

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: HYDROMETEOROLOGICAL INFO CENTER (W/OS31)
SSMC 2 – Rm. 13468
1325 EAST – WEST Highway
SILVER SPRING, MD 20910 –3283

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: January 2005 was much wetter and slightly warmer than normal over Northern Indiana, Northwest Ohio and Extreme Southern Lower Michigan. Precipitation averaged 2.87 inches above normal. Snowfall averaged 6.5 inches above normal. Temperatures averaged 0.7 °F above normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of January, the average high temperature was in the lower 30s, the average low temperature was in the upper teens giving an average temperature in the middle 20s. (Only NWS Fort Wayne and South Bend data were used).

There were several significant precipitation events in January 2005. The first 14 days of January saw an average of 4.69 inches of precipitation fall across Extreme Southern Lower Michigan, Northern Indiana and Northwest Ohio (COOP Data). The precipitation total included an average of 7.8 inches of snow (COOP Data). This excessive precipitation led to major flooding along some rivers in Northern Indiana and Northwest Ohio. The first event consisted of several rain storms which moved across the area from the 1st through the 4th. An average of 1.26 inches of rain fell across the area (COOP Data). Rivers, which were already high from snowmelt that occurred in late December, began flooding. Most of the flooding was minor along the Tiffin, Maumee, Auglaize, Eel, Salamonie, Kankakee, St. Marys and the Blanchard Rivers in Northern Indiana and Northwest Ohio.

Another storm system developed over the Southern Plains and swept northeast across the area on the 5th and 6th spreading freezing rain across Northern Indiana south of U. S. Highway 30 and over much of Northwest Ohio with sleet and snow north of U. S. Highway 30 in Northern Indiana and Extreme Southern Lower Michigan. The rain caused additional minor flooding along the Mississinewa River in Northern Indiana and increased the flooding along the St. Marys River to the moderate level. The snow, sleet and freezing rain left more ice and snow on the ground which would later melt causing major flooding a few days later. Ice totals ranged from 1 to 2 inches across parts on North-Central and Northeast

Indiana and Northwest Ohio. Isolated 3 inch amounts were reported in Northwest Ohio. Precipitation averaged 1 inch across the area with an average of 2.4 inches of snow (COOP Data).

There was a short break until the evening of the 7th when a quick moving storm system dumped between 4 and 7 inches across the Western Lower Great Lakes region. COOP stations reported an average of 4 inches across the area for the 8th and 9th of the month. An average of 0.19 inches of liquid was also reported (COOP Data). Some locations reported over a half inch liquid amount in the snow. This added more moisture to the amounts already stored on the ground.

With ice and snow amounting up to 3 inches in some spots in Northwest Ohio and Northeast Indiana, the potential of significant flooding was great. Hydrologic Outlooks (ESFs) were issued beginning on the 7th to cover this threat as another storm system was expected to bring warm air and the possibility of heavy rain to the area early the following week. A total of 6 Hydrologic Outlooks were issued to cover this possibility. As the expected storm developed, a Flood Watch (FFA) was issued for the entire area on the 11th which was extended to the 14th as the storm moved through.

The third storm system approached the area from the southwest. Only this time, very warm moist tropical air was drawn north ahead of the storm. A warm front was driven north across the Western Lower Great Lakes region during the night of the 11th and during the day on the 12th. Heavy rain broke out ahead of the warm front causing flash flooding over parts of Northeast Indiana where the heaviest ice accumulation were located. Precipitation began as snow over far Northern Indiana and Extreme Southern Lower Michigan on the 10th with an average of 0.9 inches (COOP Data). Precipitation amounts averaged 0.29 inches across the area (COOP Data) by the morning of the 11th. Heavy rains developed across parts of Northeast Indiana and Northwest Ohio on the afternoon of the 11th with Hartford City reporting almost 3 inches by the morning of the 12th. An average of 1.09 inches fell by the morning of the 12th (COOP Data). The heavy rain led to flash flooding over parts of Northeast Indiana on the morning of the 12th. The warm front finally moved north of the area by the late afternoon of the 12th. In the frontal zone dense fog developed reducing visibility to near zero in many areas. There was a large temperature contrast marked by the front. Ahead of the warm front temperatures were in the mid 30s with the 50s behind the front. The very warm air quickly melted the ice and snow on the ground. The snow melt plus the overnight rainfall caused rivers and streams to rise quickly. High temperatures reached the lower 60s that afternoon and stayed there through the night. Flooding quickly developed across the entire area with rivers and streams leaving their banks. Flooding occurred in every river basin in the Hydrological Service Area. Flooding occurred along the Wabash, St. Marys, Tiffin, Tippecanoe, Salamonie, Mississinewa, St. Joseph (Ohio), Auglaize, Blanchard, Kankakee, Eel, Maumee, Little, Elkhart, St. Joseph (Michigan) and Yellow Rivers. The mild weather did not last long as a strong cold front swept through the area on the 13th. More rain fell ahead of the front producing an average of 0.43 inches (COOP Data) by the morning of the 13th. Another 0.62 inches of rain fell across the area during the day as the cold front passed through. The precipitation changed to light snow before ending. An average accumulation of 0.5 inches fell across the area

which did little to add to the flooding. One side effect from the high water was ice jam flooding along the St. Joseph River (Michigan). The river became ice free in response to the very warm temperatures from the 12th and 13th, however with much colder air invading the area on the 14th, ice production on the river rapidly increased. A temporary increase in water level on January 19th caused some nervous homeowners in Elkhart County Indiana to notify officials about rising water in their area. The water had crossed the banks of the river, but was not seriously impacting anyone in the area, so a Flood Statement (FLS) was issued to inform the public of the situation, which was alleviated the following day. However the heavy snowfall that over swept the area on January 21st-22nd covered the ice on the river and acted as a glue welding ice pieces together in favored areas in far Northeast Elkhart County producing an ice jam. As a result, flooding and ice flows occurred in that area with sandbagging being required at some homes. Ice piled up close to at least one home on the river bank as well. A Flood Warning (FLW) was issued around noon on the 22nd for the area. The flooding was slow to recede so the Flood Warnings (FLWs) were extended into Monday January 24th. More ice jams were reported in Berrien County Michigan along the St. Joseph River (Michigan) and a flood warning was issued to cover that threat from Monday January 24th to Tuesday January 25th. With the possibility of more ice jams in other areas along the St. Joseph River, Flood Watches (FFAs) were issued from Monday afternoon January 24th and extended to Friday January 28th. No more reports of any ice jam flooding were received after the 24th.

The river flooding ended by the 25th as the Kankakee River returned to its banks. During the flood events, 38 Flood Warnings (FLWs) were issued to cover river flooding, 12 Flood Warnings (FLWs) were issued to cover areal flooding and 2 Flash Flood Warnings (FFWs) were issued to cover flash flooding in Northeast Indiana. Flood Statements (FLSs) were also issued to update Flood Warnings and for minor areal flooding. Flood Warnings covering rivers were updated with 115 Flood Statements (FLSs) and 9 Flood Statements (FLSs) were issued to update areal flood warnings and for minor areal flooding. Flash Flood Warnings were updated by issuing 3 Flash Flood Statements (FFSs).

Additional significant precipitation after the 14th fell as snow. A series of weak low pressure systems produced light to moderate snows. There was one stronger storm system that passed by to our south on the evening of the 21st lasting through most of the day on the 22nd with an average of 6.1 inches of snowfall (COOP Data). There were reports of more than 11 inches over parts of Southern Michigan and over far Northern Indiana where there was one report of 12 inches in Steuben County Indiana. This snowstorm was the catalyst causing the ice jam flooding along the St. Joseph River (Michigan) covered above. From the 15th through the 23rd an average of 8.7 inches of snow fell, 0.49 inches liquid equivalent (COOP Data). No more flooding occurred in January as temperatures remained below freezing for the most part through the rest of the month.

Soil Moisture: Soil moisture reached extreme levels in some areas as January 2005 ended. The Palmer Drought Severity Index for the period ending January 29, 2005 showed the following: Northwest Indiana (+4.56, Extremely Moist Spell), North-Central Indiana (+5.39, Extremely Moist Spell), Northeast Indiana (+4.90, Extremely Moist Spell), Southwest Michigan (+3.25, Very Moist Spell), South-Central Michigan (+4.11, Extremely

Moist Spell), Southeast Michigan (+4.21, Extremely Moist Spell), and Northwest Ohio (+4.75, Extremely Moist Spell).

Temperature: For Fort Wayne, the average high temperature in January 2005 was 31.7 °F and the average low temperature was 17.2 °F. This gave an average temperature of 24.5 °F which was 0.9 °F above normal. At Fort Wayne, the warmest temperature reached in January 2005 was 64 °F on the 12th which broke the high temperature record for the date and the coldest temperature was -4 °F reached on the 23rd.

At South Bend, the average high temperature was 31.1 °F and the average low temperature was 16.7 °F giving an average temperature of 23.9 °F which was 0.5 °F above normal for January. The warmest temperature occurred on January 12th (62 °F) which broke the high temperature record for the date and the coldest temperature occurred on the 23rd (-7 °F).

Precipitation: Precipitation was well above normal at both Fort Wayne and at South Bend in January 2005. At Fort Wayne, 4.96 inches of precipitation fell, 2.91 inches above normal. Snowfall totaled 17.2 inches in January 2005 which was 7.3 inches above normal. At South Bend, 5.10 inches of precipitation fell, 2.83 inches above normal. Snowfall totaled 28.8 inches which was 5.6 inches above normal for January. The precipitation record for January 11th was broken when 0.57 inches of precipitation was recorded at Fort Wayne. The snowfall record was broken at South Bend for a January 17th when 3.7 inches fell.

Weather: January 2005 began warm and wet with high temperatures ranging from the mid 30s to the mid 40s across the area on New Years Day. The wet weather continued into the 4th as a storm system passed through the area spreading rain across the region. High temperatures rose into the mid 50s on the 2nd as a warm front, associated with the storm system passed north of the area. A cold front quickly pushed through on the 3rd dropping high temperatures back into the upper 30s to lower 40s. The air behind the front was not too cold with temperatures remaining above freezing. This rain caused minor flooding on rivers in Northern Indiana and Northwest Ohio. A second storm system passed over the area on the 5th and 6th spreading a variety of winter precipitation across the area with snow/sleet common over Extreme Southern Lower Michigan and the northern part of Northern Indiana to rain/freezing rain over the rest of Northern Indiana and Northwest Ohio. The ice storm caused significant damage to property in Northwest Ohio and Northeast Indiana and increased flooding along the St. Marys River to the moderate category. The storm moved out of the area by the 7th which was dry. High temperatures were pushed a couple of degrees below freezing.

Another weather system moved through the area on the evening of the 7th and the morning of the 8th dropping 4 to 7 inches of snow across the entire area with the highest amounts in an area that covered the north-central and northeast parts of Northern Indiana. The heaviest snows fell in Kosciusko and Northern Fulton Counties where Warsaw and Rochester both reported 7 inches of snow. This precipitation increased the flood potential. **(Flooding is covered in the General Overview Section.)** Temperatures stayed below freezing from the 7th through the 8th before popping above freezing on the 9th. Snow began a slow melt as

warmer air tried to advance north. Little runoff occurred as the snow pack absorbed the melt. High temperatures remained in the middle 30s on the 10th and 11th as the cold air was slow to lose its grip on the area.

The third storm system drove a warm front north across Northern Indiana, Northwest Ohio and Southern Michigan, beginning on the afternoon of the 11th with much warmer air overspreading the area on the 12th. The advance of the warm air mass was accompanied by a thick fog bank along with heavy rain and thunderstorms. All of the factors, plus the rapid snow and ice melt resulting from temperatures soaring into the 60s by the afternoon of the 12th. The snow and ice melted rapidly releasing copious amounts of runoff producing massive flooding of rivers and streams. The mild temperatures lasted until the morning of the 13th as a cold front swept across the Western Lower Great Lakes region. More rain fell ahead of the frontal system aggravating the flooding. High temperatures fell into the upper 20s and lower 30s by the 14th as a cold arctic air mass crept into the area. The cold air reduced the runoff which mitigated the flooding somewhat. From the 1st through the 14th, temperatures averaged 9.0 °F above normal.

Cold air remained in control of the region's weather through the 24th as temperatures averaged 8.9 °F below normal for that time period. Persistent weak weather systems moving across the area from the northwest blanketed the area with more snow. One storm, stronger than the others, produced considerable snowfall from the evening of the 21st through the morning of the 23rd. The heaviest snow fall occurred along the Indiana/Michigan border where over 11 inches was reported in some locations, a foot of snowfall was reported in Steuben County in far Northeast Indiana. Heavy amounts were reported across far Northwest Ohio as well. The unusual high flows on the St. Joseph River (Michigan) when combined with the heavy snow led to ice jam flooding along the river in far northeast Elkhart County Indiana and in Berrien County Michigan.

The weather pattern slowly changed to allow warmer air to move across the area on the 25th and 26th of the month. High temperatures rose into the upper 30s to lower 40s which caused some snowmelt, however no flooding resulted from that melt which was very limited. Temperatures for those two days averaged 5.5 °F above normal.

Colder air moved into the area on the 27th driving high temperatures into the teens and lows to the single digits above and below zero. One more storm system then crossed the area on the 28th spreading snow, but most of it stayed over the southern parts of Northern Indiana and Northwest Ohio. High temperatures rose into the low to middle 30s on the 29th and 30th as high pressure built across the area. High temperatures tried to go into the 30s on the 31st, which did occur over Northwest Indiana, but the colder air held sway over Northeast Indiana keeping them in the lower 20s. Temperatures from the 27th to the end of January averaged 7.1 °F below normal.

At the end of January 2005, snow depth ranged from 10 inches over Northwest Ohio to around one inch over far West-Central Indiana.

River levels as of February 5, 2005 had declined to a normal to above normal level over

Northern Indiana and Northwest Ohio and over Extreme Southern Lower Michigan.
Indiana.

For January 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Five Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan) and Kankakee River Basins. Six Hydrologic Outlooks were issued to cover anticipated flooding in January 2005. One Hydrologic Outlook was issued to cover snow melt flood potential. Thirty-eight Hydrologic Statements (RVSS) were issued to cover high flows on all the rivers in January, 2005. Thirty-eight Flood Warnings (FLWs) were issued to cover the flooding in Northern Indiana Extreme Southern Lower Michigan and Northwest Ohio in January 2005. Twelve Flood Warnings (FLWs) were issued to cover areal flooding including ice jams on the St. Joseph River (Michigan). One Hundred-fifteen Flood Statements (FLSS) were issued to cover river flooding across the entire area. Nine Flood Statements (FLSS) were issued to update areal flood warnings and for minor street flooding. Two Flash Flood Warnings (FFWs) were issued to cover flash flooding in Northeast Indiana and three Flash Flood Statements (FFSS) were issued to update those flash flood warnings.

All temperature data used is NWS Fort Wayne and South Bend data only.

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An X inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: February 2005 was wetter and warmer than normal over Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 0.24 inches above normal. Snowfall averaged 7.4 inches below normal. Temperatures averaged 3.2 °F above normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of February, the average high temperature was in the upper 30s, the average low temperature was in the lower 20s giving an average temperature around 30 °F. (Only NWS Fort Wayne and South Bend data were used).

Three significant precipitation events occurred over the Western Lower Great Lakes Region in February 2005.

The first event began on the 6th as warm air overspread the region out ahead of the storm system which passed across the area. The precipitation began as rain on the 6th and ended as snow by the 11th. Total average precipitation was about 0.7 inches liquid amount and an average of around 2 inches of snow (COOP Data). A majority of the precipitation fell as rain. Before the rain began, the snow pack ranged from 1 to 5 inches with the greatest amounts over Northwest Ohio. Amounts of 3 inches or greater were found across much of Northeast Indiana, Southern Lower Michigan and Northwest Ohio. The rain that fell caused much melting of the snow pack reducing it to one inch over far Northern Indiana, Northwest Ohio and Southern Lower Michigan. Trace amounts or less were found south of there.

The snow melt and rain combined to cause flooding along the Wabash, Kankakee, Maumee and St. Marys Rivers. Flooding began on the 8th and ended by the 10th. Flooding was minor in nature and no damage reports were received due to flooding. The precipitation ended as snow from the 9th through the 11th as cold air swept across the region.

The second event began on the 13th and lasted though the 17th. There was significantly

more precipitation with this system than the first one with much of the precipitation falling in the form of rain. With river levels already high from the first event, river flooding spread sporadically across parts of the entire region. Flooding occurred along the Eel, Wabash, Maumee, St. Marys, St. Joseph (Ohio) and St. Joseph (Michigan), Tiffin, Tippecanoe, Kankakee Rivers. Other creeks and stream overflowed their banks as well. Most of the flooding was minor in nature, but moderate flooding occurred along the Tippecanoe and St. Joseph (Ohio) Rivers. An average of around 1.2 inches of precipitation fell across the area (COOP Data), with an average of 1.6 inches of snow (COOP Data), most of the snow occurring on the 16th and 17th.

The third most significant precipitation event occurred from the 18th through the 21st of the month. An average of around one half inch of precipitation fell over the Western Lower Great Lakes Region as the third in a series of storms passed through the region (COOP Data). The precipitation was a mixture of rain and snow. There were even reports of hail as the system passed across the area. This event prolonged the flooding along the Tippecanoe, Kankakee, St. Joseph Ohio and St. Joseph (Michigan) Rivers in Northern Indiana, Southern Lower Michigan and Far Northwest Ohio. An average of 1.5 inches of snow fell with this system (COOP Data). Most of the precipitation fell on the 20th and 21st.

Each of these systems brought rain then snow or a mixture of both to the region. The flooding would have been worse had all of the precipitation been rain. All of the rivers fell below flood stage with the exception of the Kankakee River by the end of February 2005.

Soil Moisture and River Levels: The Palmer Drought Severity Index for the period ending February 26, 2005 continued to indicate very to extremely moist soil conditions across the entire area. The numbers are as follows: Northwest Indiana (+4.52, Extremely Moist Spell), North-Central Indiana (+5.49, Extremely Moist Spell), Northeast Indiana (+5.08, Extremely Moist Spell), Southwest Michigan (+3.51, Very Moist Spell), South-Central Michigan (+4.38, Extremely Moist Spell), Southeast Michigan (+4.65, Extremely Moist Spell), and Northwest Ohio (+4.73, Extremely Moist Spell). River levels rose to flood or near flood by the middle of February, and declined slowly as the last week of February was a little drier than in previous months. The month ended with river levels in the normal to above normal range across the area (USGS).

Temperature: For Fort Wayne, the average high temperature in February 2005 was 37.1 °F and the average low temperature was 23.0 °F. This gave an average temperature of 30.1 °F which was 2.8 °F above normal. At Fort Wayne, the warmest temperature reached in February 2005 was 56 °F on the 15th and the coldest temperature was 6 °F reached on the 1st and 2nd.

At South Bend, the average high temperature was 37.2 °F and the average low temperature was 24.5 °F giving an average temperature of 30.9 °F which was 3.6 °F above normal for February. The warmest temperature occurred on February 14th (51 °F) and the coldest temperature occurred on the 3rd (11 °F).

Precipitation: Precipitation was slightly below normal at South Bend and above normal at

Fort Wayne in February 2005. At Fort Wayne, 2.47 inches of precipitation fell, 0.53 inches above normal. Snowfall totaled 7.7 inches in February 2005 which was 0.1 inches above normal. At South Bend, 1.92 inches of precipitation fell, 0.06 inches below normal. Snowfall totaled 8 inches which was 7.5 inches below normal for February. By March 1st, the snow pack had been reduced to a trace over much of Northern Indiana and Northwest Ohio with much of the area having no snow on the ground. One inch amounts were found over Extreme Southern Lower Michigan, far Northern Indiana and far Northwest Ohio.

Weather: February 2005 began colder than normal across the Western Lower Great Lakes region. There was a large range in high temperatures with highs in the lower 20s being reported at Fort Wayne and lower 30s recorded at South Bend. The large temperature differences were caused by a thick blanket of fog which covered North-Central Indiana, Northwest Ohio and South-Central and Southeast Lower Michigan. The fog event lasted through the 2nd before finally breaking as warmer air finally was able to overspread the entire region. High temperatures rose into the lower to middle 40s by the 5th. The weather was mostly dry. Temperatures averaged 2.1 °F below normal for the first four days of February.

A significant warm up began on the 5th as high temperatures rose into the lower to middle 40s. High temperatures remained in that range through the 7th. A storm system approached the area from the west beginning on the 6th spreading rain across the area. The combination of rain and snow melt caused flooding on rivers in Northern Indiana and Northwest Ohio. **Flood details are covered in the General Review Section of this report.** The storm system brought colder temperatures to the region by the 8th causing high temperatures to fall into the upper 30s. High temperatures were driven down into the lower 30s by the 9th. The precipitation turned to snow by the 9th bringing an average of around 2 inches to the area (COOP Data) by the 11th.

The cold air did not linger long as another storm system approaching from the west drove warmer air back across the area. High temperatures rose back into the middle 40s by the 12th. The newly fallen snow with depths of 3 inches over parts of North-Central Indiana and Southern Lower Michigan began melting. The storm system brought significant rains with it adding to the runoff. With soil moisture at a very high level from a prolonged wet period lasting months, flooding began on rivers in Northern Indiana, Northwest Ohio and Southern Lower Michigan. **Flood details are covered in the General Review Section of this report.** High temperatures reached the upper 40s to the middle 50s range by the 14th of February. An average of 1.2 inches of precipitation fell as the storm system worked it's way across the area (COOP Data) The warmer weather was replaced by much colder weather by the 16th as high temperatures fell into the lower to middle 30s. High temperatures continued drifting lower reaching the lower 20s by the 18th. The precipitation changed back to snow by the 17th with an average of 1.6 inches of snow falling across the area (COOP Data). Temperatures averaged 8.6 °F above normal from the 5th through the 16th.

Again the colder weather did not last as another storm system approached from the west. Temperatures rebounded into the upper 30s by 19th and into the upper 30s to middle 40s

range by the 20th. This storm system brought a mixture of rain and snow to the area with an average of 1.5 inches of snowfall with a total of around 0.5 inches of precipitation (COOP Data). The rains prolonged the river flooding along the Kankakee, Tippecanoe and St. Joseph (Ohio) Rivers. The new snow increased the snow pack a little with generally 1 to 2 inches across the northern part of Northern Indiana, Northwest Ohio and Southern Lower Michigan. With the constant freeze/thaw cycles that occurred during January and February 2005, there was considerable ice build up in area farm fields increasing water storage. Once this storm passed, high temperatures fell into the middle to upper 30s range and remained there through the rest of the month as a somewhat drier weather pattern developed. From the 16th through the end of February, temperatures averaged 0.1 °F below normal.

February 2005 ended with another storm system crossing the area. This storm will be covered in the March, 2005 report.

At the end of February 2005, snow depth had declined to the trace level across most of Northern Indiana to the one to two inch range across Southern Lower Michigan and far Northwest Ohio. Again there was considerable ice build up in farm fields in some locations.

For February 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Three Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan) and Kankakee River Basins. Three Hydrologic Outlooks were issued to cover flood potential associated with the spring snow melt and water resource season. Thirty-two Hydrologic Statements (RVSs) were issued to cover high flows on all the rivers in February, 2005. Thirty-two Flood Warnings (FLWs) were issued to cover the flooding in Northern Indiana Extreme Southern Lower Michigan and Northwest Ohio in February 2005. Ninety Flood Statements (FLSs) were issued to cover river flooding across the entire area. No Flash Flood Warnings (FFWs) or Flash Flood Statements (FFSs) were issued as the rain and snowmelt occurred over a long period of time. No Flood Watches (FFAs) were issued in February 2005 with flood threats being widely scattered across the Western Lower Great Lakes Region.

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An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: March 2005 was drier and colder than normal over Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 1.22 inches below normal. Snowfall averaged 4.6 inches above normal. Temperatures averaged 3.9 °F below normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of March, the average high temperature was in the lower 40s, the average low temperature was in the mid 20s giving an average temperature in the mid 30s. (Only NWS Fort Wayne and South Bend data were used).

All of the precipitation events in March 2005 were quite light when compared to the events of January 2005. The top five events are listed below.

The first event began on February 28th and lasted through March 2nd and was caused by an Alberta Clipper which crossed the Great Lakes Region. The storm became a lake effect system which produced snow amounts upward to 18 inches over a small part of Southwest Lower Michigan with amounts ranging from 5 to 10 inches across the rest of Southwest Lower Michigan and Northwest Indiana. Northeast Indiana and Northwest Ohio received between 2 and 6 inches. Snow water equivalent averaged around a quarter of an inch (COOP Data), with amounts as high as 0.6 inches over parts of Northwest Ohio and Northwest Indiana. This was added to the 1 to 2 inch snow pack already on the ground over Southern Michigan and Northern Indiana as February ended.

The second event began on the 4th and ended on the 5th as another Alberta Clipper storm system crossed the area. An average of 0.17 inches of liquid precipitation and an average 0.8 inches of snow (COOP Data) was produced by the storm adding more snow to that already on the ground.

Warm air followed this storm on the 6th and 7th as high temperatures rose into the upper 50s across the Western Lower Great Lakes Region. The snow on the ground melted quickly

causing minor flooding along the Kankakee River in Northwest Indiana and the Tiffin River in Northwest Ohio. Flood warnings (FLWs) were posted for both rivers to cover the flooding.

The third event began on the 10th and ended on the 13th as another Alberta Clipper crossed the area. An average of 0.24 inches of liquid precipitation in an average of 3.1 inches of snow (COOP Data) was produced by the system. The precipitation did not add to the flood threat as the snow melted slowly in the March sun.

The fourth event began on the 18th and ended on the 20th with only rain being produced. Amounts averaged around a quarter of an inch (COOP Data). No flooding resulted from the precipitation. All of the snow on the ground at the beginning of March was already melted which further reduced any flood threat. This precipitation was caused by a storm system which passed to the south of the area.

The fifth event began on the 24th and ended on the 26th with an average of 0.38 inches and an average of 0.2 inches of snow (COOP Data). Much of the precipitation was in the form of rain as another storm system passed to our south. Again no flooding occurred from the precipitation.

Soil Moisture and River Levels: The Palmer Drought Severity Index for the period ending April 2, 2005 are beginning to reflect the below normal precipitation levels of March 2005. However, soils continue to be moist. The numbers are as follows: Northwest Indiana (+2.96, Unusual Moist Spell), North-Central Indiana (+4.30, Extremely Moist Spell), Northeast Indiana (+3.67, Very Moist Spell), Southwest Michigan (+2.87, Unusual Moist Spell), South-Central Michigan (+3.06, Very Moist Spell), Southeast Michigan (+2.94, Unusual Moist Spell), and Northwest Ohio (+3.54, Very Moist Spell). River levels continue to fall from the high levels reached in early to mid March to mostly below normal levels in early April.

Temperature: For Fort Wayne, the average high temperature in March 2005 was 44.1 °F and the average low temperature was 25.7 °F. This gave an average temperature of 34.9 °F which was 3.2 °F below normal. At Fort Wayne, the warmest temperature reached in March 2005 was 76 °F on the 30th and the coldest temperature was 9 °F on the 3rd.

At South Bend, the average high temperature was 42.3 °F and the average low temperature was 23.7 °F giving an average temperature of 33.0 °F which was 4.5 °F below normal for March. The warmest temperature occurred on March 14th (75 °F) and the coldest temperature occurred on the 3rd (7 °F).

Precipitation: Precipitation was below normal at both South Bend and Fort Wayne in March 2005. At Fort Wayne, 1.46 inches of precipitation fell, 1.40 inches below normal. Snowfall totaled 7.1 inches in March 2005 which was 2.4 inches above normal. At South Bend, 2.05 inches of precipitation fell, 0.84 inches below normal. Snowfall totaled 15.4 inches which was 6.7 inches above normal for March. No snow cover remained by the end of March.

Weather: March 2005 began with high temperatures in the upper 20s. A strong storm system passed by to the north bringing heavy lake effect snows to Northwest Indiana and Southwest Lower Michigan. Most of the rest of the Hydrologic Service Area received some snow. Large amounts, however, fell in the lake effect snow areas with amounts as high as 18 inches. Arctic air dominated the weather through the 3rd as high temperatures remained in the 20s. From the 1st through the 4th temperatures averaged 9.1 °F below normal.

Warmer air was pulled north as the next in a series of Alberta Clipper systems crossed the area to the north. More snow fell on the 4th and 5th with an average amount of around one inch. High temperatures reached the upper 30s on the 4th and 5th. Much warmer air followed this system pushing highs into the 50s on the 6th and 7th of March. The warmer temperatures caused the remaining snow on the ground to melt causing minor flooding along the Kankakee and Tiffin Rivers in Northwest Indiana and Northwest Ohio. No damage was reported with this flooding. From the 5th through the 7th, temperatures averaged 6.2 °F above normal.

The warmer weather was short lived as cold Arctic air masses dominated the weather over the Lower Great Lake Region for the next three weeks. From the 8th through the 27th, temperatures averaged 6.5 °F below normal. Weak weather systems crossed the area on the 8th and 9th, the 10th through the 13th, the 18th through the 20th, and from the 24th through the 26th. The first three systems produced mainly snow while the last was mostly a rain producer. Amounts can be found in the Overview Section. Precipitation amounts for the 8th and 9th averaged to less than a tenth of an inch liquid (COOP Data).

From the 28th through the 31st, warm air finally made its way to the Western Lower Great Lakes Region as high temperatures reached the mid 70s by the 30th. A cold front crossed the area on the 30th with light rainfall. Rainfall amounts averaged around a tenth of an inch with the front. A colder Maritime Polar air mass followed on the 31st driving high temperatures back into the upper 50s to lower 60s.

For March 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Two Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan) and Kankakee River Basins. Three Hydrologic Outlooks were issued to cover flood potential associated with the spring snow melt and water resource season. Twenty-three Hydrologic Statements (RVSS) were issued to cover high flows on all the rivers in March, 2005. Two Flood Warnings (FLWs) were issued to cover the flooding in Northern Indiana and Northwest Ohio in March 2005. Fifteen Flood Statements (FLSs) were issued to cover river flooding. No Flash Flood Warnings (FFWs) or Flash Flood Statements (FFSs) were issued no flash flooding occurred in March, 2005. No Flood Watches (FFAs) were issued in March 2005.

All temperature data used is NWS Fort Wayne and South Bend data only.

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: HYDROMETEOROLOGICAL INFO CENTER (W/OS31)
SSMC 2 – Rm. 13468
1325 EAST – WEST Highway
SILVER SPRING, MD 20910 –3283

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: April 2005 was drier and warmer than normal across Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 1.94 inches below normal. Snowfall averaged 0.6 inches below normal. Temperatures averaged 3.3 °F above normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of April, the average high temperature was in the middle 60s, the average low temperature was around 40 giving an average temperature in the lower 50s. (Only NWS Fort Wayne and South Bend data were used).

There were only 2 significant precipitation events in April 2005 with commentary listed below. Both events occurred during the last 11 days in April 2005.

The first event began on April 19th and lasted through April 21st which coincided with a cold frontal passage. This signaled a significant change in large scale weather pattern from warm to cold. Temperatures averaged 8.9 °F above normal over the first 20 days of April. An average of around 0.60 inches of rain fell across the area (COOP Data). The heaviest rains were located over far southern part of Northeast Indiana and Northwest Ohio which led to significant rises on the St. Marys and Upper Wabash Rivers. Rises on other rivers in Northern Indiana and Northwest Ohio were much more subdued with some continuing a slow fall. No flooding resulted from this rainfall.

The second event was a long event lasting from April 22nd through April 30th. The cause of this precipitation was the development of an upper low pressure system over Southern Canada. This weather feature remained anchored over Southern Canada for the last 9 days of the month and drove several weather disturbances across the area. The heaviest precipitation fell from April 22nd to the 23rd in the form of rain. The heaviest rainfall occurred over the southern part of Northeast Indiana and Northwest Ohio. Rainfall amounts of over one inch were reported over parts of Adams, Wells and Blackford Counties in Northeast Indiana and nearly one inch amounts were reported over parts of

Defiance, Williams and Paulding Counties in Northwest Ohio. An average of almost three-quarters of an inch fell during this time period (COOP Data) over the entire area. This additional rainfall led to minor flooding along the St. Marys and Blanchard Rivers in Northeast Indiana and Northwest Ohio. Snow followed the rain event late on the 23rd and on the 24th. The rain became mixed with and changed to snow on the night of the 23rd with as much as 4 inches falling over parts of Northwest Indiana. The snow quickly melted the following day. The snow melt only delayed the recession of river levels in Northeast Indiana and Northwest Ohio. Both the St. Marys and Blanchard Rivers fell below flood stage by April 26th.

The upper low continued to bring weaker weather disturbances across the Western Lower Great Lakes from the 25th through the 30th

Soil Moisture and River Levels: The Palmer Drought Severity Index for the period ending April 30, 2005 showed significant drying of area soils. April 2005 precipitation was well below normal and that coupled with the very dry and warm conditions which occurred in Mid-April is reflected in the most recent Palmer Drought Severity Index. The numbers are as follows: Northwest Indiana (+0.46, Near Normal), North-Central Indiana (+1.42, Near Normal), Northeast Indiana (+1.13, Near Normal), Southwest Michigan (-0.58, Near Normal), South-Central Michigan (+0.22, Near Normal), Southeast Michigan (+0.70, Near Normal), and Northwest Ohio (+2.08, Unusual Moist Spell).

River levels have dropped to well below normal across much of Northern Indiana and Southern Lower Michigan at the end of April. Normal to below normal flows could be found across Northwest Ohio. Below normal precipitation amounts in February, March and April are beginning to take toll on soil moisture.

Temperature: For Fort Wayne, the average high temperature in April 2005 was 63.7 °F and the average low temperature was 39.7 °F. This gave an average temperature of 51.7 °F which was 2.7 °F above normal. At Fort Wayne, the warmest temperature reached in April 2005 was 82 °F on the 18th and the coldest temperature was 29 °F on the 4th.

At South Bend, the average high temperature was 63.9 °F and the average low temperature was 40.4 °F giving an average temperature of 52.2 °F which was 3.9 °F above normal for April. The warmest temperature occurred on April 18th (83 °F) and the coldest temperature occurred on the 1st, 4th and the 23rd (31 °F).

Precipitation: Precipitation continued to be below normal both South Bend and Fort Wayne in April 2005. At Fort Wayne, 2.15 inches of precipitation fell, 1.39 inches below normal. Snowfall totaled 0.6 inches in April 2005 which was 0.5 inches below normal. At South Bend, only 1.14 inches of precipitation fell, 2.48 inches below normal. Snowfall totaled 1.1 inches which was 0.6 inches below normal for April. No snow cover remained on the ground by the end of April.

Weather: April 2005 began with high temperatures in the lower to middle 50s. From the 1st the area went through a slow warm up with high temperatures reaching the lower 80s

by the 18th. High temperatures rose to the upper 70s by the 6th. A weak cold front crossed the Western Lower Great Lake Region on that day bringing a few light showers. High temperatures fell into the 55 to 60 degree range by the 7th on a cool northeast wind. Temperatures then rose back into the upper 70s by the 10th as another warm air mass invaded the Western Lower Great Lakes Region. A second cold front crossed the area late on the 11th with a few more rain showers. High temperatures fell into the middle to upper 50s on the 12th. The cold weather was short lived as another warm air mass boosted high temperatures back into the middle 70s by the 16th and into the lower 80s by the 18th. This spell of warm weather was caused by a high pressure ridge building over the Central Plains of North America. High temperatures remained in the lower 80s into the 19th and in the 70s and lower 80s on the 20th. Temperatures averaged 8.7 °F above normal from the 1st through the 20th.

The high pressure ridge began to break down on the 20th as the first in a series of cold fronts crossed the area. This cold front brought the first significant rains to the area on the 19th through the 21st with an average rainfall of around 0.6 inches. The heaviest rain fell across the southern part of Northeast Indiana and Northwest Ohio. Amounts exceeding one inch occurred across parts of Blackford and Grant Counties in Northeast Indiana. High temperatures fell to the upper 40s by the 22nd across the area as another storm system approached the area from the west. Rainfall amounts averaged around three-quarters of one inch with the second storm system. This precipitation was enough to cause some minor flooding along the St. Marys and Blanchard Rivers in Northeast Indiana and Northwest Ohio.

Cold air continued pouring south out of Canada keeping high temperatures in the lower 40s by 23rd. A third storm system developed over the Mid-Mississippi valley by that evening producing rain and rain mixed with snow. The precipitation changed to all snow later that night. The snow began to stick with amounts averaging around one inch over Northern Indiana, Northwest Ohio and Southern Lower Michigan. However there were isolated amounts of around 4 inches reported over Northwest Indiana and over 2 inches over isolated spots in Northwest Ohio.

Warmer air tried to move back into the area on the 25th as high temperatures rebounded into the lower 60s. However another strong cold front crossed the area late on the 26th producing a widespread rain event with an average of around 0.3 inches (COOP Data) across the entire area. This amount was not enough to cause rivers to go over flood stage.

A fourth storm system approached the area from the west on the 27th. Conditions were right for a significant rainfall from the system so Hydrologic Outlooks were issued to cover the threat for flooding on the weekend of April 29th through May 1st. However the influence of the upper Canadian low pushed the storm system too far south to cause any flooding problems. An average of less than a tenth of an inch of rainfall occurred on April 29th and 30th. From April 21st through April 30th temperatures averaged 6.8 °F below normal.

For April 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Four Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan) and Kankakee River Basins. Three Hydrologic Outlooks were issued to cover the flood threat of April 29th through May 1st 2005. Nine Hydrologic Statements (RVSs) were issued to cover high flows on impacted rivers in April, 2005. Two Flood Warnings (FLWs) were issued to cover the flooding in Northern Indiana and Northwest Ohio in April 2005. Six Flood Statements (FLSs) were issued to cover river flooding. No Flood Watches (FFAs) were issued in April 2005. No Flash Flood Warnings (FFWs) or Flash Flood Statements (FFSs) were issued because there was no flash flooding in April, 2005.

All temperature data used is NWS Fort Wayne and South Bend data only.

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: HYDROMETEOROLOGICAL INFO CENTER (W/OS31)
SSMC 2 – Rm. 13468
1325 EAST – WEST Highway
SILVER SPRING, MD 20910 –3283

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: May 2005 was drier and cooler than normal across Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 2.25 inches below normal. Temperatures averaged 2.9 °F below normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of May, the average high temperature was in the upper 60s, the average low temperature was in the mid 40s giving an average temperature in the upper 50s. (Only NWS Fort Wayne and South Bend data were used).

There were only 2 significant precipitation event in May 2005 with commentary listed below.

The first event began on May 11th and lasted through May 15th when an average three quarters of an inch of rain fell across the area (COOP Data). It was during this event that a rural flood event occurred. This event was isolated in that it affected only one county (Kosciusko County in North-Central Indiana). River levels across the entire area changed little during the event, remaining well below flood stage.

The second event began on May 18th and lasted until May 20th when an average of nearly 0.60 inches of rain fell across the Western Great Lakes Region (COOP Data). There was no flooding with this event.

Soil Moisture and River Levels: The Palmer Drought Severity Index for the period ending June 4th, 2005 showed continued drying of area soils. May 2005 precipitation was well below normal and even with below normal temperatures, soils continued to dry. This is reflected in the most recent Palmer Drought Severity Index. The numbers are as follows: Northwest Indiana (-2.34, Moderate Drought), North-Central Indiana (-1.75, Dry Side of Normal), Northeast Indiana (-1.39, Dry Side of Normal), Southwest Michigan (-2.86, Moderate Drought), South-Central Michigan (-2.23, Moderate Drought), Southeast

Michigan (-2.05, Moderate Drought), and Northwest Ohio (-0.82, Dry Side of Normal).

River levels continued to fall and were in the low side of normal to well below normal range across Northern Indiana, Southern Lower Michigan and Northwest Ohio by early June.

Temperature: For Fort Wayne, the average high temperature in May 2005 was 69.0 °F and the average low temperature was 45.1 °F. This gave an average temperature of 57.1 °F which was 3.3 °F below normal. At Fort Wayne, the warmest temperature reached in May 2005 was 85 °F on the 13th and the coldest temperature was 27 °F on the 4th which broke the record low for the date and tied the record low for the entire month of May.

At South Bend, the average high temperature was 68.5 °F and the average low temperature was 45.8 °F giving an average temperature of 57.2 °F which was 2.4 °F below normal for May. The warmest temperature occurred on May 9th (84 °F) and the coldest temperature occurred on the 4th (26 °F) which broke the record for the date.

Precipitation: Precipitation continued to be below normal at both South Bend and Fort Wayne in May 2005. At Fort Wayne, 1.70 inches of precipitation fell, 2.05 inches below normal. At South Bend, 1.06 inches of precipitation fell, 2.44 inches below normal. May 2005 was the 2nd driest on record at South Bend and the 8th driest at Fort Wayne.

Weather: May 2005 was divided into three periods: From the 1st through the 4th temperatures were cold averaging 13.1 °F below normal. From the 5th through the 11th, a warm spell ensued with temperatures averaging 6.4 °F above normal. From the 12th through the 31st, temperatures cooled again, but not as much as in the first period averaging only 3.8 °F below normal.

As stated above, May 2005 began with temperatures well below normal with high temperatures only reaching the lower 50s on the 1st. High temperatures were driven even lower posting highs only in the mid to upper 40s for the 2nd and 3rd. Low temperatures reached record levels falling into the mid to upper 20s. by the morning of the 4th. The Western Lower Great Lakes were being dominated by a cool Canadian air mass. A trace of snow fell at South Bend on the 3rd.

The Canadian air mass moved east later on the 4th allowing high temperatures to rebound into the lower 60s. The warming trend continued with high temperatures reaching the lower 80s by the 8th. Light rain showers fell across the area on the 6th and 7th as a warm front pushed north of the area. An average of less than a tenth of an inch of rain fell across the area (COOP Data). Light rain showers returned to the area on the 9th and 10th with amounts averaging around 0.01 inches (COOP Data). The warm weather continued into the 12th when a cold front briefly crossed the area driving high temperatures down into the mid 50s to lower 60s range. The cold front made a quick return as a warm front on the 13th allowing the 80s to return to the area. This was the warmest day in May at Fort Wayne.

The frontal boundary remained in the area from the 11th through the 15th. Weak

disturbances moved along the front causing bouts of showers and thunderstorms. The most significant rainfall during this time period occurred on the 13th and 14th when an average of around a half inch fell across the area (COOP Data). The rain caused some minor rural flooding in Kosciusko County in North-Central Indiana as a result, but it was short lived. Heavy rains were scattered across the entire area during this time period. Amounts of over one inch were reported over Northeast Indiana, especially around the Fort Wayne Metro Area. The largest amount reported was 1.61 inches at Spy Run Creek on the Northwest Side of Fort Wayne.

The front pushed south of the area on the 14th allowing cold air to again overspread the area. High temperatures fell into the lower to mid 60s. Cold air began consolidating its hold on the Western Lower Great Lakes Region pushing high temperatures back into the lower 50s by the 15th. High temperatures remained in the 50s on the 16th. Warmer air again began moving northward on the 17th allowing high temperatures to rise into the 65 to 70 degree range. Another cold front approached the area on the 18th and 19th causing showers and thunderstorms across parts of the area. An average of around 0.60 inches of rain fell on the 19th and 20th (COOP Data). Again with rivers at low flow, there was no flooding. High temperatures fell into the low to mid 60s again by the 19th.

This pattern continued through the rest of May with high temperatures oscillating from the 60s to the 70s. There were several periods of rain from the 21st through the end of the month. But with cold high pressure anchored over Southeast Canada pumping dry air from the east over the area, much of the potential precipitation evaporated before hitting the ground. Rainfall amounts averaged from around a tenth of an inch (COOP Data) on the 22nd through the 24th and around 0.15 inches fell from May 27th through May 30th (COOP Data).

Another shift in the weather pattern began as May ended allowing warmer air to advance north again. High temperatures rose into the upper 70s to around 80 as May ended.

For May 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Five Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan) and Kankakee River Basins. No Hydrologic Statements (RVSs), Flood Warnings (FLWs), Flood Statements for river flooding, Flood Watches (FFAs), Flash Flood Warnings (FFWs) or Flash Flood Statements (FFSs) were issued due to the lack of flooding. One Flood Statement (FLS) was issued to cover the minor flood event in Kosciusko County in North-Central Indiana.

All temperature data used is NWS Fort Wayne and South Bend data only.

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: HYDROMETEOROLOGICAL INFO CENTER (W/OS31)
SSMC 2 – Rm. 13468
1325 EAST – WEST Highway
SILVER SPRING, MD 20910 –3283

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: June 2005 was drier and warmer than normal across Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 2.02 inches below normal. Temperatures averaged 4.3 °F above normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of June, the average high temperature was in the mid 80s, the average low temperature was in the lower 60s giving an average temperature in the lower 70s. (Only NWS Fort Wayne and South Bend data were used).

There was only 1 significant precipitation event in June 2005 with commentary listed below.

That event began on June 10th and lasted through June 16th when an average of one and a quarter of an inch of rain fell across the area (COOP Data). Parched ground resulting from the very dry weather over the past three months led to no river flooding and only localized flooding due to very heavy rains associated with thunderstorms. The flood statements (FLSs) were issued on June 12th and 13th. River levels continued well below flood stage during this event. There was no flooding with this event.

On June 9th, a flood statement was issued for a localized heavy rain event across the eastern half of Fulton County Ohio.

Soil Moisture and River Levels: The Palmer Drought Severity Index for the period ending July 2, 2005 showed much of the area slipping into severe drought with the rest of the area in moderate drought as June rainfall totals were well below normal. The numbers are as follows: Northwest Indiana (-3.48, Severe Drought), North-Central Indiana (-3.44, Severe Drought), Northeast Indiana (-3.01, Severe Drought), Southwest Michigan (-3.58, Severe Drought), South-Central Michigan (-2.79, Moderate Drought), Southeast Michigan (-3.09, Severe Drought), and Northwest Ohio (-2.80, Moderate Drought).

River levels remain well below normal across Northern Indiana, Southern Lower Michigan, and Northwest Ohio with isolated spots reaching record low levels. Some areas continued to have river levels in the normal range.

Temperature: For Fort Wayne, the average high temperature in June 2005 was 84.7 °F and the average low temperature was 62.2 °F. This gave an average temperature of 73.5 °F which was 3.8 °F above normal. At Fort Wayne, the warmest temperature reached in June 2005 was 96 °F on the 25th and the coldest temperature was 52 °F on the 17th and the 21st. No temperature records were broken in June 2005 at Fort Wayne. June 2005 was the 8th warmest on record for Fort Wayne.

At South Bend, the average high temperature was 84.2 °F and the average low temperature was 63.5 °F giving an average temperature of 73.8 °F which was 4.8 °F above normal for June. The warmest temperature occurred on June 24th (96 °F) and the coldest temperature occurred on the 17th (49 °F). High temperature records were set on June 5th (93 °F) and on June 24th (96 °F). June 2005 was the third warmest on record for South Bend.

Precipitation: Precipitation continued to be below normal at both South Bend and Fort Wayne in June 2005. At Fort Wayne, 2.13 inches of precipitation fell, 1.91 inches below normal. At South Bend, 2.07 inches of precipitation fell, 2.12 inches below normal. June 2005 was the 8th driest on record at both South Bend and Fort Wayne.

Weather: June 2005 was divided into three periods: From the 1st through the 14th temperatures were warm averaging 7.4 °F above normal. From the 15th through the 21st, cooler weather prevailed as temperatures would average 5.3 °F below normal. From the 22nd through the 30th, temperatures warmed again averaging 7.8 °F above normal.

As stated above, June 2005 began with temperatures running just above normal with high temperatures in the upper 70s and lower 80s. High temperatures remained in the 70s through the 3rd. Warmer weather arrived with a few scattered showers producing an average of 0.14 inches from the 2nd through the 4th (COOP Data). Following the rain showers, high temperatures rose into the 80s on the 4th and right into the 90s by the 5th. A record high temperature was recorded at South Bend on the 5th. A cold front tried to move across the area on the 5th and 6th producing around four tenths of an inch of rain across the area (COOP Data). High temperatures however did not fall much as the cold front failed to cross the area. Highs stayed in the 80s and 90s through the 14th.

A more significant cold front crossed the area on the 15th dropping high temperatures into the lower 70s and upper 60s. The most significant rainfall occurred from the 10th through the 16th as spotty showers and thunderstorms developed in the hot humid air. The most significant rainfall occurred on the 12th and 13th when 0.77 inches of rain fell (COOP Data) with the approach of the cold front.

The cooler weather continued from the 15th through the 19th, but warmer air began to make it way back into the Western Lower Great Lakes region by the 20th as high temperatures

rose back into the 80s. By the 22nd, temperatures went above normal rising into the 90s from there, reaching the mid 90s on the 24th and 25th. Spotty thunderstorms caused an additional amount of around a half of an inch (COOP Data) from the 25th through the 30th. However, these rain events were isolated, with most of the area remaining rain free during this time. June 2005 ended with high temperatures in the upper 80s to lower 90s.

For June 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Five Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan) and Kankakee River Basins. No Hydrologic Statements (RVSSs), Flood Warnings (FLWs), Flood Statements for river flooding, Flood Watches (FFAs), Flash Flood Warnings (FFWs) or Flash Flood Statements (FFSs) were issued due to the lack of flooding. Four Flood Statement (FLS) were issued to cover localized flooding across isolated parts of Northern Indiana and Northwest Ohio.

All temperature data used is NWS Fort Wayne and South Bend data only.

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: HYDROMETEOROLOGICAL INFO CENTER (W/OS31)
SSMC 2 – Rm. 13468
1325 EAST – WEST Highway
SILVER SPRING, MD 20910 –3283

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: July 2005 was wetter and warmer than normal across Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 0.67 inches above normal. Temperatures averaged 1.6 °F above normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of July, the average high temperature was in the mid 80s, the average low temperature was in the lower 60s giving an average temperature in the mid 70s. (Only NWS Fort Wayne and South Bend data were used).

The 2 most significant precipitation events in July 2005 are described below.

The first event was associated with the remnants of Hurricane Dennis and began shortly after the hurricane came ashore on July 10th. This system became trapped under a strong upper level ridge as it moved through Southern Illinois. The remnants became trapped in Southern Indiana along the Ohio River for much of that week before weakening enough to allow a short wave trof to push it into Southern Canada by the 17th. Once Dennis left the Midwest, a cold front swept across the area on the 18th bringing more scattered showers and thunderstorms. From July 11th through July 19th, an average of 1.86 inches of rain fell across the Western Lower Great Lakes region (COOP Data). Much of this precipitation was spotty and even with the high average total, some areas remained quite dry. Much of the heavy rain fell in bands associated with Dennis. With that circulation trapped along the Ohio River, the bands set themselves up over essentially the same areas every afternoon. Several thunderstorms produced heavy rains increasing the localized flood threat over parts of Northwest Ohio, Northern Indiana and extreme Southern Lower Michigan. Flash Flood Warnings (FFWs) and Flash Flood Statements (FFSs) were issued for Cass County in Michigan and for Starke and Marshall Counties in Northern Indiana on the 16th. The Flash Flood Warnings were preceded by Flood Statements (FLSs). Flood Statements (FLSs) were issued for spots in Northern Indiana, Southern Lower Michigan and Northwest Ohio on the 12th, 15th, and the 17th in addition to those issued on the 16th

Rivers continued to be in low flow at this time due to the ongoing drought. The dry soils and vegetation prevented river flooding.

The second most significant precipitation event was associated with several weak cold fronts and finally a strong cold front from the 20th through the 27th. The strong cold front passed by the 27th. An average of 2.63 inches of rain fell across the area during this time period (COOP Data). Again with soil moisture still low, the only flooding was associated with heavy rains produced by some of the thunderstorms. A Flash Flood Warning (FFW) was issued for White County in Northwest Indiana on the 21st. Flood Statements (FLSs) were issued on the 21st for other spots in Northern Indiana and Northwest Ohio as well. On the 26th a Flood Statement was issued for Allen County in Northeast Indiana. Rainfall associated with the passage of the strong cold front had better coverage than the previous events in July, allowing much of the area to receive beneficial rains easing drought conditions somewhat. Also the system that passed through on the 26th moved fast enough to reduce the flash flood threat. Again no river flooding occurred.

Soil Moisture and River Levels: The Palmer Drought Severity Index for the period ending July 30, 2005 showed a marked improvement in soil moisture conditions across Northwest Ohio, Northeast Indiana and South-Central Lower Michigan. The improvement resulted from rains associated with Dennis and the passage of a strong cold front on July 26th-27th. The numbers are as follows: Northwest Indiana (-2.90, Moderate Drought), North-Central Indiana (-2.58, Moderate Drought), Northeast Indiana (-1.50, Dry Side of Normal), Southwest Lower Michigan (-2.70, Moderate Drought), South-Central Lower Michigan (-0.80, Dry but in the Normal Range), Southeast Lower Michigan (-1.19, Dry Side of Normal), and Northwest Ohio (-0.89, Dry but in the Normal Range).

As of August 8, 2005, river levels have fallen to the well below normal range along the Yellow, Kankakee, Tippecanoe and Maumee Rivers and the Fish Creek in Northern Indiana. Well below normal flows were also recorded along the Auglaize River in Northwest Ohio and along the Saint Joseph River Michigan in Southwest Lower Michigan. Other river locations are in the normal range. The lower flows include the effects of the dry first week of August, 2005.

Temperature: For Fort Wayne, the average high temperature in July 2005 was 86.6 °F and the average low temperature was 63.5 °F. This gave an average temperature of 75.0 °F which was 1.6 °F above normal. At Fort Wayne, the warmest temperature reached in July 2005 was 93 °F on the 24th and the 26th. The coldest temperature reached was 53 °F on the 2nd and the 3rd. No temperature records were broken in July 2005 at Fort Wayne

At South Bend, the average high temperature was 85.5 °F and the average low temperature was 63.4 °F giving an average temperature of 74.5 °F which was 1.5 °F above normal for July. The warmest temperature occurred on July 24th (96 °F) and the coldest temperature occurred on the 2nd (48 °F). Low temperature record was set on the 28th (52 °F). Record high low temperature records were set on the 12th (73 °F) and on the 25th (77 °F).

Precipitation: Precipitation was below normal at South Bend and well above normal at Fort Wayne in July 2005. At Fort Wayne, 5.19 inches of precipitation fell, 1.61 inches above normal. At South Bend, 3.46 inches of precipitation fell, 0.27 inches below normal. The precipitation record for a July 26th was broken when 2.30 inches fell at Fort Wayne.

Weather: July 2005 was divided into three periods: a cool beginning, a warm middle and a cool end with the warm middle stretching for 23 days.

July 2005 began cooler than normal and dry across the Western Lower Great Lakes region as a cool air mass moved in behind a cold front which passed across the area on June 30th. High temperatures were only in the upper 70s to lower 80s on the 1st rising to the mid 80s by the 3rd and lows were in the upper 40s to the middle 50s. Temperatures averaged 5.0 °F below normal from the 1st through the 3rd.

The cool Canadian air mass moved off to the east by the 4th allowing warmer air to return north. High temperatures rose into the lower 90s on the 4th but another cold front crossed the area on the 5th causing scattered showers and thunderstorms to break out across parts of Northern Indiana, Extreme Southern Lower Michigan and Northwest Ohio. An average of around 0.2 inches fell across the area (COOP Data). This air mass was not as cool as the previous one with high temperatures only falling into the lower to middle 80s and lows remaining in the lower 60s. Drier air flowed around this high from the northeast and east causing a greater than normal diurnal range between high and low temperatures than normal. Highs again reached the lower 90s by the 10th with lows falling into the mid 50s, a range of around 45 °F. Isolated thunderstorms occurred on the 6th and 7th and on the 8th and 9th, but thunderstorms on the 8th prompted the issuance of 2 Flood Statements (FLSs) for spots in Northwest Ohio. Radar estimated rainfall amounts of over 2 inches in a short time were detected with these storms. Areas affected were parts of Putnam and Allen Counties in Northwest Ohio.

This high pressure was slow to retreat to the north until Hurricane Dennis approached the Mid-Mississippi Valley from the Gulf of Mexico. Before his arrival, large areas were in the grip of severe drought. The first rains from Dennis began falling across Northern Indiana, Northwest Ohio and Southern Lower Michigan on July 11th. This situation persisted for the next 6 days. A more detailed description of the event can be found in the general overview section on page 1 of this report. The warm moist tropical air associated with Dennis caused low temperatures to rise into the upper 60s and lower 70s. As a result, the diurnal range decreased from 45 °F to around 20 °F. A record high low temperature of 73 °F was set at South Bend on the 12th. Temperatures varied greatly with high temperatures in areas receiving rain reaching only near 80 °F while high temperatures reaching the lower 90s in rain free areas. Rain in the thunderstorm bands was heavy at times increasing localized flood threat which prompted the issuance of Flood Statements (FLSs) on the 12th, 15th, 16th and the 17th.

The circulation associated with Dennis finally moved into Southern Canada by the 17th allowing a weak cold front to pass through the area on the 18th. Again the air behind the front was not very cool with high temperatures only falling into the upper 80s.

Another cold front approached on the 21st causing more scattered showers and thunderstorms. These frontal passages did not bring in any appreciably cooler air with highs continuing to be in the middle to upper 80s. Rainfall amounts averaged around 1.10 inches from the 21st and 22nd. This pattern persisted through the 28th with a more widespread rainfall occurring on the 26th and 27th. Discussion of these events can be found in the General Overview Section on page 2 of this report. A more significant cool air mass followed this cold front dropping high temperatures into the 70s on the 27th. From the 4th through the 26th, temperatures averaged 3.8 °F above normal.

Cooler and drier weather prevailed from the 27th through the end of July 2005. High temperatures started out in the lower to mid 70s on the 27th, slowly rising to the mid 80s by the 31st. From July 27th through July 31st temperatures averaged 3.6 °F below normal.

For July 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Four Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan) and Kankakee River Basins. Four Hydrologic Outlooks were issued to disseminate drought information. Three Public Information Statements (PNSs) were also issued to disseminate drought information. No Hydrologic Statements (RVSs), Flood Warnings (FLWs), Flood Statements for river flooding (FLSs) or Flood Watches (FFAs) were issued in July 2005. Three Flash Flood Warnings (FFWs) and Five Flash Flood Statements (FFSs) were issued to cover flash flooding threats in Northwest Indiana and Southwest Lower Michigan. Sixteen Flood Statement (FLS) were issued to cover localized minor flood threats over parts of Northern Indiana, Northwest Ohio and Southern Lower Michigan in July 2005.

All temperature data used is NWS Fort Wayne and South Bend data only.

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: HYDROMETEOROLOGICAL INFO CENTER (W/OS31)
SSMC 2 – Rm. 13468
1325 EAST – WEST Highway
SILVER SPRING, MD 20910 –3283

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: August 2005 was warmer and drier than normal across Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 1.72 inches below normal. Temperatures averaged 2.1 °F above normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of August, the average high temperature was in the lower 80s, the average low temperature was in the lower 60s giving an average temperature in the lower70s. (Only NWS Fort Wayne and South Bend data were used).

The 2 most significant precipitation events in August 2005 are described below.

The first event occurred on August 8th 2005 and it was an isolated event. A small area of thunderstorms broke out over Northern Indiana covering parts of 5 counties in North Central Indiana. A second cluster developed over a small area of Northwest Ohio. The heaviest rainfall was reported at the Goshen Airport where nearly 3 inches fell. Only 0.8 inches were reported at Paulding in Northwest Ohio (COOP Data). The rains were intense enough to prompt the issuance of a Flash Flood Warning (FFW) for Elkhart County in North-Central Indiana along with 2 Flash Flood Statements (FFSs). The Flash Flood Warning was preceded by a Flood Statement (FLS) issued for Elkhart and surrounding counties in North-Central Indiana. The thunderstorms that developed over Northwest Ohio prompted the issuance of one Flood Statement (FLS) for two counties there. All Flood Statements were issued to alert the public to the threat of minor flooding along small creeks and streams in those area. Much of the rest of the area remained dry with an average less than a tenth of an inch reported (COOP Data)

The second most significant precipitation event lasted from August 10th through August 16th as scattered thunderstorms broke out ahead of two weak cold fronts. The first front passed through the Western Lower Great Lakes region on the 11th and 12th producing locally heavy rains over small parts of Northern Indiana. Two Flood Statements (FLS)

were issued on the 11th and 12th for several counties in Northern Indiana in response to very heavy rains associated with those thunderstorms. The second cold front passed across the area on the 13th and 14th. This front produced very heavy rains as well, but no flooding was caused by them. The rains associated with this event were spread out across 6 days which reduced the overall flood threat. An average of 1.52 inches fell across the area, but coverage remained spotty across much of the area. Spotty rainfall coverage in addition to the effects of the drought worked together to eliminate any river flooding in August, 2005.

An average of another third inch fell (COOP Data) across the area from the 18th through the 21st and another third of an inch fell across the area from the 29th through September 1st (COOP Data) from the remnants of Hurricane Katrina, however the rainfall did not cause any flooding.

Soil Moisture and River Levels: The Palmer Drought Severity Index for the period ending September 3rd, 2005 showed a return to severe drought conditions across much of Northern Indiana and Southwest Lower Michigan. Much of the rest of the area sank into moderate drought. Only Northwest Ohio stayed out of moderate drought. The numbers are as follows: Northwest Indiana (-3.17, Severe Drought), North-Central Indiana (-3.45, Severe Drought), Northeast Indiana (-2.66, Moderate Drought), Southwest Lower Michigan (-3.92, Severe Drought), South-Central Lower Michigan (-2.58, Moderate Drought), Southeast Lower Michigan (-2.90, Moderate Drought), and Northwest Ohio (-1.59, Dry Side of Normal).

As of September 7th, 2005, river flows in large areas in Northern Indiana were in the less than 10 percentile range with flows on the Tippecanoe River and Fish Creek recording record lows for the date. River flows continued to be below the 24 percentile range for much of Southern Lower Michigan. However, Northwest Ohio had most of their rivers in the 25 to 75 percentile range. These flow numbers included the effects of the nearly rainless first week of September 2005.

Temperature: For Fort Wayne, the average high temperature in August 2005 was 83.9 °F and the average low temperature was 61.9 °F. This gave an average temperature of 72.9 °F which was 1.8 °F above normal. At Fort Wayne, the warmest temperature reached in August 2005 was 91 °F on the 3rd. The coldest temperature reached was 50 °F on the 23rd. No temperature records were broken in August 2005 at Fort Wayne

At South Bend, the average high temperature was 83.1 °F and the average low temperature was 63.4 °F giving an average temperature of 73.3 °F which was 2.3 °F above normal for August. The warmest temperature occurred on August 3rd (93 °F) and the coldest temperature occurred on the 23rd (53 °F). No temperature records were broken at South Bend in August 2005.

Precipitation: Precipitation was below normal at both South Bend and Fort Wayne in August 2005. At Fort Wayne, 1.95 inches of precipitation fell, 1.65 inches below normal. At South Bend, 2.20 inches of precipitation fell, 1.78 inches below normal. No precipitation records were broken in August 2005 at both South Bend and Fort Wayne.

Weather: August 2005 was divided into three periods: a warm two thirds, a cool three days and a return to warmth for the last week.

August 2005 began warmer than normal across the Western Lower Great Lakes region with high temperatures hovering in the upper 80s and lower 90s. A large ridge of high pressure continued to dominate the Midwest, however it weakened some by the 4th allowing a cold front to pass across the area by the 4th dropping high temperatures into the lower 80s on the 4th. Scattered showers and thunderstorms moved along with the front giving the area an average of around two tenths of an inch (COOP Data) a small number of one inch amounts occurred. Somewhat cooler air remained over the area on the 5th and 6th, however temperatures began to inch toward the 90 degree mark on the 7th and 8th. Isolated showers and thunderstorms developed across parts of Northern Indiana and Northwest Ohio on the 8th causing flash flooding in Elkhart County in North-Central Indiana and the threat of minor small stream and creek flooding in other parts of North-Central Indiana and Northwest Ohio. Most other areas remained dry during this event. High temperatures reached the upper 80s to lower 90s across the area on the 9th and 10th.

A series of weak cold fronts crossed the region from the 10th through 16th causing more widespread rains benefiting the entire area. An average of 1.52 inches (COOP Data) fell during this time period across the entire area, however some areas received much more than others during this event. For example on the 12th and 13th North Judson received 1.56 inches, Winamac received 1.42 inches and Young America received 1.64 inches of rain. All of these sites are in the southern part of Northwest Indiana. Many other locations across Northern Indiana, Extreme Southern Lower Michigan and Northwest Ohio received a third of an inch or less. Most areas though received at least some rain during the period. The rains put some dent in the ongoing drought which has plagued the Western Lower Great Lakes region since March 2005. High temperatures were driven from the mid 80s to around 90 on the 12th to the mid 70s by the 14th.

High temperatures began to rebound into the lower 80s on the 16th, remaining in the lower to mid 80s through the 20th with Fort Wayne reaching the upper 80s on the 20th. Another cold front crossed the area on the 19th and 20th bringing more showers and thunderstorms to the Western Lower Great Lakes Region. The precipitation began on the 18th with the showers and storm producing an average of around a third of an inch of precipitation (COOP Data) for the period. This front was stronger than the previous ones pushing temperatures significantly below normal for the first time in August 2005. High temperatures were driven down into the lower to mid 70s by the 22nd. Temperatures averaged 3.2 °F above normal from the 1st through the 21st and 5.7 °F below normal from the 22nd through the 24th.

Warmer air again advanced across the Western Lower Great Lakes region on the 25th as high temperatures rose back into the lower to middle 80s. Widely scattered showers and thunderstorms crossed the area from the 25th through the 27th with an average amount of less than a tenth of an inch (COOP Data). The next system to affect the region was the remnants of Hurricane Katrina. From August 30th through September 1st, the rain from the

storm was confined to Southeast third of Northern Indiana and Northwest Ohio with Lima Ohio reporting nearly 6 inches. Ridgeville in Northeast Indiana reported two and three quarters of an inch with other locations in Northwest Ohio receiving between 1 and 2 inches. However, those totals were rare with most locations south of an Auburn to North Manchester to Medaryville Indiana line receiving between a tenth and a half inch. Temperatures on the 30th varied widely with high temperatures in areas affected by Katrina remaining in the lower 70s vs. the mid 80s elsewhere. No flooding was reported with the rains. The duration of the storm limited the flood threat, considering that the 6 inches at Lima fell over 24 hours.

August closed out with the remnants of Katrina moving away from the Lower Great Lakes region. High temperatures on the 31st were in the upper 70s to around 80s across the region. Temperatures from the 25th through the 31st averaged 2.4 °F above normal.

For August 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Six Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan), the Kankakee and the Upper Wabash River Basins. Three Hydrologic Outlooks (ESFs) were issued to disseminate drought information and three more Hydrologic Outlooks (ESFs) were issued to cover the threat of flooding associated with the remnants of Hurricane Katrina. Three Public Information Statements (PNSs) were also issued to disseminate drought information. No Hydrologic Statements (RVSs), Flood Warnings (FLWs), Flood Statements for river flooding (FLSs) or Flood Watches (FFAs) were issued in August 2005. One Flash Flood Warning (FFW) and Two Flash Flood Statements (FFSs) were issued to cover flash flood threats in North-Central Indiana. Four Flood Statements (FLSs) were issued to cover localized minor flood threats over parts of Northern Indiana and Northwest Ohio in August 2005.

All temperature data used is NWS Fort Wayne and South Bend data only.

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: HYDROMETEOROLOGICAL INFO CENTER (W/OS31)
SSMC 2 – Rm. 13468
1325 EAST – WEST Highway
SILVER SPRING, MD 20910 –3283

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: September 2005 was warmer and wetter than normal across Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 0.44 inches above normal. Temperatures averaged 4.1 °F above normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of September, the average high temperature was around 80, the average low temperature was in the mid 50s giving an average temperature in the upper 60s. (Only NWS Fort Wayne and South Bend data were used).

There were four significant precipitation events in September 2005 with the last one a combination of 2 events over a stretch of 6 days.

The first event occurred from September 13th through September 16th when an average of around 1.2 inches of rain fell across the Western Lower Great Lakes region (COOP Data). This event followed nearly two weeks of dry weather which pushed parts of the area into severe drought. As a result no flooding developed from this rainfall. This was the first event signaling a change in the long term weather pattern as a strong mid level ridge of high pressure over the Central Plains and the Midwest began to break down.

The second event began on the 19th and lasted into the 20th. This event produced an average of only about 0.2 inches of rain across the area according to COOP Data, but the heavy rain that fell across far southern White County in Northwest Indiana missed the COOP Gauges. Two to four inches of rain fell in a short time that Monday afternoon. This led to the issuance of a Flash Flood Warning (FFW) for Southern White County. Flash flooding was reported in that area with water flowing across several county roads. Some roads were impassable. There was no flooding elsewhere during this event.

The third event was a long term event encompassing two short term events as a series of storm systems crossed the area. These systems crossed further south as the mid level ridge

broke down. From September 21st through September 27th an average of 2.37 inches of rain fell across the Western Lower Great Lakes (COOP Data). These events began to put dents in the summer long drought. With rivers so low at the onset of this precipitation, no river flooding occurred, but rivers in Northwest Ohio and Northeast Indiana responded to the rainfall with the Blanchard River at Ottawa rising and cresting at 17.7 feet on September 27th, a rise of over 12 feet in 4 days.

The first part of this event occurred from September 22nd to September 23rd when around 0.8 inches of rain fell (COOP Data). Two Flood Statements (FLSs) were issued for the small stream and street flooding threat on the 22nd covering areas in Extreme Southern Lower Michigan, Far Northeast Indiana and Extreme Northwest Ohio.

The second part occurred from September 25th to September 26th. This rain was associated with the remnants of Hurricane Rita plus a cold front that moved toward the area from the northwest. An average of around 1.4 inches of rain fell across the area (COOP Data). Local rainfall reports of over two inches were found over southern parts of Northeast Indiana (Bluffton 1 SE, 2.05 inches), (Decatur 1 N, 2.08 inches) and (Hartford City, 2.37 inches), and over Northwest Ohio (Grover Hill 2.00 inches) and (Van Wert 2.06 inches). Most totals were between 1 and 2 inches, however not every area received a large amount of rain. La Porte in Northwest Indiana only received around a third of an inch in this event. The rain fell over a long duration so no flooding was reported. It was this event however that evoked the greatest response from the rivers. The St. Marys at Decatur rose around 4.5 feet from 3.4 to 7.9 feet in response to the rain. The Blanchard River at Ottawa rose an additional 7.3 feet from 10.4 feet to the crest at 17.7 feet.

The fourth event developed as another cold front barreled southeast from the Northern Plains and moved across the Western Lower Great Lakes from September 28th to September 29th. Showers and thunderstorms developed along and just behind the cold front as it swept across the area late on September 28th. About 0.6 inches fell as a result. Again with much of the area still in a lingering drought, no flooding occurred.

Soil Moisture and River Levels: The Palmer Drought Severity Index for the period ending October 1st, 2005 showed great improvement in soil moisture conditions across the Western Great Lakes region with the drought ending across Northwest Ohio. The rest of the area with the exception of Southwest Lower Michigan improved to just the dry side of normal. However Southwest Lower Michigan continued to be in severe drought. The numbers are as follows: Northwest Indiana (-1.94, Dry Side of Normal), North-Central Indiana (-1.58, Dry Side of Normal), Northeast Indiana (-1.77, Dry Side of Normal), Southwest Lower Michigan (-3.37, Severe Drought), South-Central Lower Michigan (-1.73, Dry Side of Normal), Southeast Lower Michigan (-1.28, Dry Side of Normal), and Northwest Ohio (+0.49, Normal).

As of October 4th, 2005, river flows in large areas of Northern Indiana improved markedly with many rivers and streams reporting flows in the 25 to 75 percentile range. The St. Marys and Maumee Rivers near Fort Wayne showed flows in the greater than 90 percentile range. There continued to be some dry spots in North Central Indiana where flows were in

the 10 to 24 percentile range. The Elkhart River at Cosperville had flow in the less than 10 percentile range. Southern Lower Michigan had improved flows as well, but not as much as Northern Indiana or Northwest Ohio. Some river flows in Southern Lower Michigan were in the 25 to 75 percentile range and some rivers were in the 10 to 24 percentile range. Northwest Ohio river levels showed the most improvement with many river having levels in the 25 to 75 percentile range and others in the 76 to 90 percentile range.

Temperature: For Fort Wayne, the average high temperature in September 2005 was 80.9 °F and the average low temperature was 54.8 °F. This gave an average temperature of 67.9 °F which was 3.8 °F above normal. At Fort Wayne, the warmest temperature reached in September 2005 was 91 °F on the 11th. The coldest temperature reached was 37 °F on the 30th. No temperature records were broken in September 2005 at Fort Wayne.

At South Bend, the average high temperature was 79.4 °F and the average low temperature was 56.0 °F giving an average temperature of 67.7 °F which was 4.3 °F above normal for September. The warmest temperature occurred on September 13th (93 °F) and the coldest temperature occurred on the 30th (39 °F). No temperature records were broken at South Bend in September 2005.

Precipitation: Precipitation was below normal at South Bend and above normal at Fort Wayne in September 2005. At Fort Wayne, 3.97 inches of precipitation fell, 1.16 inches above normal. At South Bend, 3.07 inches of precipitation fell, 0.72 inches below normal. A record rain of 1.45 inches fell at Fort Wayne on September 25th which broke the old record of 1.30 inches set back in 1930. No precipitation records were broken at South Bend.

Weather: September 2005 started out dry with temperatures running slightly above normal. A strong ridge of high pressure developed over the eastern half of the country preventing any rain producing systems from reaching the Western Lower Great Lakes Region. High temperatures were in the low to mid 80s. The dry weather continued through the 7th as high temperatures inched into the upper 80s. A weak cold front approached the Western Lower Great Lakes from the north on the 8th producing a few rain showers. Coverage was isolated with Goshen Airport reporting around a half inch of rain. The cold front dissipated before reaching Central Indiana. As a result, high temperatures were not affected remaining in the mid 80s on the 9th. Temperatures rose into the upper 80s to around 90 by the 11th and into the lower 90s in some locations by the 13th. These days continued to be rainless with high pressure remaining entrenched across the region.

The weather pattern began to change as the high pressure ridge began to weaken allowing cold fronts to move further south. By the 13th another cold front approached from the north, but this time the system was stronger and the blocking high pressure ridge weaker. As a result, several rounds of showers and thunderstorms moved across the area. The rainfall continued through the 16th with an average total of 1.20 inches falling across the area when the system finally passed through. High temperatures fell into the lower 60s by the 16th, the day of the heaviest and most widespread rainfall as a cool Canadian high pressure built in behind the cold front.

The cooler weather did not last long as high temperatures rose back into the lower 80s by the 18th. The next cold front then moved across the area on the 19th producing more rain showers on the 19th and 20th. This event is covered in the overview section. The cold front was weak as high temperatures remained in the 80s, even rising into the upper 80s by the 22nd.

The next several cold fronts were stronger for the rest of the month with the next system moving across the area on the 22nd and 23rd. Rainfall amounts are covered in the overview section. This cold front brought another shot of cool Canadian air to the region as high temperatures fell into the low to mid 70s on the 23rd. Temperatures began to recover rising back into the mid to upper 70s by the 25th when the remnants of Hurricane Rita came up from the Gulf Coast. Moderate to heavy rainfall was brought north by the storm. The rainfall story is covered in the overview section. Rita was followed by a weak cold front which failed to lower temperatures significantly. From September 1st through the 28th, temperatures averaged 4.9 °F above normal.

A much stronger cold front passed through the area on the 28th bringing another shot of rain to the Western Lower Great Lakes region. Significantly cooler air overspread the Western Lower Great Lakes Region as high temperatures were driven down into the upper 50s to lower 60s on the 29th and low temperatures on the morning of the 30th fell into the upper 30s bringing some areas a bout of frost. Temperatures averaged 6.0 °F below normal on the 29th and 30th.

For September 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Five Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan), the Kankakee and the Upper Wabash River Basins. Three Hydrologic Outlooks (ESFs) were issued to disseminate drought information. Three Public Information Statements (PNSs) were also issued to disseminate drought information. No Hydrologic Statements (RVSs), Flood Warnings (FLWs), Flood Statements for river flooding (FLSs) or Flood Watches (FFAs) were issued in September 2005. One Flash Flood Warning (FFW) and Two Flash Flood Statements (FFSs) were issued to cover flash flooding in Northwest Indiana. Two Flood Statements (FLSs) were issued to cover localized minor flood threats over parts of Northeast Indiana, Extreme Southern Lower Michigan and Extreme Northwest Ohio in September 2005.

All temperature data used is NWS Fort Wayne and South Bend data only.

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

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When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: October 2005 was warmer and much drier than normal across Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 2.08 inches below normal. Temperatures averaged 1.5 °F above normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of October, the average high temperature was in the lower 60s, the average low temperature was in the mid 40s giving an average temperature in the lower 50s. (Only NWS Fort Wayne and South Bend data were used).

There were only two significant precipitation events that occurred in October 2005.

The first event began on October 19th and lasted through October 25th. Just an average of just a little over a half inch of rain fell across the area with the majority of it falling on the 20th and 21st and on the 23rd and 24th (COOP Data). No flooding occurred with any of this rainfall with most areas except Northwest Ohio having low soil moisture. There were significant rises on rivers in Northwest Ohio in response to the rainfall with the Blanchard River at Ottawa rising from little more than 5 feet on morning of the 24th to just over 14 feet by the morning of the 26th. Flood stage at Ottawa Ohio is 23 feet. Fort Jennings on the Auglaize River rose from around 1.5 feet to 7 feet during the same time period. Flood stage at Fort Jennings is 13 feet.

The second event began on October 31st and ended on November 1st with an average of around a half inch of rain falling across the area (COOP Data). The heaviest rain fell over Northwest Indiana and Southwest Lower Michigan where some locations reporting between 0.8 inches to just under an inch. With the heaviest rains falling on the driest areas, there was little response from the rivers.

Soil Moisture and River Levels: The Palmer Drought Severity Index for the period ending October 29th, 2005 showed renewed drought threat across all of southern Michigan

and Northern Indiana and some deterioration in Northwest Ohio. Extreme drought was indicated for Southwest Lower Michigan. The numbers are as follows: Northwest Indiana (-2.92, Moderate Drought), North-Central Indiana (-2.24, Moderate Drought), Northeast Indiana (-2.91 Moderate Drought), Southwest Lower Michigan (-4.07, Extreme Drought), South-Central Lower Michigan (-2.80, Moderate Drought), Southeast Lower Michigan (-2.75, Moderate Drought) and Northwest Ohio (-0.58, Normal).

As of November 2nd, 2005, river flows in large areas of Northern Indiana show decreased flow across Northern Indiana with about half of the gauges reporting flows in the 25 to 75 percentile range and half reporting flows in the 10 to 24 percentile range. The St. Marys River near Fort Wayne had flows in the greater than 90 percentile range. Flows improved across Southern Lower Michigan in response to rains on October 31st and November 1st with flows in the many locations in the 25 to 75 percentile range. The St. Joseph River at Burlington had flow in the less than 10 percentile range. Northwest Ohio continued to have flows in the 25 to 75 percentile range with some gauges reporting flows in the 76 to 90 percentile range. River data is from the USGS.

Temperature: For Fort Wayne, the average high temperature in October 2005 was 63.6°F and the average low temperature was 44.5 °F. This gave an average temperature of 54.0 °F which was 1.6 °F above normal. At Fort Wayne, the warmest temperature reached in October 2005 was 87°F on the 3rd. The coldest temperature reached was 27 °F on the 29th. No temperature records were broken or tied in October 2005 at Fort Wayne.

At South Bend, the average high temperature was 62.8 °F and the average low temperature was 44.0 °F giving an average temperature of 53.4 °F which was 1.3 °F above normal for October. The warmest temperature occurred on October 4th (85 °F) and the coldest temperature occurred on the 29th (29 °F). No temperature records were broken or tied at South Bend in October 2005.

Precipitation: Precipitation was well below normal at both South Bend and Fort Wayne in October 2005. At Fort Wayne, 0.51 inches of precipitation fell, 2.12 inches below normal. At South Bend, 1.24 inches of precipitation fell, 2.03 inches below normal. No precipitation records were broken at South Bend and at Fort Wayne. October 2005 was the 4th driest on record.

Weather: October 2005 started out very warm and dry with high temperatures in the upper 70s on the 1st rising to the mid to upper 80s on the 3rd and 4th. A weak cold front passed across the Western Lower Great Lakes region on the 6th. From the 1st through the 6th, temperatures averaged 11.8 °F above normal.

The air behind the front was much cooler driving high temperatures down into the upper 50s to lower 60s range. High temperatures continued their fall reaching the 50 °F to 55 °F range on the 8th. Warmer air returned slowly with high temperatures reaching the lower 60s range by the 9th. Temperatures averaged 3.9 °F below normal from the 7th through the 10th.

Warmer air continued to overspread the area on the 11th driving high temperatures into the lower 70s by the 13th. The air mass change was accompanied by a few light rain showers with average amounts being well below a tenth of an inch from the 10th through the 14th (COOP Data). A weak cold front pushed through the area on the 15th dropping high temperatures back into the lower 60s by the 16th. Warmer air returned on the 17th pushing high temperatures back into the upper 60s to lower 70s range. That warm up was short lived as another cold front moved through the Western Lower Great Lakes Region on the 18th. Scattered very light rain showers fell with the front with amounts, again with an average amounts of less than a tenth of an inch (COOP Data). With frontal passage high temperatures ranged from the upper 60s over the eastern half of the area to the upper 50s over the west. From the 11th through the 19th, temperatures averaged 3.6 °F above normal.

This cold front heralded a change in the main weather pattern allowing colder air masses and more precipitation to move across the area. High temperatures from the 20th through the 28th, ranged from the upper 40s to the upper 50s. There were several cold frontal passages during this time period producing bouts of rain showers. The heaviest precipitation fell on the 20th and 21st (Average of 0.16 inches, COOP Data) and on the 23rd and 24th (Average of 0.31 inches, COOP Data). None of this rain caused any flooding. The rain showers ended on the 25th. From the 20th through the 29th, temperatures averaged 4.7 °F below normal.

Warm air again made its way back to the Western Lower Great Lakes region on the 30th and 31st as high temperatures rebounded into the lower 60s. A cold front approached the area on the 31st producing a large area of rain which lasted into November 1st. An average of around a half inch of rain fell with this system (COOP Data). Temperatures averaged 5.9 °F above normal for the last 2 days in October.

For October 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Five Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan), the Kankakee and the Upper Wabash River Basins. No Hydrologic Statements (RVSs), Flood Warnings (FLWs), and Flood Statements for river flooding (FLSs), Flood Watches (FFAs), Flash Flood Warnings (FFW), Flash Flood Statements (FFSs), or Flood Warnings (FLWs) and Flood Statements (FLSs) for areal flood threats were issued in October 2005.

All temperature data used is NWS Fort Wayne and South Bend data only.

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: HYDROMETEOROLOGICAL INFO CENTER (W/OS31)
SSMC 2 – Rm. 13468
1325 EAST – WEST Highway
SILVER SPRING, MD 20910 –3283

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: November 2005 was warmer and drier than normal across Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 0.87 inches below normal. Temperatures averaged 2.3 °F above normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of November, the average high temperature was in the lower 50s, the average low temperature was in the lower 30s giving an average temperature in the lower 40s. (Only NWS Fort Wayne and South Bend data were used).

There were only two significant precipitation events that occurred in November 2005.

The first event began on November 14th and lasted through November 18th with average precipitation amounts of 1.55 inches (COOP Data). Most of the precipitation fell as rain, but the event ended with the first measurable snow with an average of just 0.1 inches (COOP Data). This event continued to erode the drought conditions across much of the area. There were significant rises on the rivers and streams in the area with the St. Marys at Decatur rising around 7 feet from the 15th to the 17th from around 5.5 feet to over 12.5 feet. Rises on other rivers were also dramatic with a rise at Ottawa Ohio on the Blanchard River of 9.5 feet from a little over 6 feet to over 15 feet. The rise occurred from the 15th into the 17th. The greatest rises were confined to the Maumee River Basin in Northeast Indiana and Northwest Ohio and the Upper Wabash River Basin in Northern Indiana.

Areas that suffered the least in the drought had the greatest response to the rainfall. Also the heaviest rains fell in those areas. Several stations reported amounts in excess of 2 inches across Northeast Indiana and Northwest Ohio. Decatur Indiana reported 2.08 inches of rain. Auburn reported 2.40 inches with Hamilton Lake receiving 2.35 inches (COOP Data). Northwest Ohio locations reporting amounts in excess of 2 inches included Montpelier (2.00 inches), Paulding (2.09 inches) and Wauseon (2.10 inches) (COOP Data). Two Flood Statements were issued on the 15th for a local urban flooding threat primarily in

Fort Wayne. That was the only flood threat caused by the rainfall. Hydrologic Statements were issued for high flows on the St. Marys, Auglaize and Wabash Rivers. The first measurable snow fell on the 16th and 17th with South Bend receiving 1.8 inches of snow. Most other areas received a dusting to about a half inch. The heavier amounts fell over Southwest Lower Michigan and Northwest Indiana.

The second event stretched from November 21st to November 30th where an average of 0.91 inches of precipitation fell which included an average of 2.1 inches of snow. However, most of the precipitation fell as rain. The snows fell from the 22nd through the 25th with an average of 1.8 inches of snow (COOP Data). Some locations reported amounts in excess of 2 inches. Both South Bend and Fort Wayne reported 2.1 inches of snow on the 23rd and South Bend reported an additional 1.7 inches on the 24th. With temperatures in the 30s, snow melt was slow and did not affect river and stream levels. Warmer air then moved into the Western Lower Great Lakes region on the 26th driving temperatures up into the 40s with highs reaching the 60s by the 28th. Precipitation fell as rain with heavy rain reported in some locations in Northeast Indiana and Northwest Ohio. Amounts in excess of one inch were confined to Northwest Ohio on the 28th and 29th. Lima Ohio reported the highest amount, 1.55 inches of rain. This rain event combined with any remaining snow melt caused significant rises on the Tiffin, St Marys, Auglaize, Blanchard, Maumee and the St. Joseph (Ohio) Rivers in Northeast Indiana and Northwest Ohio. The Tiffin approached flood stage but crested a little more than a foot short of it.

All snow melted before the end of November 2005.

Soil Moisture and River Levels: Soil moisture levels improved considerably from those in October 2005. Only Northwest Indiana remained in Moderate Drought as measured by the Palmer Drought Severity Index. The numbers calculated for data through December 3, 2005 are as follows: Northwest Indiana (-2.74, Moderate Drought), North-Central Indiana (-1.73, Dry Side of Normal), Northeast Indiana (-1.65 Dry Side of Normal), Southwest Lower Michigan (-1.71, Dry Side of Normal), South-Central Lower Michigan (-0.49, Normal), Southeast Lower Michigan (+1.05, Wet Side of Normal) and Northwest Ohio (+0.80, Normal).

As of December 8th, 2005, most river flows in Northern Indiana ranged from 25 through the 75 percentile range in the Upper Wabash and Maumee River Basins. The St. Marys near Fort Wayne reported in the 76 to 90 percentile range. It was drier in the St. Joseph (Michigan) and the Upper Kankakee River Basins with most locations reporting flows in the 10 to 24 percentile range. Some gauges reported in the less than 10 percentile range. Southern Lower Michigan gauges reported flows in the 10 to 24 percentile range. These lower flows coincide with the drought stricken areas. Flows in Northwest Ohio were in the 25 to 75 percentile range. River data was provided by the United States Geological Survey.

Temperature: For Fort Wayne, the average high temperature in November 2005 was 52.3°F and the average low temperature was 33.1 °F. This gave an average temperature of 42.7°F which was 2.1 °F above normal. At Fort Wayne, the warmest temperature reached in November 2005 was 72°F on the 3rd. The coldest temperature reached was 12 °F on the

25th. Record warm minimum temperatures were set on the 5th (55 °F) and on the 28th (49 °F) at Fort Wayne.

At South Bend, the average high temperature was 51.4 °F and the average low temperature was 33.6 °F giving an average temperature of 42.5 °F which was 2.4 °F above normal for November. The warmest temperature occurred on November 3rd (70°F) and the coldest temperature occurred on the 25th (14 °F). A record warm minimum temperature was set on the 28th (44 °F) at South Bend.

Precipitation: Precipitation was well below normal at South Bend and above normal at Fort Wayne in November 2005. At Fort Wayne, 3.29 inches of precipitation fell, 0.31 inches above normal. At Fort Wayne, 2.3 inches of snow fell which was 0.7 inches below normal. At South Bend, 2.21 inches of precipitation fell, 1.18 inches below normal. At South Bend, 6.0 inches of snow fell which was 1.7 inches below normal. No precipitation records were broken at South Bend, but 1.79 inches of rain fell on November 15th at Fort Wayne which broke the record for that date.

Weather: November 2005 started out warm and moist with the rains from Halloween ending. High temperatures were in the lower to mid 50s on the 1st. The warm up continued through the first 9 days of the month. High temperatures soared into the lower 70s by the 3rd across the most of the Western Lower Great Lakes region. Somewhat cooler air behind a weak cold front moved into the region on the 4th dropping high temperatures into the upper 60s, however high temperatures remained in the 60s through the 9th. There were bouts of rain in this warm air mass with scattered showers and thunderstorms occurring on the 5th and 6th with average rainfall amounts of around a quarter of an inch (COOP Data). Another bout of rain occurred on the 8th and 9th but only an average of 0.13 inches (COOP Data) fell. A strong cold front and associated storm system moved through the Midwest on the 9th and 10th dropping high temperatures into the upper 40s by the 10th. Little precipitation fell with frontal passage.

That cold spell was short lived as warm air again overspread the area. High temperatures again rose into the 60s with the upper 60s achieved by the 12th. The front however remained in the area causing showers and a more widespread rain event to develop across the Western Lower Great Lakes region. The heaviest rain fell on the 15th and 16th when average amounts of one and a quarter of an inch fell across the area. Flooding threats are handled in the overview section. This rainfall was associated with another strong cold front that passed through the region on the 15th. Temperatures from the 1st through the 15th averaged 8.3 °F above normal.

The cold front that passed through on the 15th ushered in a change in the weather pattern as high temperatures plummeted from the lower to mid 60s on the 15th to the lower to mid 40s on the 16th. High temperatures continued to fall reaching the mid to upper 20s by the 17th as Artic air overspread the Western Lower Great Lakes region. Snow fell on the 17th with South Bend reporting 1.8 inches of snow. This very cold air quickly moved out of the area being replaced by a warmer Maritime Polar air mass letting high temperatures rebound into the lower to mid 50s by the 19th. Another cold front passed across the area on the 21st

causing high temperatures to settle into an upper 30s to lower 40s range. Scattered snow shower occurred on the 21st and 22nd with little accumulation, however a storm system crossed the area on the 22nd and 23rd spreading a more significant snow across Northern Indiana, Northwest Ohio and Southwest Lower Michigan. Two to nearly 3 inches fell across Southern Lower Michigan to far Northern Indiana with lesser amounts south of that area and in Northwest Ohio. This snow preceded another strong cold front. The front passed across the area on the 24th dropping high temperatures back into the 20s. Lake effect snows developed late on the 24th and 25th with the most snow falling over Southwest Lower Michigan and Northwest Indiana. South Bend reported a total of 3.8 inches of snowfall with this event. Locations in parts of Southwest Lower Michigan reported 6 inches. Much of Northwest Indiana, however, received less than an inch. From the 16th through the 25th, temperatures averaged 7.1 °F below normal.

Warmer air returned to the Western Lower Great Lakes by the 26th with high temperatures reaching the lower to mid 40s causing snow to melt. A warm front approached the area bringing warmer temperatures and rain to the region. High temperatures reached the lower 60s by the 28th. The balmy temperatures for this time of year were accompanied by a large area of rain as another cold front approached. Amounts averaged around 0.60 inches (COOP Data) from the 27th through the 29th. This rainfall caused rivers and stream to rise, especially in Northeast Indiana and Northwest Ohio. The rainfall caused rises on rivers and streams. This is covered in the general overview section above. High temperatures fell hard following the passage of the cold front. High temperatures fell through the 40s and lower 50s on the 29th to the upper 20s on the 30th. From the 26th through the 30th, temperatures averaged 4.5 °F above normal.

For November 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Three Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan), the Kankakee and the Upper Wabash River Basins. Nine Hydrologic Statements (RVSS) were issued to disseminate river forecasts. No Flood Warnings (FLWs), and Flood Statements for river flooding (FLSs), Flood Watches (FFAs), Flash Flood Warnings (FFW), Flash Flood Statements (FFSs), or Flood Warnings (FLWs) were issued. Two Areal Flood Statements (FLSs) were issued for minor urban flood threats.

All temperature data used is NWS Fort Wayne and South Bend data only.

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: HYDROMETEOROLOGICAL INFO CENTER (W/OS31)
SSMC 2 – Rm. 13468
1325 EAST – WEST Highway
SILVER SPRING, MD 20910 –3283

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs include miscellaneous river conditions such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Directive 10-924).

An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: December 2005 was much colder and drier than normal across Northern Indiana, Northwest Ohio, and Extreme Southern Lower Michigan. Precipitation averaged 0.96 inches below normal. Temperatures averaged 4.9 °F below normal. (Only NWS Fort Wayne and South Bend data were used).

For the month of December, the average high temperature was in the upper 20s, the average low temperature was in the mid teens giving an average temperature in the mid 20s. (Only NWS Fort Wayne and South Bend data were used).

There were three significant precipitation events that occurred in December 2005. The first one was a snow event and the second two were rain events. The two rain events combined with melting snow to cause minor flooding along some rivers in Northeast Indiana and Northwest Ohio.

The first event began on the 8th and ended on the 9th and was snow. An average of around 6.5 inches of snow fell across the Western Lower Great Lakes Region (COOP Data). Some locations reported amounts in excess of 8 inches. The snow contained an average of around a half inch of liquid (COOP Data).

The second event was mostly a rain event and it occurred from December 24th through December 26th. An average of around a half of an inch fell across the area. Minor flooding occurred on the Salamonie River near Warren Indiana on the 26th as a result of an ice jam. The jam quickly broke up reducing the flooding to around one hour. This rain event led to the minor flooding that occurred over Northeast Indiana and Northwest Ohio.

The third event occurred from December 28th and lasted through December 29th. It too was a rain event. An average of around a half inch of rain fell with this system also (COOP Data). It was this event that finally caused the breakdown of the snow pack. The

result of the break up was minor flooding along rivers in Northeast Indiana and Northwest Ohio. The rivers that flooded were: The Tiffin, the St. Marys and the Maumee Rivers. The flooding along the Maumee River was the result of another ice jam. This flooding occurred very early on the 29th near the Defiance Ohio river gauge. This one was more serious than that which occurred on the Salamonie River with river levels increasing to more than 4 feet above flood stage. The water, however quickly fell to just above the 10 foot flood stage by dawn. A Flood Watch (FFA) was issued to alert the public to the possibility of more ice jam flooding. Later a flood warning was issued for Defiance as the river level was slow to recede. A call to the Defiance County Ohio Emergency Manager revealed that little damage occurred as a result of the flooding. The flooding along the St. Marys and the Tiffin was also minor in nature. Flood Warnings (FLWs) were also issued to cover flood threats along the Maumee, Tiffin, St. Marys, St. Joseph (Ohio) and the Blanchard Rivers in Northeast Indiana and Northwest Ohio.

There was a continue threat of more rain for New Years Day and early January so a Hydrologic Outlooks (ESFs) were issued to cover a threat for more river flooding in Northeast Indiana and Northwest Ohio. The Hydrologic Outlook was later upgraded to a Flood Watch (FFA) on New Years Day for rivers in the Maumee River Basin in Northeast Indiana and Northwest Ohio.

The flooding was restricted to Northeast Indiana and Northwest Ohio because of the drought conditions across the rest of the area. It was these dry soils that prevented flooding there. With the massive thaw over the last 9 days of the month, little snow remained on the ground as December 2005 ended.

Soil Moisture and River Levels: Soil moisture levels improved in extreme Southern Lower Michigan, Northwest Ohio and Northeast Indiana from November 2005 but deteriorated in Northwest Indiana and North-Central Indiana. Northwest Indiana slipped into Severe Drought as measured by the Palmer Drought Severity Index. The numbers calculated for data through December 31, 2005 are as follows: Northwest Indiana (-3.06, Severe Drought), North-Central Indiana (-2.07, Moderate Drought), Northeast Indiana (-1.57 Dry Side of Normal), Southwest Lower Michigan (-0.72, Dry Side of Normal), South-Central Lower Michigan (+0.05, Normal), Southeast Lower Michigan (+1.88, Wet Side of Normal) and Northwest Ohio (+1.56, Wet Side of Normal).

As of January 4, 2005, river flows in the northwest 2/3rds of Northern Indiana ranged from 25 through the 75 percentile range where as the river flows in the southeast third were in the 76 to 90 percentile range. Southern Lower Michigan gauges reported flows in the 25 to 75 percentile range. Flows in Northwest Ohio were in the 76 to 90 percentile range. So in general river flows increased across the entire area. River data was provided by the United States Geological Survey.

Temperature: At Fort Wayne, the average high temperature in December 2005 was 29.5 °F and the average low temperature was 18.4 °F. This gave an average temperature of 24.0 °F which was 5.0 °F below normal. At Fort Wayne, the warmest temperature reached in December 2005 was 47°F on the 28th. The coldest temperature reached was -2 °F on the

8th tying the record for the date. Low maximum temperature records were set on the 5th (24 °F), tied on the 6th (18 °F) and broken on the 7th (16 °F).

At South Bend, the average high temperature was 29.2 °F and the average low temperature was 18.9 °F giving an average temperature of 24.0 °F which was 4.7 °F below normal for December. The warmest temperature occurred on December 27th (44 °F) and the coldest temperature occurred on the 5th (-1 °F) which broke the record for the date. The low temperature record for the 7th (0 °F) was also broken. The record low maximum temperature for the 19th was tied (**10 °F**). **Corrected**

Precipitation: Precipitation was well below normal at South Bend and below normal at Fort Wayne in December 2005. At Fort Wayne, 2.16 inches of precipitation fell, 0.61 inches below normal. Snowfall totaled 15.8 inches in December 2005, 7.5 inches above normal. A record was set for when 8.3 inches of snow fell on the 8th. At South Bend, 1.79 inches of precipitation fell, 1.30 inches below normal. Snowfall totaled 19.1 inches, 0.1 inches below normal. A record 7.7 inches fell on December 8th.

Weather: December 2005 over the Western Lower Great Lakes Region was a month of contrasts. The first 22 days were very cold with temperatures averaging 10.7 °F below normal and the last 9 days temperatures average 10.4 °F above normal.

The first two thirds of December 2005 weather over the Midwest and Great Lakes Regions was dominated by maritime polar and arctic air masses. An upper level ridge over the West Coast of North America served to steer cold air into the center of the North American Continent. High temperatures on the 1st were in the lower 30s and they fell from there to be in the mid teens by the 7th. Low temperatures reached down below zero across the area between the 6th and the 8th.

Weak low pressure disturbances crossed the area producing light snows of between 1 and 2 inches each day through the 3rd. A more significant snow producer crossed the area on the 8th and 9th giving the area a thicker coat of snow. Snowfall amounts as much as 8 inches were reported in some locations with this system. Record snows were recorded on the 8th at both South Bend and Fort Wayne. High temperatures recovered into the 20s as the storm approached reaching the lower 30s by the 11th. Another cold air mass then overspread the area on the 12th dropping high temperatures back into the 20s. The cold air mass was not as cold as the previous one with lows only falling into the teens to around 20 °F vs. single digits and below zero temperatures that were common with the previous cold snap.

The weather pattern began to shift slowly to a more favorable one for warmer weather. Another storm system brought more snow to the area on the 14th through the 17th. Warm air ahead of the approaching storm brought high temperatures into the mid 30s by the 14th reducing snow accumulations. An average of 2.1 inches fell across the area (COOP Data). Colder air again followed this system dripping high temperatures back into the lower teen by the 19th. Low temperatures again approached zero on the 19th. This was the last very cold air mass to invade the Midwest and Great Lakes Regions. The weather pattern made a change which allowed blocked Pacific air masses to cross the United States and kept cold

air masses bottled up in Canada. High temperatures warmed into the 20s by the 21st reaching the mid 30s by the 22nd. From the 1st through the 22nd, temperatures averaged 10.7 °F below normal.

By the 23rd, high temperatures reached the upper 30s to around 40 °F. The thick snow pack began to melt slowly. Temperatures were now warm enough to allow for rain to be the predominant precipitation type for each storm system that would pass through the Western Lower Great Lakes Region. The first of the two rain storms began on the 24th continuing into the 26th producing an average of around a half inch of liquid. This rainfall was largely sopped up by the snow. The precipitation ended as some light snow with an average of less than a half inch (COOP Data). The melting continued and water levels began to rise on area rivers and streams on the 26th. These rises were significant only in Northeast Indiana and Northwest Ohio where there was more autumn precipitation. Drought conditions continued to plague Northwest and North-Central Indiana as well as extreme Southwest Lower Michigan.

A very weak cool air mass followed this storm system allowing low temperatures to fall a little below freezing in some locations. The second storm crossed the area on the 28th and 29th adding another half inch of rain to the region (COOP Data). The persistent rains and temperatures remaining above freezing finally caused the snow pack, saturated with the previous rainfall to completely melt away causing flooding along some rivers in Northeast Indiana and Northwest Ohio. (Flooding is covered in the General Overview Section.) High temperatures reached the 40s on the 27th and 28th with some highs reaching the upper 40s.

Cooler air followed the second storm system producing a little snow on the 29th. High temperatures fell into the mid to upper 30s range, still above freezing with low temperatures ranging from the upper 20s over Northwest Indiana to the mid 30s over Northeast Indiana. A third storm system brought mixed rain and snow to the Western Lower Great Lakes Region on the 30th. Temperatures fell into the lower 30s on the evening of the 30th allowing some snow to accumulate. Amounts were quite light with around a third of an inch of snow measured on the 30th and 31st (COOP Data). Liquid equivalent of around 0.3 inches was reported with this system (COOP Data). The snow completely melted by New Years Day.

For December 2005, Daily River and Lake Summaries (RVDs) and the Daily Hydrologic Summaries (RVAs) were issued as usual. Five Hydrologic Outlooks (ESFs) were issued to disseminate probabilistic forecast numbers associated with the Advanced Hydrologic Prediction Service (AHPS) for the Maumee, St. Joseph (Michigan), the Kankakee and the Upper Wabash River Basins. Two Hydrologic Outlooks (ESFs) were issued to cover river flood threats over the last couple of days in December. Fifteen Hydrologic Statements (RVSs) were issued to disseminate river forecasts. Four Flood Warnings (FLWs) were issued to cover the flood threat along rivers in Northeast Indiana and Northwest Ohio. Seventeen Flood Statements (FLSs) were issued to cover river flooding in Northeast Indiana and Northwest Ohio. Two Flood Watches (FFAs) were issued to cover an ice jam flood threat along the Maumee River near Defiance Ohio. No Flash Flood Warnings

(FFW), Flash Flood Statements (FFSs), or Areal Flood Statements (FLSs) or Areal Flood Warnings (FLWs) were issued areal flood threats.

All temperature data used is NWS Fort Wayne and South Bend data only.