT WILL BE ISSUED AT 1000 PM THIS EVENING...OR EARLIER
IF FURTHER UPDATES ARE NEEDED.

WAC015-060600-
/O.EXT.KPQR.FL.W.0077.001207T1000Z-001209T1400Z/
/CASW1.3.ER.001207T1000Z.001207T1800Z.001209T1400Z.NO/
COWLITZ-
INCLUDING THE CITY OF CASTLE ROCK
400 PM PST TUE DEC 5 2000
```

```
...FORECAST FLOODING INCREASED FROM MINOR TO MAJOR AND FLOOD WARNING
EXTENDED UNTIL SATURDAY MORNING...

THE FLOOD WARNING CONTINUES FOR
  COWLITZ RIVER AT CASTLE ROCK
* FROM LATE WEDNESDAY NIGHT UNTIL SATURDAY MORNING
* AT 300 PM PST TUESDAY THE STAGE/FLOW WAS...47.2 FEET / 61000 CFS
* MAJOR FLOODING IS FORECAST
* FLOOD STAGE/FLOW IS...48.0 FEET / 65000 CFS
* FORECAST...THE RIVER IS EXPECTED TO RISE THROUGH THE NIGHT AND
  WEDNESDAY... REACHING FLOOD STAGE AROUND 200 AM THURSDAY. IT WILL
  CONTINUE TO RISE THROUGH THE MORNING HOURS AND CREST NEAR 54.0 FEET
  LATE MORNING THURSDAY AND REMAIN ABOVE FLOOD STAGE UNTIL SATURDAY
  MORNING.
* ABOVE 51 FEET...EXPECT FLOODING OF BUILDINGS AND RESIDENTIAL AREAS
  WEST OF THE RIVER IN THE VICINITY OF CASTLE ROCK. ALSO...EXPECT
  WIDESPREAD FLOODING OF LOW LYING PASTURE AND FARMLAND. AT 54 FEET...
  EXPECT WIDESPREAD FLOODING OF BUSINESS AND RESIDENTIAL AREAS...
  ESPECIALLY WEST OF THE RIVER IN THE FOUR CORNERS AREA AND ALONG
  HWY 411. ALSO EXPECT WIDESPREAD FLOODING OF FARM AND PASTURE LAND.
  LEVEES HAVE HISTORICALLY BEEN THREATENED OF OVERTOPPING AT THIS
  AND HIGHER LEVELS.

$$

WAC015-060600-
/O.EXT.KPQR.FL.W.0078.001207T1400Z-001209T2200Z/
/KELW1.3.ER.001207T1400Z.001207T2200Z.001209T2200Z.NO/
COWLITZ
INCLUDING THE CITIES OF KELSO AND LONGVIEW
400 PM PST TUE DEC 5 2000

...FORECAST FLOODING INCREASED FROM MINOR TO MAJOR SEVERITY AND
FLOOD WARNING EXTENDED UNTIL SATURDAY AFTERNOON...

THE FLOOD WARNING CONTINUES FOR
  COWLITZ RIVER AT KELSO
* FROM THURSDAY MORNING UNTIL SATURDAY MORNING
* AT 300 PM PST TUESDAY THE STAGE/FLOW WAS...20.6 FEET / 93000 CFS
* MAJOR FLOODING IS FORECAST
* FLOOD STAGE/FLOW IS...21.5 FEET / 100000 CFS
* FORECAST...THE RIVER IS EXPECTED TO RISE THROUGH THE NIGHT AND
  WEDNESDAY...REACHING FLOOD STAGE AROUND 600 AM THURSDAY. IT WILL
  CONTINUE TO RISE THROUGH THE MORNING HOURS AND CREST NEAR 27.0 FEET
  LATE AFTERNOON THURSDAY AND REMAIN ABOVE FLOOD STAGE UNTIL EARLY
  SATURDAY AFTERNOON.
* ABOVE 24.5 FEET...FLOODING OF A FEW RESIDENTIAL AREAS IN THE KELSO
  VICINITY BEGINS. ALSO...EXPECT WIDESPREAD FLOODING OF PASTURE LAND
  AND LOW LYING ROADS. ABOVE 26.5 FEET...SOME FLOODING OF BUSINESS
  AND RESIDENTIAL AREAS OCCURS IN KELSO. NUMEROUS ROAD CLOSURES CAN
  BE EXPECTED. THE TOPS OF LEVEES ARE APPROACHED AT THIS LEVEL.

$$
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Notes and Explanations:

(1) Note how the Flood Warning (FLW) identifier is used in a product which is following up a previously issued FLW, but the event tracking numbers are the same as those in the previously issued product for both segments.

Draft

(2) Note that the overview headline and individual segment headlines announce both an increase in forecast flood severity and an extension of the flood warning.
(3) Note - EXT is used for the VTEC action code when a category increase also involves a warning extension.

6.8 Example #8 - Flood Warning for Forecast Points: Non-Flood Point Included (FLW).
Situation – WFO Birmingham, AL issues a flood warning for a series of three forecast points on the Tombigbee River. However, only the first and third forecast points are expected to exceed flood stage. The second point is included to give users a complete "picture" of the river reach. Such non-flood forecast points would use HY.S for the VTEC phenomena/significance code and would follow the same format in flood statements.

```
WGUS44 KBMX 221604
FLWBMX

BULLETIN - IMMEDIATE BROADCAST REQUESTED
FLOOD WARNING
NATIONAL WEATHER SERVICE BIRMINGHAM, AL
1003 AM CST WED DEC 22 2004

...THE NATIONAL WEATHER SERVICE IN BIRMINGHAM HAS ISSUED A FLOOD
WARNING FOR THE UPPER TOMBIGBEE RIVER ABOVE GAINESVILLE...

.HEAVY RAINFALL OF 1 TO 2 INCHES WITH LOCALLY HIGHER AMOUNTS IS
FORECAST OVER THE TOMBIGBEE BASIN DURING THE NEXT 24 HOURS.
THIS FORECAST RAINFALL IS EXPECTED TO SEND THE UPPER TOMBIGBEE
RIVER INTO FLOOD AND A FLOOD WARNING IS IN EFFECT ABOVE THE
GAINESVILLE DAM.  HOWEVER...FROM GAINESVILLE DOWNSTREAM LEVELS
ARE FORECAST TO ONLY RISE TO NEAR OR A LITTLE BELOW FLOOD STAGE...
AND ANY OVERFLOW ALONG THIS PORTION IS EXPECTED TO BE MINOR

IT IS EMPHASIZED THAT THESE FORECASTS ARE BASED ON THE EXPECTED
RAINFALL THE NEXT 24 HOURS.  IF MORE RAINFALL THAN WHAT IS FORECAST
OCCURS...IT MAY BECOME NECESSARY TO REVISE THESE FORECAST UPWARD.

ALL PERSONS WITH INTERESTS ALONG THE RIVER SHOULD MONITOR THE LATEST
FORECASTS...AND TAKE NECESSARY PRECAUTIONS TO PROTECT LIFE AND
PROPERTY FROM RISING RIVER LEVELS.

A FLOOD STATEMENT WILL BE ISSUED BY THURSDAY MORNING...OR SOONER IF
CONDITIONS WARRANT.

ALC107-230000-
/O.NEW.KBMX.FL.W.0097.041224T0300Z-041227T0300Z/
/AVLA1.1.ER.041224T0300Z.041225T0900Z.041227T0300Z.NO/
PICKENS-
1003 AM CST WED DEC 22 2004

THE NATIONAL WEATHER SERVICE IN BIRMINGHAM HAS ISSUED A
* FLOOD WARNING FOR
  TOMBIGBEE RIVER AT THE LOWER BEVILL LOCK AND DAM
* FROM THURSDAY EVENING UNTIL SUNDAY EVENING
* AT 600 AM CST WEDNESDAY THE STAGE WAS 110 FEET
* MINOR FLOODING IS FORECAST
* BANKFULL STAGE IS 120 FEET
* FLOOD STAGE IS 122 FEET
```

```
* FORECAST...RISE ABOVE FLOOD STAGE THURSDAY EVENING. CREST
  125.5 TO 126 FEET EARLY SATURDAY MORNING. FALL BELOW FLOOD STAGE
  SUNDAY EVENING.
* AT 122 FEET...CATTLE IN LOW-LYING AREAS OF SOUTHERN PICKENS COUNTY
  SHOULD BE MOVED TO HIGHER GROUND. CATTLE ARE CUTOFF IN LOWLANDS OF
  SOUTHERN PICKENS COUNTY AT STAGES ABOVE 122 FEET.

$$

ALC063-119-230000-
/O.ROU.KBMX.HY.S.0000.000000T0000Z-000000T0000Z/
/GNSA1.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
1003 AM CST WED DEC 22 2004

FORECAST INFORMATION FOR
  TOMBIGBEE RIVER AT THE LOWER GAINESVILLE LOCK AND DAM
* AT 6 AM WEDNESDAY THE STAGE WAS 78.6 FEET
* BANKFULL STAGE IS 101 FEET
* FLOOD STAGE IS 101 FEET
* FORECAST...NO SIGNIFICANT OVERFLOW IS FORECAST. CREST NEAR
  98.5 FEET SATURDAY MORNING.
* AT 101 FEET, FLOODING OF LOW LYING AGRICULTURAL AND WOODED LANDS
  IN THE AREA OCCURS.

$$

ALC065-091-119-230000-
/O.NEW.KBMX.FL.W.0098.041226T1800Z-041227T0000Z/
/DLDA1.1.ER.041226T1800Z.041226T1800Z.041227T0000Z.NO/
HALE-MARENGO-SUMTER-
INCLUDING THE CITY OF DEMOPOLIS
1003 AM CST WED DEC 22 2004

THE NATIONAL WEATHER SERVICE IN BIRMINGHAM HAS ISSUED A
* FLOOD WARNING FOR
  TOMBIGBEE RIVER AT THE LOWER DEMOPOLIS LOCK AND DAM
* FROM SUNDAY AFTERNOON UNTIL SUNDAY EVENING
* AT 7 AM WEDNESDAY THE STAGE WAS 43.6 FEET
* MINOR FLOODING IS FORECAST
* BANKFULL STAGE IS...68 FEET
* FLOOD STAGE IS...68 FEET
* FORECAST...CREST NEAR 68 FEET MID DAY SUNDAY. FALL SLOWLY AFTER
  THAT TIME.
* AT 68 FEET...FLOODING OF LOWLANDS IN THE AREA OCCURS AND CATTLE
  SHOULD BE MOVED TO HIGHER GROUND.

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7. Areal Flood Warning (FLW) and Associated Follow-up Products (FLS).

7.1 Example #1 - Areal Flood Warning (FLW). Situation – over 3 inches of rain fell overnight in portions of Adams County in southern Ohio. Looking at the amount of overnight rainfall coupled with the strong possibility of an additional 1 to 2 inches, a forecaster at WFO Wilmington, OH determines that this is enough to cause widespread flooding throughout Adams County. There is one forecast point in this county, but numerous small streams will also flood, so the forecaster decides to issue an areal flood warning for the entire county at 8:00 a.m.

```
WGUS41 KILN 241202
FLWILN

BULLETIN - IMMEDIATE BROADCAST REQUESTED
FLOOD WARNING
NATIONAL WEATHER SERVICE WILMINGTON OH
802 AM EDT THU AUG 24 2000

OHC001-241800-
/O.NEW.KILN.FA.W.0011.000824T1202Z-000825T0000Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
ADAMS-
INCLUDING THE CITIES OF WEST UNION...WRIGHTSVILLE AND BLUE CREEK
802 AM EDT THU AUG 24 2000

THE NATIONAL WEATHER SERVICE IN WILMINGTON HAS ISSUED A

* FLOOD WARNING FOR SMALL STREAMS IN
  ADAMS COUNTY IN SOUTHERN OHIO

* UNTIL 800 PM THIS EVENING

* AT 800 AM EDT...WEATHER SERVICE DOPPLER RADAR INDICATED THAT OVER
  3 INCHES OF RAIN HAD FALLEN OVER PARTS OF THE COUNTY. AN ADDITIONAL
  ONE OR TWO INCHES ARE POSSIBLE THROUGHOUT THE DAY. AS A RESULT...
  HIGH WATER LEVELS CAN BE EXPECTED INTO THE EVENING HOURS.  SOME
  LOCATIONS IN THE WARNING AREA INCLUDE WEST UNION AND BLUE CREEK.

A FLOOD WARNING MEANS THAT FLOODING IS IMMINENT OR HAS BEEN REPORTED.
IF FLOODING IS OBSERVED...ACT QUICKLY. DO NOT STAY IN AREAS SUBJECT
TO FLOODING WHEN WATER BEGINS RISING. NEVER DRIVE CARS...TRUCKS OR
SPORT UTILITY VEHICLES THROUGH FLOODED AREAS. THE WATER MAY BE TOO
DEEP TO ALLOW FOR SAFE PASSAGE.

LAT...LON 3900 8327 3904 8330 3905 8338 3901 8360 3901 8368
3863 8370 3869 8365 3866 8362 3868 8352 3866 8345 3864 8337
3863 8332 3858 8328 3860 8327

$$
```

7.2 <u>Example #2 - Flood Statement: Follow-up to an Areal Warning: (FLS)</u>. Situation – the previous flood warning issued for Adams County had a product expiration time six hours after issuance and an Event Ending Date/Time twelve hours after issuance. Heavy rain and flooding is continuing, so just before 2:00 p.m., WFO Wilmington, OH issues a flood statement to continue the areal flood warning and provide updated flood information.

```
WGUS81 KILN 241755
FLSILN

FLOOD STATEMENT
NATIONAL WEATHER SERVICE WILMINGTON OH
155 PM EDT THU AUG 24 2000
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OHC001-250000-
/O.CON.KILN.FA.W.0011.000000T0000Z-000825T0000Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
ADAMS-
INCLUDING THE CITIES OF WEST UNION...WRIGHTSVILLE AND BLUE CREEK
155 PM EDT THU AUG 24 2000

...THE FLOOD WARNING REMAINS IN EFFECT UNTIL 800 PM EDT THIS EVENING
FOR SMALL STREAMS IN ADAMS COUNTY...

AT 150 PM EDT...WEATHER SERVICE DOPPLER RADAR INDICATED A SECOND
AREA OF HEAVY RAINFALL APPROACHING THE COUNTY AND SURROUNDING AREAS.
AN ADDITIONAL HALF INCH TO INCH OF RAIN IS POSSIBLE OVER PARTS OF
ADAMS COUNTY...CAUSING SMALL STREAMS TO RISE AGAIN AFTER THIS
MORNINGS FLOODS. FLOODING HAS BEEN REPORTED AT SEVERAL LOCATIONS
ALONG WEST UNION AND BLUE CREEKS...BUT THE STREAMS ARE CRESTING AND
FLOODING SHOULD BEGIN TO DECREASE IN THE NEXT FEW HOURS AFTER THE
SECOND AREA OF HEAVY RAINFALL PASSES THROUGH.

A FLOOD WARNING MEANS THAT FLOODING IS IMMINENT OR HAS BEEN REPORTED.
IF FLOODING IS OBSERVED...ACT QUICKLY. DO NOT STAY IN AREAS SUBJECT
TO FLOODING WHEN WATER BEGINS RISING. NEVER DRIVE CARS...TRUCKS OR
SPORT UTILITY VEHICLES THROUGH FLOODED AREAS. THE WATER MAY BE TOO
DEEP TO ALLOW FOR SAFE PASSAGE.

LAT...LON 3900 8327 3904 8330 3905 8338 3901 8360 3901 8368
3863 8370 3869 8365 3866 8362 3868 8352 3866 8345 3864 8337
3863 8332 3858 8328 3860 8327

$$
```

7.3 Example #3 - Flood Statement: Cancellation of an Areal Flood Warning (FLS).

Situation – in the previous flood statement continuing the flood warning for Adams County, the product expiration time was set to six hours after issuance – i.e., 0000Z or 8:00 pm. However, the flooding ended earlier than expected and the threat for more rain had ended, so at 2200Z (6:00 p.m.), WFO Wilmington, OH issues a flood statement to cancel the areal flood warning.

```
WGUS81 KILN 242200
FLSILN

FLOOD STATEMENT
NATIONAL WEATHER SERVICE WILMINGTON OH
600 PM EDT THU AUG 24 2000

OHC001-242300-
/O.CAN.KILN.FA.W.0011.000000T0000Z-000825T0000Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
ADAMS-
INCLUDING THE CITIES OF WEST UNION...WRIGHTSVILLE AND BLUE CREEK
600 PM EDT THU AUG 24 2000

...THE FLOOD WARNING HAS BEEN CANCELLED FOR SMALL STREAMS IN ADAMS
COUNTY...

AT 600 PM EDT...WEATHER SERVICE DOPPLER RADAR INDICATED THE SECOND
AREA OF HEAVY RAINFALL HAS MOVED OUT OF THE COUNTY AND SURROUNDING
AREAS. SMALL STREAMS HAVE DROPPED FROM FLOOD LEVELS...BUT HIGHER THAN
NORMAL FLOWS MAY CONTINUE THROUGH EARLY THIS EVENING.
```

```
NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED
AREAS. THE WATER MAY BE TOO DEEP TO ALLOW FOR SAFE PASSAGE.

LAT...LON 3900 8327 3904 8330 3905 8338 3901 8360 3901 8368
3863 8370 3869 8365 3866 8362 3868 8352 3866 8345 3864 8337
3863 8332 3858 8328 3860 8327

$$
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Notes and Explanations:
(1) Even though the flood warning is being cancelled at 2200Z (6 p.m.) on August 24, the Event Ending Date/Time remains 0000Z on August 25, per VTEC rules (NWSI 10-1703, sect. 2.2.2, CAN portion).

7.4 <u>Example #4 – Areal Flood Warning for a River Reach (FLW)</u>. Situation – Releases from Albeni Falls Dam have kept flows along the Pend Oreille River close to flood level for several days. During the morning on June 5, a forecaster at WFO Spokane, OR receives information indicating that several factors are coming together to push the river above flood level along an extended reach. At 11:00 a.m., the forecaster decides to issue an areal flood warning covering an entire reach of the Pend Oreille River in Pend Oreille County from Albeni Falls Dam downstream (northward) to the Canadian border.

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WGUS46 KOTX 051800
FLWOTX

BULLETIN - IMMEDIATE BROADCAST REQUESTED
FLOOD WARNING
NATIONAL WEATHER SERVICE SPOKANE WA
1100 AM PDT WED JUN 5 2002

WAC051-060600-
/O.NEW.KOTX.FA.W.0003.020605T1800Z-020607T0600Z/
/00000.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/
PEND OREILLE-
INCLUDING THE CITIES OF...NEWPORT...IONE...METALINE AND METALINE
FALLS
1100 AM PDT WED JUN 5 2002

THE NATIONAL WEATHER SERVICE IN SPOKANE HAS ISSUED A

* FLOOD WARNING FOR THE PEND OREILLE RIVER IN PEND OREILLE COUNTY

* UNTIL 1100 PM PDT THURSDAY EVENING

* ON THE PEND OREILLE RIVER BELOW ALBENI FALLS DAM...RELEASES FROM
  ALBENI FALLS DAM HAVE INCREASED TO 98000 CFS AT 1000 AM WEDNESDAY.
  THE FLOOD FLOW IS 100000 CFS. THE OUTFLOW FROM ALBENI FALLS DAM
  WILL DECREASE SLIGHTLY THIS EVENING TO 92000 CFS.

* THOUGH THE RIVER IS CURRENTLY BELOW FLOOD FLOW IMMEDIATELY BELOW
  THE DAM...MINOR FLOODING WILL OCCUR ALONG THE RIVER FURTHER
  DOWNSTREAM FROM NEWPORT TO THE CANADIAN BORDER DUE TO INFLOW FROM
  TRIBUTARIES AND LOCAL RAINFALL. SEVERAL STRUCTURES WILL BE FLOODED
  IN NEWPORT. THE RAINFALL EXPECTED TODAY WILL ADD TO THE EXISTING
  HIGH FLOW.
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Draft

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BOATERS AND PERSONS WITH INTERESTS ALONG THE PEND OREILLE RIVER ARE
URGED TO USE EXTREME CAUTION WHEN NEAR OR ON THE RIVER. STAY TUNED
TO FURTHER DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO OR YOUR
LOCAL TV OR RADIO STATIONS.

LAT...LON 4895 11728 4877 11742 4825 11723 4817 11700 4821 11700
4828 11720 4845 11722 4876 11736 4895 11725

$$
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7.5 <u>Example #5 – Areal Flood Warning: Extension In Time (FLW)</u>. Situation – At 11:00 p.m. on Thursday evening, the forecaster realizes that the river did not recede as much as originally expected and decides to extend the areal flood warning for the Pend Oreille River in Pend Oreille County by 24 hours.

```
WGUS41 KOTX 070545
FLWOTX

FLOOD WARNING
NATIONAL WEATHER SERVICE SPOKANE WA
1045 PM PDT THU JUN 6 2002

WAC051-071800-
/O.EXT.KOTX.FA.W.0003.000000T0000Z-020608T0600Z/
/00000.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/
PEND OREILLE-
INCLUDING THE CITIES OF...NEWPORT...IONE...METALINE AND METALINE
FALLS
1045 PM PDT THU JUN 6 2002

THE NATIONAL WEATHER SERVICE IN SPOKANE HAS EXTENDED THE

* FLOOD WARNING FOR THE PEND OREILLE RIVER IN PEND OREILLE COUNTY

* UNTIL 1100 PM PDT FRIDAY EVENING

* ON THE PEND OREILLE RIVER BELOW ALBENI FALLS DAM...THE MOST
  RECENTLY REPORTED DAM RELEASE WAS 92800 CFS AT 1000 PM THURSDAY.
  TRIBUTARIES AND LOCAL RAINFALL HAVE ADDED TO THE DAM OUTFLOW TO
  RAISE THE RIVER ABOVE FLOOD FLOW OF 100000 CFS. THE OUTFLOW FROM
  ALBENI FALLS DAM IS FORECAST TO GRADUALLY DECREASE TO 92000 CFS
  BY SATURDAY MORNING AND THE RAINFALL IS EXPECTED TO END EARLY
  FRIDAY MORNING...SO MINOR FLOODING WILL CONTINUE UNTIL FRIDAY
  EVENING.

* MINOR FLOODING CONTINUES ALONG THE RIVER DOWNSTREAM FROM NEWPORT TO
  THE CANADIAN BORDER. SEVERAL STRUCTURES ARE FLOODED AND SOME SAND
  BAGGING OPERATIONS ARE CONTINUING. ANY ADDITIONAL RAINFALL WOULD
  ADD TO THE EXISTING HIGH FLOW.

BOATERS AND PERSONS WITH INTERESTS ALONG THE PEND OREILLE RIVER ARE
URGED TO USE EXTREME CAUTION WHEN NEAR OR ON THE RIVER. STAY TUNED
TO FURTHER DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO OR YOUR
LOCAL TV OR RADIO STATIONS.

LAT...LON 4895 11728 4877 11742 4825 11723 4817 11700 4821 11700
4828 11720 4845 11722 4876 11736 4895 11725

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Draft

8. Flood Statement – Advisories (FLS).

8.1 Example #1 - Urban and Small Stream Flood Advisory. Situation – A forecaster at WFO San Angelo notes an area of thunderstorms across central and northern Taylor County in Texas. Based on experience with numerous similar storm complexes, the forecaster decides that the likely hydrologic response would not rise to a level warranting a flood or flash flood warning, but instead issues an urban and small stream flood advisory to heighten the level of public awareness in the area

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WGUS84 KSJT 281256
FLSSJT

FLOOD STATEMENT
NATIONAL WEATHER SERVICE SAN ANGELO TX
755 AM CDT TUE MAY 28 2002

TXC441-281500-
/O.NEW.KSJT.FA.Y.0005.020528T1255Z-020528T1500Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
TAYLOR-
INCLUDING THE CITY OF ABILENE
755 AM CDT TUE MAY 28 2002

THE NATIONAL WEATHER SERVICE IN SAN ANGELO HAS ISSUED AN

* URBAN AND SMALL STREAM FLOOD ADVISORY FOR TAYLOR COUNTY AND THE
  CITY OF ABILENE

* UNTIL 1000 AM CDT TUESDAY

* AT 750 AM CDT...WEATHER SERVICE RADAR INDICATED THUNDERSTORMS WITH
  LOCALLY HEAVY RAINFALL ACROSS CENTRAL AND NORTHERN TAYLOR COUNTY.
  RAINFALL BETWEEN 1 TO 2 INCHES HAS FALLEN IN ABILENE SINCE 700 AM
  WITH ANOTHER ONE HALF INCH POSSIBLE THROUGH MID MORNING.

* LOW LYING AND POOR DRAINAGE AREAS ACROSS THE CITY OF ABILENE MAY
  BECOME FLOODED AND IMPASSABLE.

MOTORISTS ACROSS ABILENE SHOULD USE EXTREME CAUTION WHEN TRAVELING
ACROSS THE CITY. DO NOT ATTEMPT TO CROSS AREAS WHERE WATER OF UNKNOWN
DEPTH COVERS THE ROAD.

LAT...LON 3253 10014 3208 10014 3208 9960 3253 9960

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8.2 Example #2 – Arroyo and Small Stream Advisory. Situation - A forecaster at WFO Albuquerque observes an area of thunderstorms moving into Sandoval County in New Mexico. Based on experience with numerous similar storm complexes, the forecaster decides that the likely hydrologic response would not rise to a level warranting a flood or flash flood warning, but instead issues an arroyo and small streams flood advisory to heighten the level of public awareness in the area. "Arroyo and small stream" is used in the advisory title because it more accurately captures the type of stream channels in the area.

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WGUS85 KABQ 072300
FLSABQ

FLOOD STATEMENT
NATIONAL WEATHER SERVICE ALBUQUERQUE NM
500 PM MDT TUE OCT 7 2003

NMC043-080100-
/O.NEW.KABQ.FA.Y.0014.031007T2300Z-031008T0100Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
SANDOVAL-
500 PM MDT TUE OCT 7 2003

THE NATIONAL WEATHER SERVICE IN ALBUQUERQUE HAS ISSUED AN

* ARROYO AND SMALL STREAM FLOOD ADVISORY FOR SOUTHERN SANDOVAL COUNTY
  IN NORTH CENTRAL NEW MEXICO

* UNTIL 700 PM MDT TUESDAY

* AT 453 PM MDT WEATHER SERVICE RADAR INDICATED WIDESPREAD MODERATE
  RAIN OVER SOUTHERN SANDOVAL COUNTY WITH POCKETS OF HEAVY RAIN FROM
  SAN YSIDRO EXTENDING SOUTHWEST INTO BERNALILLO AND CIBOLA COUNTIES.
  THIS LARGE AREA OF RAIN IS MOVING NORTH TO NORTHEAST AT 15 TO 20
  MPH AND WILL OVERSPREAD MUCH OF SANDOVAL COUNTY THROUGH 700 PM.

* ADDITIONAL RAINFALL AMOUNTS UP TO ONE HALF INCH WILL CONTINUE TO
  CAUSE RISES IN SMALL STREAMS AND NORMALLY DRY ARROYOS...AND COULD
  CREATE DANGEROUS FLOWS OVER LOW WATER CROSSINGS.

HEAVY RAINFALL MAY CAUSE ARROYOS AND SMALL STREAMS TO SPILL OVER
THEIR BANKS...RESULTING IN FLOODING OF LOW LYING AREAS AND ROAD
INTERSECTIONS. DO NOT ATTEMPT TO DRIVE THROUGH THESE WATERS. WATER
IN ARROYOS MAY TRAVEL MANY MILES AND TAKE HOURS TO REACH YOUR LOCATION
FROM UPSTREAM RAIN AREAS

LAT...LON 3555 10728 3530 10728 3530 10723 3521 10718 3521 10625
3555 10625

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8.3 Example #3 – Flood Statement: Follow-up to a Small Stream Flood Advisory.

Situation – This product is the seventh in a series of flood watches, flood warnings, flood advisories, and flood statements that was issued for a hydrologic event in the WFO Portland, OR hydrologic service area. This product is a follow-up to a small stream flood advisory covering a portion of the area where waters were reported over several roadways, but didn't reach a level warranting issuance of a flood warning.

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WGUS86 KPQR 150315
FLSPQR

FLOOD STATEMENT
NATIONAL WEATHER SERVICE PORTLAND OR
715 PM PST WED NOV 14 2001

...NW OREGON/SW WASHINGTON COASTAL BASINS BULLETIN NO. 7...
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WAC049-069-150700-
/O.CON.KPQR.FA.Y.0054.000000T0000Z-011115T1400Z/
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
PACIFIC-WAHKIAKUM-
715 PM PST WED NOV 14 2001

...THE SMALL STREAM FLOOD ADVISORY REMAINS IN EFFECT UNTIL 600 AM
CDT THURSDAY FOR PACIFIC AND WAHKIAKUM COUNTIES IN SOUTHWEST
WASHINGTON...

AT 715 PM PST...EMERGENCY OFFICIALS INDICATE WATER IS STILL OVER
SEVERAL ROADWAYS IN PACIFIC AND WAHKIAKUM COUNTIES. RUNOFF FROM
PREVIOUS HEAVY RAINFALL OVER THE AREA WILL CONTINUE TO POSE FLOODING
PROBLEMS ON SMALL STREAMS...CREEKS AND RIVERS IN THESE AREAS.

MOTORISTS SHOULD USE EXTREME CAUTION WHEN TRAVELING IN THESE AREAS.
DO NOT ATTEMPT TO CROSS AREAS WHERE WATER OF UNKNOWN DEPTH COVERS
THE ROAD.

LAT...LON 4680 12328 4680 12400 4627 12398 4623 12380 4630 12360
4627 12358 4628 12342 4612 12323 4615 12317 4640 12317 4640 12328

$$
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8.4 Example #4 - Hydrologic Advisory for Elevated River Levels Caused By Ice Jams.

Situation – A forecaster receives a report of ice jams on two rivers. From observer reports, the ice jams are not causing inundations which reach flood levels, so he decides to issue a hydrologic advisory to elevate public awareness of the unusual hydrologic activity.

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WGUS81 KCAR 212115
FLSCAR

FLOOD STATEMENT
NATIONAL WEATHER SERVICE CARIBOU ME
515 PM EDT MON APR 21 2003

MEC003-222100-
/O.NEW.KCAR.FA.Y.0004.030421T2115Z-030424T2100Z/
/00000.0.IJ.000000T0000Z.000000T0000Z.000000T0000Z.OO/
AROOSTOOK-
515 PM EDT MON APR 21 2003

THE NATIONAL WEATHER SERVICE IN CARIBOU HAS ISSUED A

* HYDROLOGIC ADVISORY FOR ICE JAMS ON THE AROOSTOOK AND SAINT JOHN
  RIVERS

* UNTIL 500 PM THURSDAY

* TWO ICE JAMS WERE OBSERVED ON THE AROOSTOOK RIVER...AND ONE ICE JAM
  WAS REPORTED ON THE SAINT JOHN RIVER IN NORTHEAST AROOSTOOK COUNTY
  MONDAY.

  ON THE AROOSTOOK RIVER...THE FIRST JAM WAS DOWNSTREAM OF THE VILLAGE
  OF CROUSEVILLE ON STATE ROUTE 164 BETWEEN THE TOWNS OF WASHBURN AND
  PRESQUE ISLE. THIS JAM APPEARED TO HAVE BROKEN IN HALF OVER THE PAST
  24 HOURS...SENDING THE DOWNSTREAM FLOW OF ICE SOUTHEAST THROUGH THE
  TOWN OF PRESQUE ISLE LATE MONDAY AFTERNOON. THIS JAM...COMBINED WITH
  THE SNOWMELT RUNOFF...IS CAUSING THE RIVER TO BACKUP INTO LOW LYING
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Draft

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  AREAS OF THE FLOODPLAIN...BUT DOES NOT SEEM TO BE THREATENING ANY
  ROADS OR PROPERTY AT THIS TIME.

  ON THE AROOSTOOK RIVER...NEAR THE TOWN OF FORT FAIRFIELD...AN ICE
  JAM HAS FORMED IN THE RUSSELL FLATS AREA APPROXIMATELY TWO MILES
  DOWNSTREAM OF THE FORT FAIRFIELD BRIDGE...WHERE THE AROOSTOOK RIVER
  FLOWS INTO NEW BRUNSWICK. THIS JAM IS CAUSING THE RIVER TO RISE
  BEHIND THE JAM...BUT DOES NOT SEEM TO BE THREATENING AT THIS TIME.

  ON THE SAINT JOHN RIVER...A RIVER SPOTTER HAS REPORTED AN ICE JAM
  FIVE TO SIX MILES DOWNSTREAM OF THE INTERNATIONAL BRIDGE IN VAN
  BUREN...WHERE THE ICE FLOE HAS RUN INTO THE STILL STRONG SHEET OF
  RIVER ICE. THIS RIVER SPOTTER ALSO NOTED THAT DOWNSTREAM OF THIS
  JAM THE SAINT JOHN RIVER APPEARED TO BE FREE OF ICE.

RIVER ICE IS VERY UNPREDICTABLE...AND MAY MOVE AND JAM WITH LITTLE
NOTICE. ANY ICE JAM CAN CAUSE FLOODING...AS THE ICE DAMS THE RIVER...
CAUSING THE RIVER AT OR BEHIND THE JAM TO ELEVATE. STAY CLEAR OF LOW
LYING AREAS NEAR ICE AFFECTED RIVERS AND MONITOR CONDITIONS CLOSELY.

LAT...LON 4708 6780 4732 3825 4725 6877 4645 6840 4646 6836 4720
6865 4727 6830 4703 6785

$$
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9. Flood Advisory for Forecast Points (FLS).

9.1 Example #1 – Flood Advisory for Multiple Forecast Points. Situation: locally heavy rainfall occurs over the Cedar River basin which is sufficient to bring the river and key tributaries close to flood stage but not high enough to warrant a flood warning. WFO Des Moines issues a flood advisory for forecast points covering the next two and a half days to notify local residents of elevated flow situation and let them know that flooding is not expected at this time.

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WGUS83 KDMX 142211
FLSDMX

FLOOD STATEMENT
NATIONAL WEATHER SERVICE DES MOINES IA
511 PM CDT TUE SEP 14 2004

...THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A FLOOD
ADVISORY FOR THE WINNEBAGO RIVER AT MASON CITY...SHELL ROCK RIVER
AT MARBLE ROCK...CEDAR RIVER AT JANESVILLE...CEDAR RIVER AT CEDAR
FALLS...AND CEDAR RIVER AT WATERLOO...

.SEVERE WEATHER WITH LOCALLY HEAVY RAINFALL OF TWO TO THREE INCHES
PASSED OVER NORTHERN AND CENTRAL IOWA THIS AFTERNOON. SOME ADDITIONAL
RAINFALL MAY FALL ON WEDNESDAY BUT AMOUNTS ARE EXPECTED TO BE SMALL.
THE LOCATION OF THIS RAINFALL AND HOW MUCH FALLS WILL CONTROL WHETHER
FUTURE RIVER FORECASTS WILL NEED TO BE CHANGED AND WARNINGS WILL NEED
TO BE ISSUED.

IAC023-067-151000-
/O.NEW.KDMX.FL.Y.0006.040914T2211Z-040917T1000Z/
/MLBI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BUTLER-FLOYD-
INCLUDING THE CITIES OF MARBLE ROCK...GREENE...ROCKFORD AND
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NORA SPRINGS
511 PM CDT TUE SEP 14 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A
* FLOOD ADVISORY FOR
  SHELL ROCK RIVER AT MARBLE ROCK
* UNTIL 500 AM CDT FRIDAY MORNING
* AT 4 PM TUESDAY THE STAGE WAS...3.0 FT /ESTIMATED/
* FLOOD STAGE IS...4.0 FEET
* FORECAST...THE RIVER WILL CREST AT 3.8 FEET AT 600 PM THIS EVENING
  AND THEN FALL TO 2.0 FEET BY THURSDAY MORNING.
* AT 5.0 FEET...GATES RIVER BRIDGE TRAILER PARK IS AFFECTED AND
  EVACUATIONS ARE ORDERED BY MARBLE ROCK POLICE. SOME RESIDENCES MAY
  BE THREATENED FURTHER DOWNSTREAM TOWARD GREENE.

$$

IAC033-067-195-151000-
/O.NEW.KDMX.FL.Y.0007.040914T2211Z-040917T1000Z/
/MCWI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
CERRO GORDO-FLOYD-WORTH-
INCLUDING THE CITIES OF MASON CITY...PORTLAND...FERTILE
511 PM CDT TUE SEP 14 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A
* FLOOD ADVISORY FOR
  WINNEBAGO RIVER AT MASON CITY
* UNTIL 500 AM CDT FRIDAY MORNING
* AT 4 PM TUESDAY THE STAGE WAS...3.5 FEET
* FLOOD STAGE IS...7.0 FEET
* FORECAST...THE RIVER WILL CREST AT 6.6 FEET AT 600 PM THIS EVENING
  AND THEN FALL TO 4.0 FEET BY THURSDAY EVENING.
* AT 8.0 FEET...EAST AND WEST CITY PARKS ARE AFFECTED DOWNSTREAM
  FROM THE GAGE SITE.

$$

IAC013-017-151000-
/O.NEW.KDMX.FL.Y.0008.040914T2211Z-040917T1000Z/
/JANI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BLACK HAWK-BREMER-
INCLUDING THE CITIES OF JANESVILLE AND WAVERLY
511 PM CDT TUE SEP 14 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A
* FLOOD ADVISORY FOR
  CEDAR RIVER AT JANESVILLE
* UNTIL 500 AM CDT FRIDAY MORNING
* AT 4 PM TUESDAY THE STAGE WAS...1.5 FEET
* FLOOD STAGE IS 11.0 FEET
* FORECAST...THE RIVER WILL CREST AT 10.5 FEET AT 200 PM THURSDAY
  EVENING AND THEN FALL RAPIDLY TO 5.0 FEET BY FRIDAY MORNING.
* AT 11.0 FEET...LOWLAND FLOODING OF THE CITY PARK OCCURS.

$$

IAC013-151000-
/O.NEW.KDMX.FL.Y.0009.040914T2211Z-040917T1000Z/
/CEDI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BLACK HAWK-
INCLUDING THE CITY OF CEDAR FALLS
511 PM CDT TUE SEP 14 2004
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Draft

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THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A
* FLOOD ADVISORY FOR
  CEDAR RIVER AT CEDAR FALLS
* UNTIL 500 AM CDT FRIDAY MORNING
* AT 12 PM TUESDAY THE STAGE WAS...83.1 FEET
* FLOOD STAGE IS 88.0 FEET
* FORECAST...THE RIVER WILL CREST AT 86.5 FEET AT 1 AM EARLY FRIDAY
  MORNING AND THEN FALL TO 85.5 FEET BY 500 AM FRIDAY.
* AT 89 FEET...COTTAGE ROW BECOMES COMPLETELY COVERED IN SOME PLACES.

$$

IAC013-151000-
/O.NEW.KDMX.FL.Y.0010.040914T2211Z-040917T1000Z/
/ALOI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BLACK HAWK-
INCLUDING THE CITIES OF WATERLOO AND EVANSDALE
511 PM CDT TUE SEP 14 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A
* FLOOD ADVISORY FOR
  CEDAR RIVER AT WATERLOO
* UNTIL 500 AM CDT FRIDAY MORNING
* AT 4 PM TUESDAY THE STAGE WAS...5.6 FEET
* FLOOD STAGE IS 12.0 FEET
* FORECAST...THE RIVER WILL CREST AT 10.5 FEET AT 3 AM EARLY FRIDAY
  MORNING AND THEN FALL TO 10.0 FEET BY 500 AM FRIDAY.
* AT 13.0 FEET...THERE IS MINOR STREET FLOODING IN EVANSDALE ALONG
  WITH ABOUT 22000 ACRES FLOODED.

$$
```

9.2 <u>Example #2 – Flood Advisory for Multiple Forecast Points – Follow-up</u>. Situation: elevated flow continues to move down the Cedar River basin in response to heavy rain occurring on the previous day. Flows have decreased sufficiently at the two upstream points covered in the original advisory to allow the advisory to be cancelled for those locations, but the advisory continues for the three downstream forecast points.

```
WGUS83 KDMX 141000-
FLSDMX

FLOOD STATEMENT
NATIONAL WEATHER SERVICE DES MOINES IA
500 AM CDT WED SEP 15 2004

...THE NATIONAL WEATHER SERVICE IN DES MOINES IS CONTINUING THE FLOOD
ADVISORY FOR THE CEDAR RIVER AT JANESVILLE...CEDAR RIVER AT CEDAR
FALLS...AND CEDAR RIVER AT WATERLOO. THE FLOOD ADVISORY IS CANCELLED
FOR THE WINNEBAGO RIVER AT MASON CITY AND SHELL ROCK RIVER AT MARBLE
ROCK...

.ELEVATED STREAMFLOW IS MOVING DOWN THE CEDAR RIVER IN RESPONSE TO
YESTERDAY AFTERNOONS RAINFALL. SOME ADDITIONAL RAINFALL MAY FALL THIS
AFTERNOON BUT AMOUNTS ARE EXPECTED TO BE SMALL. THE LOCATION OF THIS
RAINFALL AND HOW MUCH FALLS WILL CONTROL WHETHER FUTURE RIVER
FORECASTS NEED TO BE CHANGED AND WARNINGS NEED TO BE ISSUED.
HOWEVER...THE RIVER IS NOT CURRENTLY EXPECTED TO EXCEED FLOOD STAGE.
```

```
IAC023-067-151100-
/O.CAN.KDMX.FL.Y.0006.000000T0000Z-040917T1000Z/
/MLBI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BUTLER-FLOYD-
INCLUDING THE CITIES OF MARBLE ROCK...GREENE...ROCKFORD AND
NORA SPRINGS
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY IS CANCELLED FOR
  SHELL ROCK RIVER AT MARBLE ROCK
* AT 4 AM WEDNESDAY THE STAGE WAS...2.5 FT /ESTIMATED/
* FLOOD STAGE IS...4.0 FEET
* FORECAST...THE RIVER WILL FALL TO 2.0 FEET BY THURSDAY MORNING.

$$

IAC033-067-195-151100-
/O.CAN.KDMX.FL.Y.0007.000000T0000Z-040917T1000Z/
/MCWI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
CERRO GORDO-FLOYD-WORTH-
INCLUDING THE CITIES OF MASON CITY...PORTLAND AND FERTILE
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY IS CANCELLED FOR
  WINNEBAGO RIVER AT MASON CITY
* AT 4 AM TUESDAY THE STAGE WAS...5.0 FEET
* FLOOD STAGE IS...7.0 FEET
* FORECAST...THE RIVER WILL FALL TO 4.0 FEET BY THURSDAY EVENING.

$$

IAC013-017-152200-
/O.CON.KDMX.FL.Y.0008.000000T0000Z-040917T1000Z/
/JANI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BLACK HAWK-BREMER-
INCLUDING THE CITIES OF JANESVILLE AND WAVERLY
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY CONTINUES FOR
  CEDAR RIVER AT JANESVILLE
* UNTIL 500 AM CDT FRIDAY MORNING
* AT 4 AM WEDNESDAY THE STAGE WAS...3.7 FEET
* FLOOD STAGE IS 11.0 FEET
* FORECAST...THE RIVER WILL CREST AT 10.5 FEET AT 200 PM THURSDAY
  EVENING AND THEN FALL RAPIDLY TO 5.0 FEET BY FRIDAY MORNING.
* AT 11.0 FEET...LOWLAND FLOODING OF THE CITY PARK OCCURS.

$$

IAC013-152200-
/O.CON.KDMX.FL.Y.0009.000000T0000Z-040917T1000Z/
/CEDI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BLACK HAWK-
INCLUDING THE CITY OF CEDAR FALLS
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY CONTINUES FOR
  CEDAR RIVER AT CEDAR FALLS
* UNTIL 500 AM CDT FRIDAY MORNING
* AT 4 AM WEDNESDAY THE STAGE WAS...84.0 FEET
* FLOOD STAGE IS 88.0 FEET
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Draft

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* FORECAST...THE RIVER WILL CREST AT 86.5 FEET AT 1 AM EARLY FRIDAY
  MORNING AND THEN FALL TO 85.5 FEET BY 500 AM FRIDAY.
* AT 89 FEET...COTTAGE ROW BECOMES COMPLETELY COVERED IN SOME PLACES.

$$

IAC013-152200-
/O.CON.KDMX.FL.Y.0010.000000T0000Z-040917T1000Z/
/ALOI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BLACK HAWK-
INCLUDING THE CITY OF WATERLOO AND EVANSDALE
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY CONTINUES FOR
  CEDAR RIVER AT WATERLOO
* UNTIL 500 AM CDT FRIDAY MORNING
* AT 4 AM WEDNESDAY THE STAGE WAS...6.7 FEET
* FLOOD STAGE IS 12.0 FEET
* FORECAST...THE RIVER WILL CREST AT 10.5 FEET AT 3 AM EARLY FRIDAY
  MORNING AND THEN FALL TO 10.0 FEET BY 500 AM FRIDAY.
* AT 13.0 FEET...THERE IS MINOR STREET FLOODING IN EVANSDALE ALONG
  WITH ABOUT 22000 ACRES FLOODED.

$$
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9.3 <u>Example #3 – Flood Advisory for Multiple Forecast Points - Extension</u>. Situation Situation: the Cedar River in the vicinity of Waterloo and Cedar Falls is staying near flood stage longer than originally expected. The forecaster decides to extend the flood advisory at the three remaining forecast points for another 12 hours to give the river more time to recede further below flood stage.

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WGUS83 KDMX 141000
FLSDMX

FLOOD STATEMENT
NATIONAL WEATHER SERVICE DES MOINES IA
500 AM CDT WED SEP 15 2004

...THE NATIONAL WEATHER SERVICE IN DES MOINES IS EXTENDING THE FLOOD
ADVISORY FOR THE CEDAR RIVER AT JANESVILLE...CEDAR RIVER AT CEDAR
FALLS...AND CEDAR RIVER AT WATERLOO...

.ELEVATED RIVER FLOW PERSISTS IN THE CEDAR FALLS AND WATERLOO AREA
DUE TO SOME MODERATE RAINFALL THURSDAY NIGHT JUST TO THE NORTH AND
WEST OF CEDAR FALLS. THIS IS KEEPING WATER LEVELS THE CEDAR RIVER UP
A LITTLE LONGER THAN ORIGINALLY EXPECTED...SO THE FLOOD ADVISORY IS
BEING EXTENDED 12 HOURS.

IAC013-017-152200-
/O.EXT.KDMX.FL.Y.0008.000000T0000Z-040917T2200Z/
/JANI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BLACK HAWK-BREMER-
INCLUDING THE CITIES OF JANESVILLE AND WAVERLY
500 AM CDT WED SEP 15 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS EXTENDED THE
* FLOOD ADVISORY FOR
  CEDAR RIVER AT JANESVILLE
```

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* UNTIL 500 PM CDT FRIDAY EVENING
* AT 4 AM FRIDAY THE STAGE WAS...9.2 FEET
* FLOOD STAGE IS 11.0 FEET
* FORECAST...THE RIVER CRESTED AT 10.5 FEET THURSDAY EVENING AND IS
  SLOWLY FALLING. IT WILL FALL TO 7.0 FEET BY SATURDAY MORNING.
* AT 11.0 FEET...LOWLAND FLOODING OF THE CITY PARK OCCURS.

$$

IAC013-152200-
/O.EXT.KDMX.FL.Y.0009.000000T0000Z-040917T2200Z/
/CEDI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BLACK HAWK-
INCLUDING THE CITY OF CEDAR FALLS
500 AM CDT WED SEP 15 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS EXTENDED THE
* FLOOD ADVISORY FOR
  CEDAR RIVER AT CEDAR FALLS
* UNTIL 500 PM CDT FRIDAY EVENING
* AT 4 AM FRIDAY THE STAGE WAS...87.0 FEET
* FLOOD STAGE IS 88.0 FEET
* FORECAST...THE RIVER IS CRESTING NOW AND WILL FALL TO 85.5 FEET BY
  SATURDAY MORNING.
* AT 89 FEET...COTTAGE ROW BECOMES COMPLETELY COVERED IN SOME PLACES.

$$

IAC013-152200-
/O.EXT.KDMX.FL.Y.0010.000000T0000Z-040917T2200Z/
/ALOI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
BLACK HAWK-
INCLUDING THE CITIES OF WATERLOO AND EVANSDALE
500 AM CDT WED SEP 15 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS EXTENDED THE
* FLOOD ADVISORY FOR
  CEDAR RIVER AT WATERLOO
* UNTIL 500 PM CDT FRIDAY EVENING
* AT 4 AM FRIDAY THE STAGE WAS...11.4 FEET
* FLOOD STAGE IS 12.0 FEET
* FORECAST...THE RIVER IS CRESTING AND WILL FALL TO 10.0 FEET BY
  SATURDAY MORNING.
* AT 13.0 FEET...THERE IS MINOR STREET FLOODING IN EVANSDALE ALONG
  WITH ABOUT 22000 ACRES FLOODED.

$$
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10. Hydrologic Statement (RVS).

10.1 Example #1 – Information on Notable River Conditions at a Forecast Point.

Situation: flow on the Sulphur River has been holding steady below flood level for several days. The forecaster issues a hydrologic statement to update the current and near-term forecast for the river at the town of Cooper. A forecaster could choose to issue a Flood Advisory for Forecast Points (FLS – FL.Y) in such situations if it was necessary for the product to be disseminated over NOAA Weather Radio. However, the river has been holding steady for several days and using the Hydrologic Statement (RVS) provides sufficient dissemination through NOAA

Draft

Weather Wire and the Internet. Regional and local WFO policies ultimately determine which type of product is issued for near-flood stage situations.

```
FGUS84 KFWD 110117
RVSFWD
TXC119-223-120100-

HYDROLOGIC STATEMENT
NATIONAL WEATHER SERVICE FORT WORTH TX
817 PM CDT WED APR 10 2002

THIS STATEMENT UPDATES INFORMATION FOR THE FOLLOWING LOCATIONS ON THE
SULPHUR RIVER...COOPER

FOR THE SOUTH SULPHUR RIVER NEAR COOPER...THE STAGE AT 715 PM
WEDNESDAY WAS 15.7 FEET. FLOOD STAGE IS 16.0 FEET. THE RIVER IS
FORECAST TO HOLD AROUND 15.7 FEET...JUST BELOW FLOOD STAGE FOR THE
NEXT SEVERAL DAYS. IF THE RIVER REACHES OR EXCEEDS 16.0 FEET...MINOR
OUT OF BANK FLOODING WILL OCCUR AND A FEW RURAL ROADS WILL BEGIN TO
FLOOD. MINOR FLOODING WILL ALSO OCCUR TO FARM AND RANCH LAND
ADJACENT TO THE RIVER.

&&

                    FLD       OBSERVED           FORECAST 7 PM
LOCATION            STG    STG   DAY  TIME     THU    FRI    SAT

SULPHUR RIVER
      COOPER        16     15.7  WED  7 PM     15.7   15.6   15.5

$$
```

10.2 <u>Example #2 - Elevated River Levels Caused By Ice Jam</u>. This example illustrates how the information shown in the product in section 7.4 could be provided in a hydrologic statement using a non-bulleted format. The hydrologic statement could be used for this type of elevated streamflow situation if it was not necessary for the product to be disseminated over NOAA Weather Radio, and NOAA Weather Wire and the internet were believed to be sufficient to get the information to need-to-know officials.

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FGUS81 KCAR 212111
RVSCAR
MEC003-222100-

HYDROLOGIC STATEMENT
NATIONAL WEATHER SERVICE CARIBOU ME
515 PM EDT MON APR 21 2003

...ICE JAMS PERSIST ON THE AROOSTOOK AND SAINT JOHN RIVERS...

TWO ICE JAMS WERE OBSERVED ON THE AROOSTOOK RIVER...AND ONE ICE JAM
WAS REPORTED ON THE SAINT JOHN RIVER IN NORTHEAST AROOSTOOK COUNTY
MONDAY.
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Draft

ON THE AROOSTOOK RIVER...THE FIRST JAM WAS DOWNSTREAM OF THE VILLAGE OF CROUSEVILLE ON STATE ROUTE 164 BETWEEN THE TOWNS OF WASHBURN AND PRESQUE ISLE. THIS JAM APPEARED TO HAVE BROKEN IN HALF OVER THE PAST 24 HOURS...SENDING THE DOWNSTREAM FLOW OF ICE SOUTHEAST THROUGH THE TOWN OF PRESQUE ISLE LATE MONDAY AFTERNOON. THIS JAM...COMBINED WITH THE SNOWMELT RUNOFF...IS CAUSING THE RIVER TO BACKUP INTO LOW LYING AREAS OF THE FLOODPLAIN...BUT DOES NOT SEEM TO BE THREATENING ANY ROADS OR PROPERTY AT THIS TIME.

ON THE AROOSTOOK RIVER...NEAR THE TOWN OF FORT FAIRFIELD...AN ICE JAM HAS FORMED IN THE RUSSELL FLATS AREA APPROXIMATELY TWO MILES DOWNSTREAM OF THE FORT FAIRFIELD BRIDGE...WHERE THE AROOSTOOK RIVER FLOWS INTO NEW BRUNSWICK. THIS JAM IS CAUSING THE RIVER TO RISE BEHIND THE JAM...BUT DOES NOT SEEM TO BE THREATENING AT THIS TIME.

ON THE SAINT JOHN RIVER...A RIVER SPOTTER HAS REPORTED AN ICE JAM FIVE TO SIX MILES DOWNSTREAM OF THE INTERNATIONAL BRIDGE IN VAN BUREN...WHERE THE ICE FLOE HAS RUN INTO THE STILL STRONG SHEET OF RIVER ICE. THIS RIVER SPOTTER ALSO NOTED THAT DOWNSTREAM OF THIS JAM THE SAINT JOHN RIVER APPEARED TO BE FREE OF ICE.

RIVER ICE IS VERY UNPREDICTABLE...AND MAY MOVE AND JAM WITH LITTLE NOTICE. ANY ICE JAM CAN CAUSE FLOODING...AS THE ICE DAMS THE RIVER... CAUSING THE RIVER AT OR BEHIND THE JAM TO ELEVATE. STAY CLEAR OF LOW LYING AREAS NEAR ICE AFFECTED RIVERS AND MONITOR CONDITIONS CLOSELY.

$$

11. Hydrologic Summary (RVA).

11.1 Example #1 - Report for Rivers and Creeks in Hydrologic Service Area.

SRUS43 KDDC 201351
RVADDC
KSC007-025-045-047-051-055-057-075-129-151-195-OKC007-211400-

HYDROLOGIC SUMMARY
NATIONAL WEATHER SERVICE DODGE CITY KS
850 AM CDT MON MAY 20 2002

LOCATION	FS	STAGE HEIGHT	24-HR CHANGE	POOL HEIGHT	24-HR CHANGE
ARKANSAS RIVER					
COOLIDGE 1S	8	2.45	0.00		
SYRACUSE	10	3.11	0.00		
GARDEN CITY	10	5.04	0.01		
DODGE CITY	11	5.82	0.01		
KINSLEY	12	3.75	-0.02		
BUCKNER CREEK					
BURDETT 6W	16	3.73	0.00		
CIMARRON RIVER					
ELKHART 8N	8	4.01	0.00		
FORGAN 8N	7	2.44	-0.02		
CROOKED CREEK					
ENGLEWOOD	5	1.64	M		

```
MEDICINE LODGE RIVER
   KIOWA 2NE          10      1.36     -0.06

PAWNEE RIVER
   BURDETT 7WNW       23      2.53      0.00
   ROZEL 1N           31      5.86      0.00

SALINE RIVER
   WAKEENEY 5N        13      2.07     -0.01

S.FK NINNESCAH RIVER
   PRATT 1E            8      2.78     -0.02

SMOKY HILL RIVER
   ARNOLD 12N          7      0.69     -0.01

CEDAR BLUFF RSVR                                2143.21     M
   SCHOENCHEN 3W      11      2.55     -0.02
   SCHOENCHEN 2E      11      2.23        M

$$
```

12. River and Lake Forecast Product (RVD).

12.1 Example #1 - Lake Sites (in SHEF).

```
FGUS54 KLUB 081306
RVDLUB
TXC045-075-169-263-091300-

DAILY RIVER AND LAKE SUMMARY
NATIONAL WEATHER SERVICE LUBBOCK TX
805 AM CDT FRI JUN 08 2001

.B LUB 0608 DC0106080805 DH12/HP/
:
:RESERVOIR/LAKE SITES
:                                    7AM
:      STATION              NORMAL   POOL      24-HR:
ID     NAME                 POOL     ELEV.     CHANGE
:
MKZT2 :MCKENZIE LAKE        3100:    3031.69/:   -0.03:
CWRT2 :WHITE RIVER LAKE     2370:    2354.38/:   -0.02:
LHPT2 :LAKE ALAN HENRY      2220:    2206.35/:   -0.07:
:
.END

$$
```

12.2 Example #2 - River and Lake Sites.

```
FGUS51 KLWX 011706
RVDLWX
MDC001>002-009-DCC001-021700-

DAILY RIVER AND LAKE SUMMARY
NATIONAL WEATHER SERVICE BALTIMORE MD/WASHINGTON DC
1206 PM EST THU MAR 01 2001
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Draft

```
.B WBC 0301 DC01030112
DH12/HG/DRH+24/HGIFF/DRH+48/HGIFF/DRH+72/HGIFF
:      STATION          FLOOD     7AM    24-HR            7AM
: ID   NAME             STAGE    STAGE   CHANGE        FORECASTS
:                                                FRI     SAT    SUN
:POTOMAC RIVER
HPFW2 :HARPERS FERRY    18.0  :  11.44/:  0.22:  11.40  /11.32 /9.75/
LITM2 :LITTLE FALLS     10.0  :   3.71/:  0.04:   3.70  / 3.60 /M   /
:
.END
:
.B WBC 0301 DH12/HP
:                       FULL       WATER      OBSERVED    24-HR
:ID    LAKE NAME        POOL       ELEV.      DAY TIME    CHANGE
KERV2: JOHN H. KERR     320   :    295.6 :    THU 7 AM    -0.2
:
.END

$$
```

13. Hydrometeorological Data Summary (HYx).

13.1 Example #1 - Daily Summary (HYD).

```
SXUS52 KCHS 301437
HYDCHS
GAC031-043-051-103-165-179-183-191-251-267-SCC005-013-015-019-029-
035-049-052-011400-

DAILY HYDROMETEOROLOGICAL DATA SUMMARY
NATIONAL WEATHER SERVICE CHARLESTON SC
1036 AM EDT TUE APR 30 2002

.B CHS 0430 E DH07/TX/TN/TA/PPP/TSIRZX/TSIRZN/TSIRZ
:
: CHARLESTON AREA TEMPERATURES AND PRECIPITATION
:
:MAX...HIGH TEMPERATURE LAST 24 HRS  MIN...LOW TEMPERATURE LAST 24 HRS
:CUR...CURRENT TEMPERATURE           PCPN...PRECIPITATION LAST 24 HRS
:
:                            AIR TEMP                 SOIL TEMP
:STATION                     MAX   MIN   CUR   PCPN   MAX  MIN   CUR
:
:...SOUTH COASTAL...
:CHARLESTON ARPT  :CHS       92/   56/   63/   0.01/  77/  68/
:CHARLESTON CITY  :CHLS1     92/   64/   64/   0.03/  79/  66/
:BEAUFORT         :BEAS1     92/   62/   62/   0.01/  80/  67/
:SUMMERVILLE      :SMVS1     93/   52/   52/   0.00/    /    /
:JAMESTOWN        :JAMS1     91/   55/   57/   0.02/    /    /
:
:...SOUTHEAST GEORGIA...
:SAVANNAH ARPT    :SAV       93/   56/   66/   0.00/    /    /   74
:SPRINGFIELD      :SRFG1     93/   57/   57/   0.11/    /    /
:EDEN             :EDEG1     93/   55/   66/   0.00/    /    /
:ROCKY FORD       :RCFG1     91/   53/   53/     M /    /    /
:
.END
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Draft

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$$
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13.2 Example #2 - Monthly Summary (HYM).

```
CSUS46 KMTR 051725
HYMMTR
CAC053-055-069-075-085-087-097-061800-

MONTHLY HYDROMETEOROLOGICAL DATA SUMMARY
NATIONAL WEATHER SERVICE SAN FRANCISCO CA
925 AM PST FRI APR 5 2002

.B MTR 0331 P DH24/PPM
:
: MONTHLY PRECIPITATION FOR SF BAY AREA AND CENTRAL COAST
:
ANGC1  3.69   :ANGWIN PACIFIC UNION COLLEGE
BISC1  4.62   :BIG SUR STATE PARK
FORC1  3.32   :FORT ROSS
HLDC1  3.46   :HEALDSBURG FIRE DEPT
KICC1  0.58   :KING CITY
MHMC1  3.86   :MOUNT HAMILTON
NSHC1  2.63   :NAPA STATE HOSPITAL
PANC1  0.90   :PANOCHE 2W
PRSC1  0.80   :PRIEST VALLEY
SFOC1  2.27   :SAN FRANCISCO DOWNTOWN
SCRC1  3.52   :SANTA CRUZ
STSC1  2.43   :SANTA ROSA
WVIC1  1.51   :WATSONVILLE WATERWORKS
.END

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Draft