

**Product/Service Description Document**  
**Water Resources Streamflow Outlook**  
**Ohio River Forecast Center**

**Part I – Mission Connection**

- a. Product/Service Description – The National Weather Service’s (NWS) OHRFC Water Resources Streamflow Outlook webpage and text product provides expected streamflow conditions for basins across the Ohio Valley for 30-days, 30- to 60-days and 60- to 90-days. In the last few years, the NWS has added the Advanced Hydrologic Prediction Service (AHPS) to its suite of hydrologic services. As part of it, the River Forecast Centers (RFC’s), began issuing 90-day probabilistic forecasts for river forecast points using the National Weather Service River Forecast System’s (NWSRFS) Ensemble Streamflow Prediction (ESP) service. With the technology of ESP many opportunities are available for the advancement of the hydrologic sciences. At the same time, there are gaps within the current AHPS program that need to be filled. They include short term probabilistic forecasts and 30, 60 and 90 day streamflow forecasts for our customers and partners. This outlook attempts to fill the second gap that exists. Currently, Spring Flood Outlooks are issued by Weather Forecast Offices (WFO’s) based on the time of the year. In addition, hydrologic outlooks are issued based on short term events as needed. However, WFO’s do not have an easy way to take full advantage of hydrologic expertise on a continual water watch via RFC’s. This product attempts to fill that gap by providing a continuous water watch for floods, droughts and everything in between. The latest scientific data and forecasts are made available to other government partners for planning as well as the public through local WFO’s. The website will be titled Water Resources Outlook while the text product will be issued as CRWESFTIR.
- b. Product Type – Operational
- c. Purpose – The purpose of this webpage and text product will be to provide our partners, customers and the public with a continuous water watch as part of the NWS’s Climate, Weather and Water programs. This webpage and product will fill the gaps between short term deterministic forecasts and 90-day probability forecasts currently available through AHPS. This webpage and product will support NOAA’s mission goals of serving society’s need for weather and water information and supporting the nation’s commerce with information for safe, efficient and environmentally sound transportation.
- d. Audience – The target audience for this product is the hydrologic community, including but not limited to: the Ohio River Basin Commission, United States Army Corp of Engineers (USACE), United States Geological Survey (USGS), Drought Monitor and NWS WFO’s.
- e. Presentation Format – The webpage will have a main graphic of the 30-day expected streamflows on it that will follow the new theme of RFC webpages with tabbed data of related information such as 60 and 90 day flows, past rainfall, future rainfall, and

current and past streamflow conditions. This page is under development and this will be part of this project to make a presentable webpage that could be used as a template for other RFC's and the NWS to implement if this project is a success.

d. Feedback – Feedback will be a critical part of this project, both the visual, but also scientific feedback. This feedback will be provide by our partners such as service hydrologists at WFO's, the USACE, the USGS, and universities such as the Ohio State and Northern Illinois University. There will be links on our website for feedback to be given and information on feedback will also be found in our text product.

Technical comments on the Water Resource Streamflow Outlook may be addressed to:

National Weather Service  
Ohio River Forecast Center  
ATTN: Jim Noel  
Senior Hydrologist  
1901 South State Route 134  
Wilmington, OH 45177  
937-383-0528

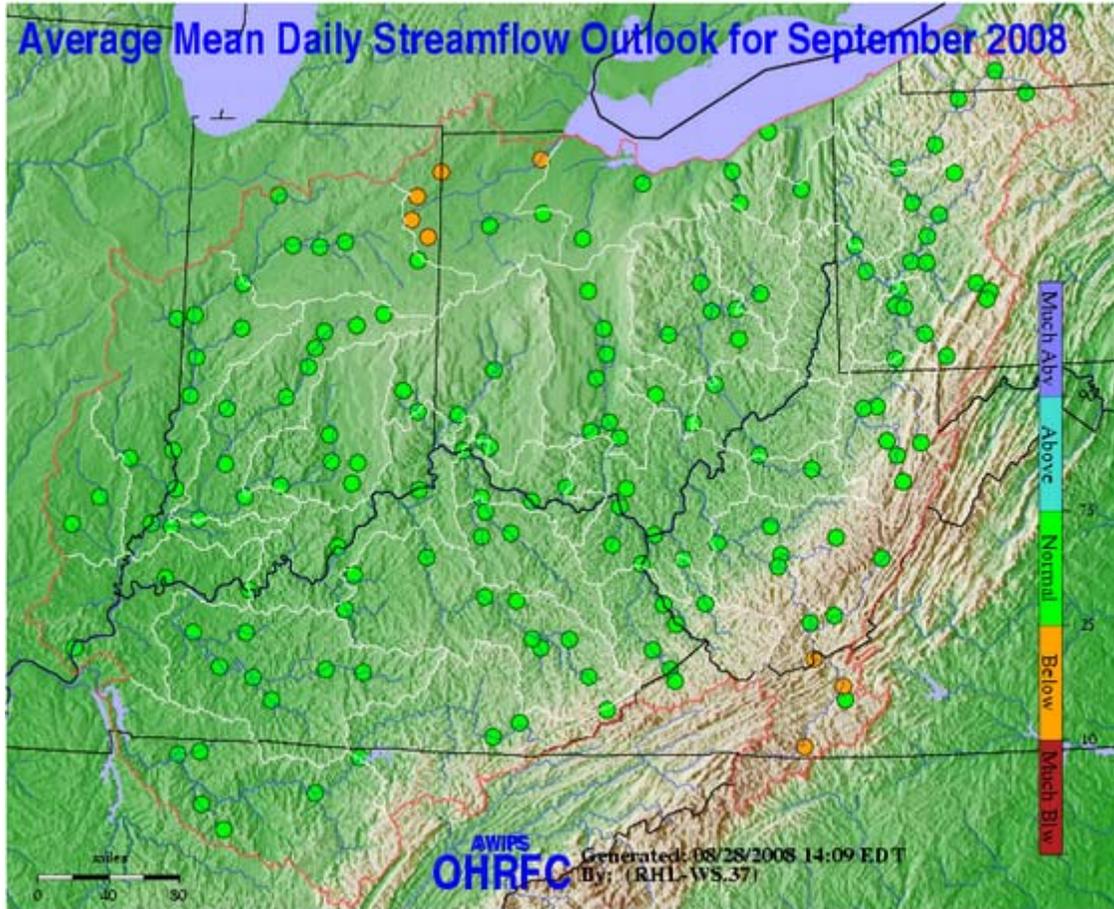
Email comments to: James.Noel@noaa.gov

## **Part II – Technical Description**

a. Format and Science Basis – This webpage and product is currently under development. The webpage can be reached at [www.erh.noaa.gov/ohrfc/WRO.shtml](http://www.erh.noaa.gov/ohrfc/WRO.shtml) for viewing. The main focus of the page will be expected streamflows generated scientifically from the NWSRFS ESP with input of rainfall forecasts from the HAS unit at the RFC and from the Hydrometeorological Prediction Center (HPC) and Climate Prediction Center (CPC). There will be an expected flow forecast for the next 30 days, 30 to 60 day period, and 60 to 90 day period. Each 30-day period will be the average flow calculated based on the mean daily flows from the NWS Ensemble Streamflow Prediction (ESP) system. The forecasts are broken in percentile categories based on USGS flows for that time of year. The five categories are < 10 percent, 10-24 percent, 25-75 percent, 76-90 percent and > 90 percent. This equates to much below, below, average, above, and much above average streamflows. This will allow for a match between USGS observed flows and NWS forecast flows. Please see an example of the product after this section. The text product will be broken into observed and forecast conditions that will be based on RFC, HPC, and CPC forecasts and tools.

b. Availability – This website will run 24 hour per day and be monitored by RFC staff. The website will be made available to all partners and customers in the OHRFC coverage area. In addition, the text product will be available via AWIPS or by other means outside the NWS including the internet.

c. Additional Information - None.



EXPECTED STEAMFLOWS ACROSS THE OHIO VALLEY FOR AUGUST

Purple	= Much above normal flows	: <10%	percentile
Light blue	= Above normal flows	: 10-24%	percentile
Green	= Normal flows	: 25-75%	percentile
Orange	= Below normal flows	: 76-90%	percentile
Red	= Much below normal flows	: >90%	percentile

ZCZC CRWESGTIR CES  
TTAA00 KTIR DDHHMM

WATER RESOURCES OUTLOOK  
NATIONAL WEATHER SERVICE  
OHIO RIVER FORECAST CENTER, WILMINGTON OH  
205 PM EDT Thursday, August 28, 2008

THE FOLLOWING IS THE 30-DAY WATER RESOURCES AVERAGE MEAN DAILY  
STREAMFLOW OUTLOOK FOR PLANNING PURPOSES IN THE OHIO VALLEY.

SEPTEMBER OUTLOOK...

STREAMFLOWS ARE FORECAST TO BE GENERALLY NORMAL FOR MOST OF THE OHIO RIVERVALLEY WITH BELOW NORMAL FORECAST IN THE NORTHWEST BASIN AS WELL AS THE SOUTHEASTERN BASIN. WITH ENSO NEUTRAL AND NO OTHER LARGE-SCALE ATMOSPHERIC INDICATORS FORECAST TO SHIFT, NO LARGE SCALE CHANGES IN THE OVERALL PATTERN FROM AUGUST ARE PREDICTED. HOWEVER, THE NUMBER OF TROPICAL SYSTEMS PEAK IN SEPTEMBER AS DOES THE CHANCE THAT THE REMNANTS OF ONE COULD WORK ITS WAY UP INTO THE AREA. OBVIOUSLY THAT WOULD ACT TO RAISE STREAMFLOWS FOR A GIVEN AREA OF THE BASIN WERE ONE ABLE TO MAKE ITS WAY NORTHWARD.

AUGUST REVIEW...

AUGUST CERTAINLY WAS A DRYING MONTH FOR THE OHIO RIVER BASIN. THE AREA GENERALLY SAW BELOW AVERAGE RAINFALL AND SUBSEQUENT LOWERING STREAMFLOWS AND A REDUCTION IN SOIL MOISTURE FROM JULY. THE RECENT RAINFALL FROM THE REMNANTS OF TROPICAL STORM FAY HELPED TO BRING SOME STREAMFLOWS IN THE EASTERN BASIN BACK TO NORMAL, BUT RAINFALL DEFICITS IN THE SOUTHWEST AND NORTHERN HALF OF THE BASIN BROUGHT STREAMFLOWS TO LOWER LEVELS THAN JULY.

.....

AUGUST RAINFALL ANTECEDENT CONDITIONS

AUGUST WAS A DRIER THAN AVERAGE MONTH FOR NEARLY THE ENTIRE OHIO RIVER FORECAST BASIN. IN FACT, LARGE AREAS OF WESTERN KENTUCKY...SOUTHERN INDIANA...NORTHERN OHIO...WESTERN PENNSYLVANIA...AND NORTHERN WEST VIRGINIA WERE MUCH DRIER THAN AVERAGE, WITH RAINFALL 5 TO 20% OF A NORMAL AUGUST. THE VAST MAJORITY OF THE AREA ONLY GOT 30 TO 60% OF ITS NORMAL AUGUST RAINFALL. ONLY RELATIVELY SMALL AREAS IN NORTHWEST INDIANA AND SOUTHEAST OHIO RECEIVED NORMAL RAINFALL.

ADDITIONAL INFORMATION ON 30-DAY TO 1-YEAR RAINFALL CAN BE FOUND ON THE NOAA/NATIONAL WEATHER SERVICE/OHIO RIVER FORECAST CENTER WEBPAGE AT:

[HTTP://WWW.ERH.NOAA.GOV/ER/OHRFC/DROUGHT.HTML](http://www.erh.noaa.gov/er/ohrfc/drought.html)

.....

AUGUST SOIL MOISTURE ANTECEDENT CONDITIONS

SOIL MOISTURE IS AVERAGE IN MOST OF KENTUCKY...TENNESSEE...OHIO... PENNSYLVANIA...AND WEST VIRGINIA. DESPITE THE DRY AUGUST, SOIL MOISTURE REMAINS ABOVE NORMAL FOR INDIANA AND EASTERN ILLINOIS.

SOIL MOISTURE TABLE	PERCENTILE
MUCH WETTER THAN AVERAGE	>90
WETTER THAN AVERAGE	70-90
AVERAGE	31-69
BELOW AVERAGE	10-30
MUCH BELOW AVERAGE	<10

SOIL MOISTURE DATA IN THE TOP 5 FEET IS COURTESY OF THE NOAA/NATIONAL

WEATHER SERVICE/CLIMATE PREDICTION CENTER. THIS AND ADDITIONAL INFORMATION CAN BE FOUND ON THE INTERNET AT:

[HTTP://WWW.CPC.NCEP.NOAA.GOV/SOILMST/W.SHTML](http://www.cpc.ncep.noaa.gov/soilmst/w.shtml)

.....

#### AUGUST STREAMFLOW CONDITIONS

SOME STREAMS IN THE EASTERN OHIO RIVER BASIN JUST RECEIVED A BUMP UP TO NORMAL STREAMFLOW DUE TO THE RECENT PASSAGE OF THE REMNANTS OF FAY. OTHERWISE, THE MAJORITY OF STREAMFLOW IN THE OHIO RIVER BASIN IS EITHER AT NORMAL OR BELOW NORMAL. AREAS IN INDIANA TEND TO BE THE CLOSEST TO ABOVE NORMAL STREAMFLOW WHILE MOST AREAS OF KENTUCKY AND TENNESSEE ARE STILL SITTING BELOW NORMAL.

STREAMFLOW TABLE	PERCENTILE
MUCH WETTER THAN AVERAGE	>90
WETTER THAN AVERAGE	76-90
AVERAGE	25-75
DRIER THAN AVERAGE	10-24
MUCH DRIER THAN AVERAGE	<10

DAILY AND MONTHLY AVERAGE STREAMFLOW ARE OBTAINED FROM THE UNITED STATES GEOLOGICAL SURVEY. THIS DATA AND ADDITIONAL INFORMATION CAN BE OBTAINED FROM THE USGS ON THE INTERNET AT:

[HTTP://WATERMONITOR.GOV](http://watermonitor.gov)

.....

#### ATMOSPHERIC TELECONNECTION AND OSCILLATION FORECASTS FOR SEPTEMBER

TELECONNECTION/OSCILLATION	SIGN	RAINFALL
ARCTIC	NEUTRAL	NORMAL
NORTH ATLANTIC	NEUTRAL TO NEGATIVE	NORMAL
PACIFIC/NORTH AMERICAN	NEUTRAL	NORMAL
ENSO	NEUTRAL	NORMAL

TELECONNECTION INFORMATION IS COURTESY OF THE NOAA/NATIONAL WEATHER SERVICE/CLIMATE PREDICTION CENTER. THIS AND ADDITIONAL INFORMATION CAN BE FOUND ON THE INTERNET AT:

[HTTP://WWW.CPC.NCEP.NOAA.GOV](http://www.cpc.ncep.noaa.gov)

.....

#### WATER RESOURCES OUTLOOK AND DISCUSSION FOR SEPTEMBER

STREAMFLOWS ACROSS THE OHIO RIVER BASIN ARE LOOKING TO BE GENERALLY NORMAL TO BELOW NORMAL IN SEPTEMBER. THERE ARE LITTLE TO NO ATMOSPHERIC TELECONNECTION INDICATORS PREDICTING A DRASTIC SHIFT IN THE OVERALL PATTERN FROM AUGUST. THE WATERS OVER THE EQUATORIAL PACIFIC CONTINUE TO BE NORMAL, THOUGH THERE ARE SOME SIGNS THAT THE WATERS MAY BE WARMING AND CPC INDICATES THERE COULD BE A SLIGHT CHANCE OF A DEVELOPING EL NINO FOR LATE FALL AND WINTER. IN THE MEANTIME, WITH NO LARGE-SCALE CHANGES TO THE

OVERALL PATTERN FORECAST, THE MOST LIKELY SOURCE OF WIDESPREAD RAINFALL THROUGH SEPTEMBER WILL LIKELY BE FROM FORMER TROPICAL SYSTEMS MOVING UP INTO THE OHIO VALLEY. ANY SIGNIFICANT TROPICAL SYSTEM (OF WHICH ARE AT A CLIMATOLOGICAL PEAK IN SEPTEMBER) ENTERING THE AREA COULD ACT TO DRIVE UP STREAMFLOWS TO NORMAL OR ABOVE NORMAL FOR AN AREA OF THE OHIO RIVER FORECAST BASIN. THAT WOULD BE THE KEY FEATURE TO WATCH THROUGH THE MONTH.

THIS STREAMFLOW FORECAST IS BASED ON THE ADVANCED HYDROLOGIC PREDICTION SERVICE (AHPS) PROBABILISTIC FORECASTS...THE LATEST ATMOSPHERIC MODEL FORECASTS...HISTORIC TRENDS...AND CLIMATE PREDICTION CENTER OUTLOOKS.

.....

SEPTEMBER BASIN EXPECTED STREAMFLOW OUTLOOK

<10=MUCH BELOW 10-24=BELOW 25-75=AVERAGE 75-90=ABOVE >90=MUCH ABOVE

BASIN	BASIN NAME	STREAMFLOW PERCENTILE FORECAST
AGU	UPPER ALLEGHENY RIVER	25-75
AGL	LOWER ALLEGHENY RIVER	25-75
MNU	UPPER MONONGAHELA RIVER	25-75
MNL	LOWER MONONGAHELA RIVER	25-75
BVR	BEAVER RIVER	25-75
MKU	UPPER MUSKINGUM RIVER	25-75
MKL	LOWER MUSKINGUM RIVER	25-75
HOC	HOCKING RIVER	25-75
LKH	LITTLE KANAWHA RIVER	25-75
KAN	KANAWHA RIVER	10-25
SAY	BIG SANDY RIVER	25-75
SCI	SCIOTO RIVER	25-75
MIM	MIAMI RIVER	25-75
LIK	LICKING RIVER	25-75
KTY	KENTUCKY RIVER	25-75
GRN	GREEN RIVER	25-75
EFW	EAST FORK WHITE RIVER	25-75
WHT	WHITE RIVER	25-75
WBU	UPPER WABASH RIVER	25-75
WBL	LOWER WABASH RIVER	25-75
LWA	LITTLE WABASH RIVER	25-75
GTL	GREAT LAKES DRAINAGE	25-75
MAU	MAUMEE RIVER	25-75
CMU	UPPER CUMBERLAND RIVER	10-25
CML	LOWER CUMBERLAND RIVER	25-75
OHW	OHIO RIVER WHEELING	25-75
OHP	OHIO RIVER PARKERSBURG	25-75
OHH	OHIO RIVER HUNTINGTON	25-75
OHC	OHIO RIVER CINCINNATI	25-75
OHL	OHIO RIVER LOUISVILLE	25-75
OHS	OHIO RIVER SMITHLAND	25-75

.....  
 VISIT OUR WATER RESOURCES WEBSITE AT [www.erh.noaa.gov/ohrfc/WRO.shtml](http://www.erh.noaa.gov/ohrfc/WRO.shtml)

IN ADDITION TO A 30-DAY STREAMFLOW OUTLOOK...YOU CAN ALSO OBTAIN A 60- AND 90-DAY OUTLOOK AT THE WEBSITE

\$\$  
Thomas Rench  
NNNN