U. S. Coast Guard Sector Ohio Valley

Waterways Action Plan

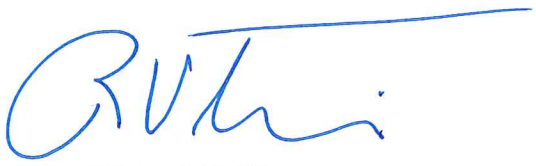
Executive Summary

The Sector Ohio Valley (SOHV) Waterways Action Plan (WAP) provides the marine industry, U.S. Coast Guard (USCG), U.S. Army Corps of Engineers (USACE), States and local governments with a plan for facilitating the safe and orderly movement of traffic during extreme conditions on the inland rivers within SOHV's area of responsibility. In the event the implantation of a security plan conflicts with the WAP, the requirements of the security plan shall take precedence. This SOHV plan supports the D8 WAP originally promulgated in 2007, which gives overall context, history and intent for WAPS throughout the district. http://www.uscg.mil/d8/westernrivers/docs/Waterways%20Action%20Plan%20October%204%202007.pdf

The WAP is a living document that should be frequently updated. The USCG shall conduct an annual review of the WAP in conjunction with industry partners and USACE to verify the accuracy of the plan and communications information. This plan establishes one common framework for all parties to use when taking proactive or reactive steps to deal with high water, high velocity, low water and ice conditions. The overall goal of this plan is to ensure safety of live and navigation, protection of infrastructure and property, and to prevent marine casualties.

Conference calls between USCG, USACE and industry stakeholders have proven critical throughout years of response to river emergencies, and they remain useful tools to successfully manage river emergencies.

Industry leaders, USACE and USCG from Pittsburgh, PA, Huntington, WV, Louisville, KY, Paducah, KY and Nashville, TN worked jointly to update the 2014 SOHV WAP. The diligent efforts and coordination of all parties working close together to manage the waterways allowed for successful publication of the WAP.



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Record of Changes from previous revision (June 2013)

1. Added Signature pages
2. Added Record of Changes
3. Updated pictures on cover page to help distinguish version

Section 2

2.A Updated USCG/USACE position chart
2.A.1 Updated boundaries of each industry committee's responsibilities
Changed "WAPI" to "WAP", also changed throughout the document
Added TRPRC title to organizational description
2.A.2 Updated committee/industry point of contact information
2.B.1 Updated Safety Advisory description to include Safety Marine Information Broadcast (SMIB)

Section 3

3.A.1 Updated communications plans with new points of contact
Added new ice conditions Broadcast Notice to Mariners and updated ice conditions SITREP

3.A.4 Updated contact information
3.A.5 Updated website addresses
3.B.1 Updated RIAC overview
Updated industry contact information
Updated website addresses
3.B.2 Updated LORMC overview
Updated industry contact information
Updated website addresses
3.C.1 Updated industry contact information
3.C.2 Updated government contact information
3.C.3 Updated website addresses
3.D. Updated industry contact information
Updated Lock & Dam vessel queue website address

Section 4

Throughout Section 4, USCG broadcast titles were changed to correctly reflect if the broadcast was a Safety Marine Information Broadcast (SMIB) or Broadcast Notice to Mariners (BNM).
The example broadcasts reflecting cancellation broadcasts were removed.
Removed example SMIB broadcasts for areas where a consolidated SMIB broadcast goes out at the watch phase.
4.A.7 Removed Low Water broadcast because there is no low water action plan
4.A.8 Removed Low Water broadcast because there is no low water action plan
4.A.9 Removed Low Water broadcast because there is no low water action plan
4.A.10 Removed Low Water broadcast because there is no low water action plan
4.A.11 Removed Low Water broadcast because there is no low water action plan
4.A.12 Removed references to safety zone
Removed conference call at watch phase
4.A.13 Lowered trigger point for watch phase from 80' to 50'
Lowered trigger point for action phase from 280' to 120'
Removed references to safety zone
Removed conference call at watch phase

4.A.14 Removed conference call at watch phase
4.A.15 Lowered watch phase trigger from 100’ to 80’
Removed conference call at watch phase
4.A.16 Removed conference call at watch phase
Updated BNM to include contacting the lock operator to see if weir navigation is safe
Removed 47’ LG as an action phase trigger
4.A.17 Removed 47’ LG as an action phase trigger
Removed conference call at watch phase
4.C.4 Added Chickamauga Lock & Dam to the trigger reading column
Increased watch phase trigger to 85,000 cfs
Increased action phase trigger to 100,000 cfs
Modified the definition of The Gorge to MM 446-454.5
Updated broadcasts to reflect new trigger points and mile markers
4,E.2 Changed broadcast titles to reflect high water, not low water as labeled
4.F.1 Reformatted table to remove extra line
4.G Updated action to reflect SCC automatic broadcast of SMIBs at watch phase.
4.H.2 Combined Max Locking and Potential Weir Navigation phases
Updated BNM to reflect contacting the lock operator to ensure weir navigation is safe
4.H.3 Combined Max Locking and Potential Weir Navigation phases
Updated BNM to reflect contacting the lock operator to ensure weir navigation is safe

Sector Ohio Valley Waterways Action Plan

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1. Geographic Description

1.A. USCG Sector Ohio Valley – Area of Responsibility

Sector Ohio Valley is comprised of all of Kentucky and West Virginia; in Missouri: Perry, Cape Girardeau, Scott, Mississippi and New Madrid Counties; in Tennessee: that portion of Lake County north and west of a line drawn from the Mississippi River at latitude 36˚ 20' N and longitude 89˚ 32' 30" W due east to Highway 78, thence northeast along Highway 78 to the Kentucky/Tennessee state line, and all other counties except Shelby, Tipton, Lauderdale, Dyer and Obion Counties; in Alabama: Colbert, Lawrence, Morgan, Marshall, Lauderdale, Limestone, Madison, and Jackson Counties; that portion of Pennsylvania south of latitude 41˚ 00' N and west of longitude 79˚ 00' W; those parts of Indiana and Ohio south of latitude 41˚00'N; in Illinois: Jackson, Williamson, Saline, Gallatin, Union, Johnson, Pope, Hardin, Alexander, Pulaski and Massac Counties, and in Randolph County, that part of the Upper Mississippi River below mile 109.9, including both banks; that part of the Lower Mississippi River above mile 869.0.

CG Marine Safety Unit Pittsburgh – Area of Responsibility	
Ohio River	MM 00.0 - MM 127.2
Monongahela River	MM 00.0 – MM 128.7
Allegheny River	MM 00.0 – MM 72.0
CG Marine Safety Unit Huntington – Area of Responsibility	
Ohio River	MM 127.2 – MM 401.3
Kanawha River	MM 00.0 – MM 97.0
Big Sandy River	MM 00.0 – MM 26.8
Elk River	MM 00.0 – MM 190.0
Muskingum River	MM 00.0 – MM 112.5
Little Kanawha River	MM 00.0 – MM 122.0
Sector Ohio Valley (Louisville) – Area of Responsibility	
Ohio River	MM 531.5 – MM 867.4
Green River	MM 00.0 – MM 199
Kentucky River	MM 00.0 – 258.6
Wabash River	MM 00.0 – MM 585.0
White River	MM 00.0 – MM 51.6
Rough River	MM 00.0 – MM 29.0
Cumberland River	MM 385.6 – MM 694.2
CG Marine Safety Detachment Cincinnati – Area of Responsibility	
Ohio River	MM 401.3 – MM 531.5
Licking River	MM 00.0 – MM 3.0
Miami River	MM 00.0 – MM 117.6
CG Marine Safety Unit Paducah – Area of Responsibility	
Ohio River	MM 867.4 – MM 981.0
Upper Mississippi River	MM 000.0 – MM 109.9
Lower Mississippi River	MM 869.0 – MM 953.8
Tennessee River	MM 000.0 – MM 080.0
Cumberland River	MM 000.0 – MM 080.0
CG Marine Safety Detachment Nashville – Area of Responsibility	
Tennessee River	MM 080.0 – MM 652.2
Cumberland River	MM 080.0 – MM 385.6
Tennessee – Tombigbee Waterway	MM 412.0 – MM 450.5

1. A.1. MTSR and Salvage Plan

In the event of river closures, salvage of vessels, or other events that negatively impact the marine transportation system, please reference the Sector Ohio Valley MTSR and Salvage Plans.

1.A.2. Hydrologic and Meteorological Factors Affecting Waterways Management

General:

The Ohio River and its tributaries form a complex system spread out over millions of square miles. In order to predict changes in conditions in this system, waterway managers must constantly monitor a number of hydrologic and meteorological factors. These include water flow, soil moisture, snow cover, precipitation, temperature, weather patterns and most importantly geography. Effective waterways managers must constantly monitor these factors and forecast river conditions in order to ensure they are adequately prepared to deal with a regional transportation emergency.

Numerous variables affect how much water is in the system at any given time. Listed below are some of the key variables:

Base Flow

The amount of water flow (measured in cubic feet per second (CFS)) along a section of river (usually measured at a dam). The USACE has established an average flow rate for each section of river. Average rates are based on flows consistent with normal weather patterns. A comparison of actual flow against the base flow is an indicator of increased or decreased water levels. The flow rate does not provide an indication of the duration of increased/decreased flows. Base flows and flow rate information are available from the USACE.

Soil Moisture

The amount of moisture concentrated in the soil. High soil moisture content means a large percentage of new precipitation will not be absorbed into the soil. This will result in increased runoff and a corresponding increase in water levels. Soil moisture averages and current levels are available from the U. S. Geological Survey (USGS) and state water/soil conservation agencies.

Precipitation

The amount of rain/sleet, etc. This becomes runoff and impacts water levels in the river systems. The amount and duration of precipitation are equally important factors. Precipitation averages and totals can be obtained from the USGS, the National Oceanic and atmospheric Association (NOAA), the National Weather Service (NWS) and State agencies.

Snow Cover

Snow cover is the buildup of snow that will melt and enter the water table and/or turn into runoff. Increase in snow cover will result in a corresponding increase in runoff and spring water levels. Information on snow cover can be obtained via NOAA, NWS and State weather services.

Temperatures

Average fall and winter temperatures determine the depth of frost, the amount of water entering the soil and the amount and duration of river ice. Below normal temperatures in the fall and winter increase the depth of frost, allowing less water to enter the soil during periods of precipitation, increasing the amount of runoff. This situation may also cause an increase in ice and subsequent problems due to ice dams or gorges, and difficulties with the lock and dam system. Above normal temperatures in the spring increases the amount of runoff from snow melt. Temperature information is available from USGS, NOAA, NWS and State agencies.

Geography Terrain

The physical characteristics of the river bend and shoreline. These characteristics impact river currents and the rate of change in water levels. Steep banks, levees, revetments, narrow channels, rock bottoms, adjacent flood plains and wetlands are just a few of the factors that determine how the river will rise or fall. In addition, geography has an effect on ice buildup, the effect of flooding, the time and complexity of maintenance and dredging and the effectiveness of traffic control measures.

River Slope

Rivers slope downstream toward their mouths. Slope is the change in elevation of the river, expressed as a ratio of the change in elevation between reference points and the number of miles between reference points. A working knowledge of slope is one of the best tools to quickly determine river conditions and the duration of low/high water events. As flow rates from the upper dams increase, the slope will increase as the upper end of the river in the vicinity of the upper dam increases in depth. If the increased flow rates remain constant, water levels downstream will rise and be sustained. As upper river water flow decreases, the river slope will decrease and water levels will crest sequentially down the river. The term for this decrease in flow and subsequent decrease in slope is called "leveling." Once the crest has passed through the system, and flow rates become more consistent, water levels and slope will return to normal.

"Leveling" also occurs when low water conditions prevail in the system. As the dams reduce flow in order to maintain their pools, less water becomes available downstream. As each successive dam reduces flow to maintain the nine foot channel, short term low water is caused in the next pool downstream until that dam holds enough water to maintain its required level. When dams are only able to maintain minimum pool or unable to maintain a minimum channel depth due to lack of sufficient water or loss of pool, traffic management may have to be initiated.

Weather Pattern Changes

Changes in weather patterns impact the river system by themselves and in conjunction with the factors listed above. One of the best known examples of this is the abnormal pattern that contributed significantly to the Great Flood of 1993. In this case, a wet-weather pattern persisted over the upper mid-west for over six months. This was caused by a weather front convergence zone which generated frequent and prolonged thunderstorms. In addition to the excessive rain, the area experienced an early snow melt, increasing spring runoff.

2. Parties and Roles
2.A. General

USACE POSITION	DUTIES AND RESPONSIBILITIES	EQUALS	USCG POSITION	DUTIES AND RESPONSIBILITIES
Head Lock operator	**Coordinate Traffic, L&D Operations, Maintains Pool**		**MSU Prevention/ Response Department Heads**	**Manages daily waterways management and casualty operations**
Lock Masters	**Oversees supervision and maintenance of project L&D**		**Prevention Department Heads per AOR**	**Manages and supervises daily prevention, casualty and incident response operations**
District Assistant Operations Manager	**Maintenance and oversight of District L&D projects**		**Prevention Department Heads per AOR**	**Manages and supervises daily prevention, casualty and incident response operations**
District Operations Manager	**Planning and Control of District L&D Projects**		**Prevention Department Heads per AOR**	**Manages and supervises daily prevention, casualty and incident response operations**
Commander/ District Engineer	**Oversees each District**		**MSU CO/XO or Sector Commander**	**Senior Officer in Charge of CG Unit and Area of Responsibility(AOR)**

The successful management of any river crisis is dependent on the cooperation of the waterway system participants. This includes agencies of the federal, state and local governments, industry groups, and the general public (See 2.A.1. below for listing of industry groups by AOR), this chapter identifies the key organizations in these areas, outlines their authority and responsibilities, and explains their roles during a river crisis. They groups serve a vital role in serving as a liaison between industry and federal agencies. These groups address waterways conditions for the Allegheny, Monongahela, Ohio, Upper Mississippi, Lower Mississippi, Tennessee and Cumberland Rivers.

This plan should be used in conjunction with existing plans. Its purpose is to pull together information from existing plans and identify critical problem areas based on federal agency experience, industry experience, and statistical analysis.

****** In addition to this plan, reference the Tennessee River Waterway Management Plan and the Cumberland River Waterway Management Plan.***

Tennessee River Waterway Management Plan

Cumberland River Waterway Management Plan

2.A.1. Industry Groups & Representatives (WAP, TRPRC, CORMIG, ICE, RIAC, LOMRC and TCIC)

2.A.1.a. MSU Pittsburgh AOR

2.A.1.a. 1. Waterways Association of Pittsburgh (WAP) is an industry based association which represents the maritime industry in navigation safety, waterway infrastructure, commercial vessel regulation and maritime labor issues in the Pittsburgh AOR. Various committees of the association review matters relating to vessel safety, navigation safety, maritime industry regulatory issues and waterway infrastructure.

2.A.1.a.2. The Three Rivers Pollution Response Council Inc., (TRPRC) is a mutual aid organization representing a partnership between industry, U.S. Coast Guard and EPA Region III, dedicated to the prevention of oil and hazardous substances entering the inland waterways. The Council assists members with the over all aspects of response planning, drilling, and training.

2.A.1.b.MSU Huntington AOR

2.A.1.b.1. Huntington District Waterway Association (HDWA) is a regional association of commercial river users whose boundaries coincide with the Army Corps of Engineers Huntington District boundaries. The boundary extends on the Ohio River from Hannibal L/D to Meldahl L/D and includes the Kanawha and Big Sandy Rivers. Five different associations comprised of The Huntington District Waterways Advisory Committee, The Navigational Subcommittee, the Big Sandy Improvement Committee, The Tri-State Fleeting Association, and The Kanawha River Improvement Committee came together to form the HDWA. The group acts as a representative for industries operating on the Ohio River in the Army Corps of Engineers Huntington District. The HDWA is coordinated by a volunteer chairman from industry.

2.A.1.c. SOHV Louisville AOR

2.A.1.c.1. Central Ohio River Marine Industry Group (CORMIG) is a committee of the central Ohio River Towing companies, Coast Guard and Army Corps Representatives formed to address navigation problems during significant changes in river conditions such as extreme low water and high water events. The committee has evolved to address all issues concerning Central Ohio River navigation and is the major liaison between the towing industry, the Coast Guard, and Army Corps of Engineers for river conditions stretching from Huntington, WV to Smithland, IL. CORMIG is coordinated by a volunteer chairman from industry..

2.A.1.d. MSU Paducah AOR

2.A.1.d.1. The Ohio River Ice Committee (ICE) MSU Paducah AOR is an ad hoc committee of the Ohio River towing companies formed to address navigation problems during the major ice event of 1977 – 1978 on the Ohio River. Subsequent to this crisis, the committee has evolved to address all issues concerning Ohio River navigation, especially issues related to river conditions in the Lower Ohio River Valley area, and is the major liaison between the towing industry, the Coast Guard, and the Army Corps of Engineers stretching from Smithland, IL to Cairo, IL. The Ice Committee also addresses river conditions impacting the Tennessee River and the Cumberland River. The Ice Committee is coordinated by a volunteer chairman from industry.

2.A.1.d.2. The River Industry Action Committee (RIAC) MSU Paducah AOR is a committee of the Upper Mississippi River and the lower Ohio River towing companies formed to address navigation problems during significant changes in river conditions such as extreme low water and high water events. The committee has evolved to address all issues concerning Upper Mississippi River navigation and is the major liaison between the towing industry, the Coast Guard, and the Army Corps of Engineers for river conditions for the entire UMR in MSU Paducah's AOR. RIAC is coordinated by a volunteer chairman from industry.

2.A.1.d.3. Lower Mississippi River Committee (LOMRC) MSU Paducah AOR is a committee of the Lower Mississippi River and the lower Ohio River towing companies formed to address navigation problems during significant changes in river conditions such as extreme low water and high water events. The committee has evolved to address all issues concerning Lower Mississippi River navigation and is the major liaison between the towing industry, the Coast Guard, and the Army Corps of Engineers for river conditions for the entire LMR in MSU Paducah's AOR. LOMRC is coordinated by a volunteer chairman from industry.

2.A.1.d.4. The Tennessee and Cumberland River Industry Committee (TCIC) MSD Nashville and MSU Paducah AOR serves as the primary committee for communicating among the towing companies operating on the Tennessee and Cumberland River within the Coast Guard Marine Safety Detachment Nashville and Marine Safety Unit Paducah Area of Responsibility. The TCIC Committee Chairman serves as the primary point of contact for relaying information, coordinating meetings, and setting up conference calls between all federal agencies and the towing industry. The primary purpose of the TCIC Committee is to address all issues concerning Tennessee and Cumberland River navigation and to act as the major liaison between the towing industry, the Coast Guard, the Tennessee Valley Authority and the Army Corps of Engineers throughout the Tennessee and Cumberland River Valleys.

2.B. Federal Agencies

The United States Code (USC) provides regulatory authority for establishing and authorizing work or structures constructed within the navigable waterways and provides regulations for maintaining navigation throughout U.S. territorial waters. Included as part of a national waterway system are numerous rivers, lakes and streams that comprise the inland waterway system. Navigation on these "navigable waters of the United States" is regulated primarily by the USCG. The USACE provides technical advice to the USCG to enable that agency to properly evaluate and make decisions on navigation safety. The USACE is also responsible for authorizing waterway projects, evaluating and maintaining navigable channels, and directing emergency flood control operations (such as activation of spillways). The Tennessee Valley Authority (TVA) maintains jurisdiction on the Tennessee River and Cumberland River and monitors river conditions through flows discharged from locks and dams on these rivers, such as Kentucky Lock & Dam and Barkley Lock & Dam.

2.B.1 United States Coast Guard (USCG)

Title 14, USC, defines USCG roles and responsibilities in establishing and maintaining the safety of ports and waterways; 33 CFR Part 165.20 gives COTP's and USCG District Commanders the authority to impose safety zones, security zones, and other restrictions to ensure the safe flow of navigation. Activities of the COTP's are overseen by the Commander, Eighth Coast Guard District, in New Orleans, LA. Activities of the Marine Safety Unit Commanding Officers are overseen by the Commander, Sector Ohio Valley, in Louisville, KY.

2.B.1.a. Safety Advisory

The simplest form of intervention is a Navigation Safety Advisory. It relies on the voluntary compliance of industry to limit risk and prevent vessel casualties. USCG advisories are usually issued after consultation with the USACE and industry-user groups. They can be originated by the USCG or self imposed by industry, and disseminated as a USCG Broadcast Notice to Mariners (BNM), Safety Marine Information Broadcast (SMIB) posted on the USACE bulletin board, posted on the River Industry Bulletin Board (RIBB), sent via the industry facsimile, or any combination of these methods. The purpose is to advise the marine industry of the existence of hazardous conditions and provide recommendations for navigating safely. Advisories can also be used to notify the marine industry of the Captain of the Port's (COTP's) intention to take action with respect to developing navigation conditions. Advisories are important tools that provide marine interests time to adjust their operations to avoid future problems.

2.B.1.b. Safety Zone

During extreme high or low water conditions the risk of commercial vessel navigation can become increasingly hazardous to the environment, persons and property. These extreme cases may require the establishment of a safety zone by the COTP that imposes vessel-operating restrictions. Consultation and deliberation with the USACE and industry-user groups usually precede implementation of a safety zone by the USCG. A safety zone entails the control of a portion of the river, tributary, or harbor. This enables the USCG to control access and/or prescribe operating restrictions on vessels seeking to navigate in the area. This approach can be applied to limited or large geographical areas and may involve simple or complex restrictions, such as:

- Minimum horsepower requirements per barge
- Maximum draft limits
- Maximum tow sizes
- Specific tow configurations
- Length and breadth limits
- Safe speed zones, no-passing zones, or no-meeting zones
- Helper or towboat requirements
- Traffic separation schemes
- Reporting requirements
- Tank barge prohibitions or the exclusion of all vessels from the safety zone

The establishment of a safety zone may include active control of vessel traffic through an area or it may be conducted passively, relying on compliance to limit risk. Safety zones using passive control have been imposed on other waterways during periods of high or abnormally low water and when local construction or pollution response cleanup operations are impacted by passing traffic.

2.B.1.c. Security Zone

In some cases a security zone may be implemented to protect persons, property and the environment from actual or potential threats related to terrorism or destruction. These extreme cases may require the establishment of a security zone by the COTP that imposes restrictions on a vessel or a specific area of the river. Consultation and deliberation with the USACE, and industry-user groups usually precede implementation of a security zone by the USCG. A security zone entails the control of a portion of the river, tributary, or harbor. This enables the USCG to control access and/or prescribe restrictions on vessels and persons. This approach can be applied to limited or large geographical areas and may involve simple or complex restrictions. The establishment of a security zone may include active control of vessel traffic and intensive screening of persons entering through an area.

2.B.1.d. Captain of the Port Order (COTP Order)

Captain of the Port Orders are specific directions to an individual, facility, or vessel. They are detailed and exact in scope. Issued under the authority of the Ports and Waterways Safety Act, compliance with COTP Orders is required, and failure may result in civil or criminal penalty action. In general, COTP Orders will only be used when a terminal or vessel appears to be operating in an unsafe manner or to reduce damage to the environment or property.

2.B.2. United States Army Corps of Engineers (USACE)

Title 33 U.S.C., defines the USACE roles and responsibilities regarding development of, or change to, waterfront facilities, weirs, dams or dikes. Specifically, the USACE is authorized to review and approve all changes to hydrodynamic structures for the purposes of maintaining a navigable channel. In addition, the USACE is charged with conducting operations to maintain the physical nature of a navigable channel on particular waterways. Generally, the USACE has the responsibility to maintain a nine foot congressionally authorized project depth within the navigable channel on the Ohio River System. The USACE is also responsible for directing emergency flood control operations and collecting information on flood stages and damage.

2.B.3. Tennessee Valley Authority (TVA)

Under the TVA Act of 1993, as amended, 6 U.S.C. 831 – 831 dd (1994), TVA is authorized to construct and operate dams and reservoirs in the Tennessee River and its tributaries to promote navigation and to control destructive floods. Also under the TVA Act, TVA has broad responsibilities for the “development of the natural resources of the Tennessee River drainage basin and of such adjoining territory as may be related to or materially affected by the development for the general purpose fostering an orderly and proper, physical, economic, and social development of said areas. The broad responsibilities placed on the Tennessee Valley Authority relate to navigability, flood control, reforestation, marginal lands, and agricultural and industrial development of the whole Tennessee Valley.” Those responsibilities specifically include the construction and maintenance of the dams and reservoirs in the Tennessee River and its tributaries and providing a nine-foot channel in the river.

3.A.1.a. MSU Pittsburgh AOR Ice Communications

The U. S. Coast Guard Captain of the Port (COTP) Pittsburgh, in conjunction with the Waterways Association of Pittsburgh (WAP), issues safety advisories when ice conditions pose a threat to the safe navigation of the Ohio, Monongahela and Allegheny rivers.
1. MSU Pittsburgh will coordinate a pre-seasonal Ice Committee Teleconference on or about the first week of December of each year. Pittsburgh Ice Committee members include the U. S. Coast Guard Captain of the Port Pittsburgh, The WAP President and head of the Navigation Committee, designated representatives from the U. S. Army Corps of Engineers, Pittsburgh District, and National Weather Service.
2. Coordinate communications of waterway conditions from WAP members during extended periods of freezing temperatures & river icing.
3. Issue Broadcast Notice to Mariners and SITREPS, as needed. An example broadcast and SITREP are listed below; previous message traffic and internal Coast Guard correspondence are located in the Waterways Action Plan\Ice Ops located in MSU Pittsburgh's shared electronic folder.
4. Coordinate scheduled Ice Committee Teleconferences, as needed.
5. Consider issuing navigation restrictions.
6. Over flights are generally performed by the U.S. Coast Guard aviation or U. S. Coast Guard Auxiliary assets, and will be requested through Sector Ohio Valley via CGMS message traffic. Additionally Pennsylvania State Police assets have been utilized. Contact information for Aviation Unit V Latrobe, PA Primary contact 724-520-3200, Alternate 724-8288; Aviation Unit VI Franklin, PA Primary 814-437-3424, Alternate 814-676-6596. Allegheny County Airport is the primary service facility available to aircraft, Primary Contact 412-469-6800, Radio frequencies Tower: 121.70MHZ, Services 129.95MHZ.

FM COGARD MSU PITTSBURGH PA
TO COMCOGARD SECTOR OHIO VALLEY LOUISVILLE KY
BT
UNCLAS
SUBJ: REQUEST BROADCAST NOTICE TO MARINERS BEGINNING *INSERT DATE*.
1. THE U. S. COAST GUARD CAPTAIN OF THE PORT (COTP) PITTSBURGH, IN CONJUNCTION WITH THE WATERWAYS ASSOCIATION OF PITTSBURGH, HAS ISSUED THIS SAFETY ADVISORY DUE TO ICE ACCUMULATIONS ON THE ALLEGHENY, MONONGAHELA AND OHIO RIVERS. IT IS IMPERATIVE THAT ALL NECESSARY ACTIONS BE TAKEN TO MITIGATE THE RISKS POSED BY THESE CONDITIONS AND THAT ALL MARINERS EXERCISE EXTREME CAUTION. FACILITY OPERATORS AND FLEETING AREA MANAGERS ARE REMINDED TO REVIEW THEIR FLEETING PROCEDURES ENSURING THE CONTINOUS SURVEILLANCE OF FLEETING AREAS, ENSURE FLEETS ARE SECURED WITH AN ADEQUATE NUMBER OF LINES, THAT LINES ARE DOUBLED-UP AT THE HEAD OF THE FLEET, AND SECURING TOWBOAT ASSISTANCE IF NECESSARY.
BT
NNNN

FM COGARD MSU PITTSBURGH PA
TO COMCOGARD SECTOR OHIO VALLEY LOUISVILLE KY
BT
UNCLAS
SUBJ: REQUEST BROADCAST NOTICE TO MARINERS BEGINNING *INSERT DATE*.
SIGNIFICANT ICE ACCUMULATION IS FORMING IN THE VICINITY OF **[MILE NUMBER]** ON THE **[ALLEGHENY-MONONGAHELA-OHIO RIVER].** MARINERS MUST REPORT ALL VESSELS THAT CANNOT MAKE WAY DUE TO ICE AND TANK BARGE MOVEMENT INTO AND WITHIN THE CAPTAIN OF THE PORT PITTSBURGH ZONE. VESSEL RESTRICTIONS AND TOW CONFIGURATION REQUIREMENTS MAY BE IMPOSED TO FACILITATE SAFETY TRANSIT AND LOCKAGES IN THE AREA. ALL MARINERS ARE URGED TO USE EXTREME CAUTION WHEN TRANSITING THE AREA. THE COAST GUARD CAN BE REACHED ON VHF-FM CHANNEL 16.
BT
NNNN

FM COGARD MSU PITTSBURGH PA
TO CCGDEIGHT NEW ORLEANS LA//DP/DPW//
COGARD MSD CINCINNATI OH
COGARD MSU HUNTINGTON WV
USCGC OSAGE
COMCOGARD SECTOR OHIO VALLEY LOUISVILLE KY
COMCOGARD SECTOR UPPER MISSISSIPPI RIVER ST LOUIS MO
COGARD AIRSTA DETROIT MI
INFO CDRUSAED PITTSBURGH PA
BT
UNCLAS //N03006//
SUBJ: SITREP ONE, ICE CONDITIONS ON THE ALLEGHENY, MONONGAHELA, AND
OHIO RIVER.
A. OHIO RIVER VALLEY WATERWAYS MANAGEMENT PLAN.
1. SITUATION: THE MSU PITTSBURGH AOR HAS EXPERIENCED SEVERAL WEEKS OF SUB-FREEZING TEMPERATURES. AS A RESULT, ACCUMULATIONS OF ICE HAVE FORMED ON ALL RIVERS WITHIN THE ZONE. NAVIGABLE CHANNELS REMAIN OPEN TO VESSEL TRAFFIC, WITH THE EXCEPTION OF THE UPPER REACHES *OF THE XXXXXX RIVER BEYOND L/D #X*. WEATHER FORECASTS FOR THE AREA INDICATE A *HIGH/LOW* PROBABILITY OF *SNOW/FREEZING RAIN* OVER THE NEXT 48 HOURS WITH TEMPERATURES EXPECTED TO *RISE TO/FALL TO/STABILIZE BETWEEN XX-XX* DEGREES FARENHEIT, *INCREASING/DECREASING* THE LIKELIHOOD OF NEW ICE FORMATION OR BUILD-UP.
2. ACTION TAKEN:
INSERT DTG: MSU PITTSBURGH IS HOSTING A TELECONFERENCE WITH THE OHIO RIVER VALLEY ICE COMMITTEE WHICH INCLUDES MEMBERS FROM: US ARMY CORPS OF ENGINEERS, NATIONAL WEATHER SERVICE, CG MSU HUNTINGTON, CG SECTOR OHIO VALLEY, CGC OSAGE, AND LOCAL INDUSTRY TO ASSESS CURRENT OPERATING CONDITIONS.
LIST RESTRICTIONS
3. FUTURE PLANS:
A. ICE COMMITTEE TELECONFERENCE SCHEDULED FOR *INSERT DTG*.
B. CGAUX OVERFLIGHT OF AOR SCHEDULED FOR *INSERT DTG*.
C. MSU PITTSBURGH WILL CONTINUE TO MONITOR SITUATION WITH INDUSTRY STAKEHOLDERS AND INITIATE OVERFLIGHTS AS NECESSARY. COTP PITTSBURGH WILL CONSIDER INPUT PROVIDED BY ALL INVOLVED AND APPLY VESSEL RESTRICTIONS, AS NEEDED, BASED UPON CHANGING CONDITIONS WITHIN THE MSU PITTSBURGH AOR.
BT
NNNN

3.A.5. Ohio Valley Internet Information Communications Plan

INTERNET SITE PURPOSE	ADDRESS
River Industry Bulletin Board (R.I.B.B.)	http://www.ribb.com/index.php
National Response Center (NRC) – Report Pollution / Terrorist Activity	http://www.nrc.uscg.mil/nrchp.html
Lock & Dam Vessel Queues	http://corpslocks.usace.army.mil/lpwb/f?p=121:3:0:
Kentucky / Barkley Lock & Dam Information	http://explorekentuckylake.com/weather.htm
National Weather Service (NWS) – River Forecasts	http://www.srh.noaa.gov/lmrfc/?n=lmrfc-mississippiandohioriverforecast
U.S. Army Corps of Engineers – River Gauges	http://www.lrd-wc.usace.army.mil/text/navrpti.txt
U.S. Army Corps of Engineers – River Navigation Charts	http://www.agc.army.mil/Missions/Echarts/InlandChartBooks.aspx
Tennessee Valley Authority (TVA) – TNR / CMR	http://www.tva.gov/river/lakeinfo/index.htm
Tennessee Valley Authority (TVA) – Barkley L&D Flows	http://lakeinfo.tva.gov/htbin/lakeinfo?site=BAH&DataType=All&submit=View+info
Tennessee Valley Authority (TVA) – Kentucky L&D Flows	http://lakeinfo.tva.gov/htbin/lakeinfo?site=KYH&DataType=All&submit=View+info
The River School – River Training & Orientation	http://www.riverschool.com/
Incident Command System (ICS) Courses – Response Training	http://training.fema.gov/EMIWEB/IS/crslist.asp
National Incident Management System (NIMS) Courses – Response Training	http://training.fema.gov/IS/NIMS.asp
U.S. Coast Guard Port Security Directorate (MTSA Info)	https://homeport.uscg.mil/mycg/portal/ep/channelView.do?channelId=-24885&channelPage=%2Fep%2Fchannel%2Fdefault.jsp&pageTypeId=13489
U.S. Coast Guard – Eighth District Site – New Orleans, LA	Sector New Orleans Homeport Link
U.S. Coast Guard – Sector Ohio Valley – Louisville, KY	Sector Ohio Valley Homeport Link
U.S. Coast Guard – Sector Upper Miss. River - St. Louis, MS	Sector Upper Mississippi River Homeport Link
U.S. Coast Guard - Marine Safety Unit – Paducah, KY	MSU Paducah Via Sector Ohio Valley Homeport
U.S. Coast Guard - Marine Safety Unit – Huntington, WV	MSU Huntington Via Sector Ohio Valley Homeport
U.S. Coast Guard – Sector Lower Mississippi River – Memphis, TN	Sector Lower Miss. River Homeport Link

3.B.1.c. Upper Mississippi River Internet Information Communications Plan

INTERNET SITE PURPOSE	ADDRESS
River Industry Bulletin Board (R.I.B.B.)	http://www.ribb.com/index.php
National Response Center (NRC) – Report Pollution / Terrorist Activity	http://www.nrc.uscg.mil/nrchp.html
Lock & Dam Vessel Queues	http://corpslocks.usace.army.mil/lpwb/f?p=121:3:0:
National Weather Service (NWS) – River Forecasts	http://www.riverwatch.noaa.gov/u_mississippi.shtml
U.S. Army Corps of Engineers – River Gauges	http://mvs-wc.mvs.usace.army.mil/trans/gages.html
U.S. Army Corps of Engineers – River Navigation Charts	http://www.agc.army.mil/Missions/Echarts/InlandChartBooks.aspx
The River School – River Training & Orientation	http://www.riverschool.com/
Incident Command System (ICS) Courses – Response Training	http://training.fema.gov/EMIWEB/IS/crslist.asp
National Incident Management System (NIMS) Courses – Response Training	http://training.fema.gov/IS/NIMS.asp
U.S. Coast Guard Port Security Directorate (MTSA Info)	https://homeport.uscg.mil/mycg/portal/ep/channelView.do?channelId=-24885&channelPage=%2Fep%2Fchannel%2Fdefault.jsp&pageTypeId=13489
U.S. Coast Guard – Eighth District Site – New Orleans, LA	Sector New Orleans Homeport Link
U.S. Coast Guard – Sector Ohio Valley – Louisville, KY	Sector Ohio Valley Homeport Link
U.S. Coast Guard – Sector Upper Miss. River - St. Louis, MS	Sector Upper Mississippi River Homeport Link
U.S. Coast Guard - Marine Safety Unit – Paducah, KY	MSU Paducah Via Sector Ohio Valley Homeport
U.S. Coast Guard – Sector Lower Mississippi River – Memphis, TN	Sector Lower Miss. River Homeport Link
U.S. Army Corps of Engineers - Channel Patrol:	http://www.mvs.usace.army.mil/Missions/Navigation/Surveys/ChannelPatrol.aspx
U.S. Army Corps of Engineers - Navigation Information Connection:	http://www2.mvr.usace.army.mil/nic2/default.cfm
U.S. Army Corps of Engineers - Weekly Navigation Status Reports:	http://www.mvs.usace.army.mil/Missions/Navigation/StatusReports.aspx

3.B.2. Lower Mississippi River

Lower Mississippi River Committee (LOMRC) is a committee of the Lower Mississippi River and the lower Ohio River towing companies, formed to address navigation problems during significant changes in river conditions such as extreme low water and high water events. The committee has evolved to address all issues concerning Lower Mississippi River navigation and is the major liaison between the towing industry, the Coast Guard, and the Army Corps of Engineers for river conditions on the LMR in MSU Paducah's AOR. LOMRC is coordinated by a volunteer chairman from industry.

3.B.2.a. Lower Mississippi River Towing Industry Communications Plan (LOMRC)

COMPANY / ORGANIZATION	DESIGNATED CONTACT	OFFICE PHONE NUMBER	E-MAIL ADDRESS	WHEN CONTACTED
Lower Mississippi River Committee (LOMRC)	LOMRC Chairman Jay McDaniel	225-201-3006 – W 225-978-2984 - C	Jay.McDaniel@kirbycorp.com	All Situations
Lower Mississippi River Committee (LOMRC)	LOMRC Co-Chair Benny Ainsworth	314-481-8828 W 314-724-6083 C	Benny.ainsworth@adm.com	All Situations
Ingram Barge Co.	Frank Johnson John Operle Todd Brown	270-441-1649 –W 270-210-5912 – C 270-441-1606 – W 270-210-6183 – C 270-441-1664 – W 270-832-2379 – C	frank.johnson@ingrambarge.com john.operle@ingrambarge.com tom.haley@ingrambarge.com	All Situations
AEP River Operations	Jeff Stover Jimmy Brown	573-334-8212	jgstover@AEPriverops.com jabrown@AEPriverops.com	All Situations
Marquette Transportation	Tom More Steve Bryan David Varvel Chris Myskowski David Griggs	270-443-9404	tmore@marquettetrans.com sbryan@marquettetrans.com dvarvel@marquettetrans.com cmyskowski@marquettetrans.com dgriggs@marquettetrans.com	All Situations
Kirby Inland Marine	Jay McDaniel	225-201-3006 w 225-978-2984 c	Jay.McDaniel@kirbycorp.com	All Situations
ARTCO	Bruce Hussell	314-481-8828	b_hussell@admworld.com	All Situations
American Commercial Barge Line (ACBL)	Chris Primm Mark Dougherty	812-288-1968 812-288-0303 (24 hrs)	cdprimm@acbl.net mark.dougherty@acbl.net	All Situations

COMPANY / ORGANIZATION	DESIGNATED CONTACT	OFFICE PHONE NUMBER	E-MAIL ADDRESS	WHEN CONTACTED
Luhr Brothers, Inc.	Mike Dunn Rodney Linker	314-705-2332 618-281-4106	michaeld@htc.net rlinker@lhur.com	All Situations Low Water Dredging
Alter Barge Line	Randy Kirschbaum	563-344-5250	Randyk@alterbarge.com	All Situations
Canal Barge Line	Paul Barnes	504-585-4623	pbarnes@canalbarge.com	All Situations
Magnolia Marine	Lester Cruse	800-696-5921(24 hrs) 601-831-1406 (Cell)	lester.cruse@ergon.com lcruseiii@gmail.com	All Situations
Ergon Marine	Danny Koestler	601- 636-6552	danny.koestler@ergon.com	All Situations
Florida Marine	Jerry Wiltz Troy Hotard	985-629-2082	jerryw@flmarine.com thotard@flmarine.com	All Situations

3.B.2.b. Lower Mississippi River Government Agency Communications Plan

GOVERNMENT AGENCY	DESIGNATED CONTACT	PHONE NUMBER	E-MAIL ADDRESS	WHEN CONTACTED
U.S. Coast Guard Sector Ohio Valley Sector Command	Capt Richard Timme CDR Thomas Kaminski CDR Carolyn Beatty	502-779-5411 502-779-5412 502-779-5448	richard.timme@uscg.mil Thomas.J.Kaminski@uscg.mil carolyn.m.beatty@uscg.mil	All Situations
U.S. Coast Guard Sector Ohio Valley Buoy Tenders	CWO Dan Payne Sector SOHV Comms Center	502-779-5301 1-800-253-7465	Daniel.C.Payne@uscg.mil	Aids to Navigation Issues
U.S. Coast Guard MSU Paducah	CDR Malcolm McLellan LT Dan McQuate	270-442-1621 X 2101 270-442-1621 X 2110	malcolm.r.mclellan@uscg.mil Daniel.J.McQuate@uscg.mil	All Situations
U.S. Army Corps of Engineers Cairo, IL GAUGE Reading	Cairo, IL GAUGE Phone Number	618-734-0577	Not Applicable	Lower Miss. River Low / High Water
U. S. Army Corps of Engineers Memphis District	Don Mayer	901-544-3764	Donald.V.Mayer@usace.army.mil	Lower Miss. River Low / High Water

3.B.2.c. Lower Mississippi River Internet Information Communications Plan

INTERNET SITE PURPOSE	ADDRESS
River Industry Bulletin Board (R.I.B.B.)	http://www.ribb.com/index.php
National Response Center (NRC) – Report Pollution / Terrorist Activity	http://www.nrc.uscg.mil/nrchp.html
Lock & Dam Vessel Queues	http://corpslocks.usace.army.mil/lpwb/f?p=121:3:0:
National Weather Service (NWS) – River Forecasts	http://www.srh.noaa.gov/lmrfc/?n=lmrfc-mississippiandohioriverforecast
U.S. Army Corps of Engineers – River Gauges	http://www.lrd-wc.usace.army.mil/text/navrpti.txt
U.S. Army Corps of Engineers – River Navigation Charts	http://www.agc.army.mil/Missions/Echarts/InlandChartBooks.aspx
The River School – River Training & Orientation	http://www.riverschool.com/
Incident Command System (ICS) Courses – Response Training	http://training.fema.gov/EMIWEB/IS/crslist.asp
National Incident Management System (NIMS) Courses – Response Training	http://training.fema.gov/IS/NIMS.asp
U.S. Coast Guard Port Security Directorate (MTSA Info)	https://homeport.uscg.mil/mycg/portal/ep/channelView.do?channelId=-24885&channelPage=%2Fep%2Fchannel%2Fdefault.jsp&pageTypeId=13489
U.S. Coast Guard – Eighth District Site – New Orleans, LA	Sector New Orleans Homeport Link
U.S. Coast Guard – Sector Ohio Valley – Louisville, KY	Sector Ohio Valley Homeport Link
U.S. Coast Guard – Sector Upper Miss. River - St. Louis, MS	Sector Upper Mississippi River Homeport Link
U.S. Coast Guard - Marine Safety Unit – Paducah, KY	MSU Paducah Via Sector Ohio Valley Homeport
U.S. Coast Guard – Sector Lower Mississippi River – Memphis, TN	Sector Lower Miss. River Homeport Link

3.C. Tennessee River Communications Plan

The Tennessee and Cumberland River Industry Committee (TCIC) MSD Nashville and MSU Paducah AOR serves as the primary committee for communicating among the towing companies operating on the Tennessee and Cumberland River within the Coast Guard Marine Safety Detachment Nashville and Marine Safety Unit Paducah Area of Responsibility. The TCIC Committee Chairman serves as the primary point of contact for relaying information, coordinating meetings, and setting up conference calls between all federal agencies and the towing industry. The primary purpose of the TCIC Committee is to address all issues concerning Tennessee and Cumberland River navigation and to act as the major liaison between the towing industry, the Coast Guard, the Tennessee Valley Authority and the Army Corps of Engineers throughout the Tennessee and Cumberland River Valley.

3.C.1. Tennessee River Towing Industry Communications Plan

COMPANY / ORGANIZATION	DESIGNATED CONTACT	PHONE NUMBER	E-MAIL ADDRESS	WHEN CONTACTED
Tennessee and Cumberland River Industry Committee (TCIC)	TCIC Chairman Billy Poindexter Jr.	270-441-1638 w 270-853-2195 c	billy.poindexterjr@ingrambarge.com	All Situations
Ingram Barge Co.	Steve Southern Billy Poindexter Jr.	270-441-1634 w 270-210-7726 c 270-441-1638 w 270-853-2195 c	Steve.southern@ingrambarge.com Billy.PoindexterJr@ingrambarge.com	All Situations
Tennessee Valley Towing (TVT)	Harley Hall Mark Mayfield	270-554-0154	hhall@tvtinc.com mmayfield@tvtinc.com	All Situations
Hunter Marine	Glenn Hendon	615-352-6935 615-352-6765 (home)	ghendon@huntermarine.net operations@huntermarine.net	All Situations
Crounse Corporation	Randy Bowling	270-444-9611	rbowling@crounse.com	All Situations
American Commercial Barge Line (ACBL)	Chris Primm Mark Dougherty	812-288-1968 812-288-0303 (24 hrs)	cdprimm@acbl.net mark.dougherty@acbl.net	All Situations
Serodino	Tom Klemisch Bill Calohan	423-942-7000 423-821-1311 (home) 423-785-7809 (home)	Aqua_knot@msn.com pete@serodinoinc.com BillC@serodinoinc.com	All Situations
Canal Barge Lines	Paul Barnes	504-585-4623 504-656-7000 (home)	pbarnes@canalbarge.com	All Situations
Magnolia Marine	Lester Cruse Michael Carpenter	800-696-5921(24 hrs) 601-831-1406 (Cell) 601-638-5921	lester.cruse@ergon.com lcruseiii@gmail.com Michael.carpenter@ergon.com	All Situations

3.C.2. Tennessee River Government Agencies Communications Plan

GOVERNMENT AGENCY	DESIGNATED CONTACT	PHONE NUMBER	E-MAIL ADDRESS	WHEN CONTACTED
U.S. Coast Guard Sector Ohio Valley Sector Command	Capt Richard Timme CDR Thomas Kaminski CDR Carolyn Beatty	502-779-5411 502-779-5412 502-779-5448	richard.timme @uscg.mil Thomas.J.Kaminski@uscg.mil carolyn.m.beatty@uscg.mil	All Situations
U.S. Coast Guard Sector Ohio Valley Buoy Tenders	CWO Dan Payne Sector SOHV Comms Center	502-779-5301 1-800-253-7465	Daniel.C.Payne@uscg.mil	Aids to Navigation Issues
U.S. Coast Guard MSU Paducah	CDR Malcolm McLellan LT Dan McQuate	270-442-1621 X 2101 270-442-1621 X 2110	malcolm.r.mclellan@uscg.mil Daniel.J.McQuate@uscg.mil	All Situations
U.S. Coast Guard MSD Nashville	LCDR Douglas Salik LT Patrick Grizzle	615-736-5421	Douglas.salik@uscg.mil patrick.j.grizzle@uscg.mil	All Situations
U.S. Army Corps of Engineers Louisville District Office	District L&D Manager Gene Dowell	502-315-6694	Eugene.A.Dowell@usace.army.mil	Lock & Dam Operations
U.S. Army Corps of Engineers Nashville District	Navigation Branch Ray Bess	615-736-7799	Ray.Bess@lrn02.usace.army.mil	Lock & Dam Operations
U.S. Army Corps of Engineers Louisville District Smithland Lock and Dam	Smithland Lockmaster Denny Craig	502-315-6731	William.D.Craig@usace.army.mil	Tennessee, Cumberland, Ohio River Low Water
U.S. Army Corps of Engineers Louisville District Area Lockmaster LD52/53/Olmsted	Area Lockmaster Jimmy Nix	618-564-2842	James.L.Nix@usace.army.mil	Tennessee, Cumberland, Ohio River Low Water
U.S. Army Corps of Engineers Louisville District LD 52	52 Lockmaster Randy Robertson	618-564-2842	Charles.R.Robertson@usace.army.mil	Tennessee, Cumberland, Ohio River Low Water
U.S. Army Corps of Engineers Louisville District LD 53	53 Lockmaster Ron Kelly	618-742-6213	Ronald.L.Kelly@usace.army.mil	Tennessee, Cumberland, Ohio River Low Water
U.S. Army Corps of Engineers Nashville District (Tennessee Locks / Cumberland Locks and Dams)	Jeff Ross Gerald Choat	615-736-7996 615-347-1746 (cell) 615-736-5972 615-892-0216 (cell)	Jeffrey.Ross@usace.army.mil Gerald.D.Choat@usace.army.mil	Tennessee, Cumberland, Ohio River Low / High Water
Tennessee Valley Authority (Tennessee Locks and Dams)	Nikki Berger Lead Engineer,Navigation Program Supervisor	865-632-8980 865-322-0013 (cell) 865-632-7063 (24 hr)	ncberger@tva.gov	Tennessee, Cumberland, Ohio River Low / High Water

3.C.3. Tennessee River Internet Information Communications Plan

INTERNET SITE PURPOSE	ADDRESS
River Industry Bulletin Board (R.I.B.B.)	http://www.ribb.com/index.php
National Response Center (NRC) – Report Pollution / Terrorist Activity	http://www.nrc.uscg.mil/nrchp.html
Lock & Dam Vessel Queues	http://corpslocks.usace.army.mil/lpwb/f?p=121:3:0:
Kentucky / Barkley Lock & Dam Information	http://explorekentuckylake.com/weather.htm
National Weather Service (NWS) – River Forecasts	http://water.weather.gov/ahps2/forecasts.php?wfo=ohx
U.S. Army Corps of Engineers – River GAUGEs	http://www.lrd-wc.usace.army.mil/text/navrpti.txt
U.S. Army Corps of Engineers – River Navigation Charts	http://www.agc.army.mil/Missions/Echarts/InlandChartBooks.aspx
Tennessee Valley Authority (TVA) – TNR / CMR	http://www.tva.gov/river/lakeinfo/index.htm
Tennessee Valley Authority (TVA) – Barkley L&D Flows	http://lakeinfo.tva.gov/htbin/lakeinfo?site=BAH&DataType=All&submit=View+info
Tennessee Valley Authority (TVA) – Kentucky L&D Flows	http://lakeinfo.tva.gov/htbin/lakeinfo?site=KYH&DataType=All&submit=View+info
The River School – River Training & Orientation	http://www.riverschool.com/
Incident Command System (ICS) Courses – Response Training	http://training.fema.gov/EMIWEB/IS/crslist.asp
National Incident Management System (NIMS) Courses – Response Training	http://training.fema.gov/IS/NIMS.asp
U.S. Coast Guard Port Security Directorate (MTSA Info)	https://homeport.uscg.mil/mycg/portal/ep/channelView.do?channelId=-24885&channelPage=%2Fep%2Fchannel%2Fdefault.jsp&pageTypeId=13489
U.S. Coast Guard – Eighth District Site – New Orleans, LA	Sector New Orleans Homeport Link
U.S. Coast Guard – Sector Ohio Valley – Louisville, KY	Sector Ohio Valley Homeport Link
U.S. Coast Guard - Marine Safety Unit – Paducah, KY	MSU Paducah Via Sector Ohio Valley Homeport

3.D. Cumberland River Communications Plan

The Tennessee and Cumberland River Industry Committee (TCIC) MSD Nashville and MSU Paducah AOR serves as the primary committee for communicating among the towing companies operating on the Tennessee and Cumberland River within the Coast Guard Marine Safety Detachment Nashville and Marine Safety Unit Paducah Area of Responsibility. The TCIC Committee Chairman serves as the primary point of contact for relaying information, coordinating meetings, and setting up conference calls between all federal agencies and the towing industry. The primary purpose of the TCIC Committee is to address all issues concerning Tennessee and Cumberland River navigation and to act as the major liaison between the towing industry, the Coast Guard, the Tennessee Valley Authority and the Army Corps of Engineers throughout the Tennessee and Cumberland River Valley.

3.D.1. Cumberland River Towing Industry Communications Plan

COMPANY / ORGANIZATION	DESIGNATED CONTACT	PHONE NUMBER	E-MAIL ADDRESS	WHEN CONTACTED
Tennessee and Cumberland River Industry Committee (TCIC)	TCIC Chairman Billy Poindexter Jr.	270-441-1638 w 270-853-2195 c	billy.poindexterjr@ingrambarge.com	All Situations
Ingram Barge Co.	Steve Southern Billy Poindexter Jr. 24 hrs Dispatch office	270-441-1634 w 270-210-7726 c 270-441-1638 w 270-853-2195 c 270-441-1600 (24 hrs)	Steve.southern@ingrambarge.com Billy.PoindexterJr@ingrambarge.com	All Situations
Tennessee Valley Towing (TVT)	Harley Hall Mark Mayfield	270-554-0154	hhall@tvtinc.com mmayfield@tvtinc.com	All Situations
Hunter Marine	Glenn Hendon	615-352-6935 615-352-6765 (home)	hmt@bellsouth.net	All Situations
Crounse Corporation	Robert Brewer	270-444-9611	rbrewer@crounse.com	All Situations
American Commercial Barge Line (ACBL)	Chris Primm Mark Dougherty	812-288-1968 812-288-0303 (24 hrs)	cdprimm@acbl.net mark.dougherty@acbl.net	All Situations

COMPANY / ORGANIZATION	DESIGNATED CONTACT	PHONE NUMBER	E-MAIL ADDRESS	WHEN CONTACTED
Serodino	Tom Klemisch Tommy Roe	423-942-7000 423-821-1311 (home) 423-485-8331 (home)	Aqua_knot@msn.com pete@serodinoinc.com Tommy@serodinoinc.com	All Situations
Canal Barge Lines	Paul Barnes	504-585-4623 504-656-7000 (home)	pbarnes@canalbarge.com	All Situations
Magnolia Marine	Lester Cruse	800-696-5921(24 hrs) 601-831-1406 (Cell)	lester.cruse@ergon.com lcruseiii@gmail.com	All Situations
Volunteer Barge & Transport, Inc.	Lisa Boone Mark Hommrich	615 361-0330 w 615 972-8541 c 615 545-1718 c	lisab@volunteerbarge.com markh@volunteerbarge.com	All Situations

3.D.2. Cumberland River Government Agencies Communications Plan

GOVERNMENT AGENCY	DESIGNATED CONTACT	PHONE NUMBER	E-MAIL ADDRESS	WHEN CONTACTED
U.S. Coast Guard Sector Ohio Valley Sector Command	Capt Richard Timme CDR Thomas Kaminski CDR Carolyn Beatty	502-779-5411 502-779-5412 502-779-5448	richard.timme@uscg.mil Thomas.J.Kaminski@uscg.mil carolyn.m.beatty@uscg.mil	All Situations
U.S. Coast Guard Sector Ohio Valley Buoy Tenders	CWO Dan Payne Sector SOHV Comms Center	502-779-5301 1-800-253-7465	Daniel.C.Payne@uscg.mil	Aids to Navigation Issues
U.S. Coast Guard MSU Paducah	CDR Malcolm McLellan LT Dan McQuate	270-442-1621 X 2101 270-442-1621 X 2110	malcolm.r.mclellan@uscg.mil Daniel.J.McQuate@uscg.mil	All Situations
U.S. Coast Guard MSD Nashville	LCDR Douglas Salik LT Patrick Grizzle	615-736-5421	Douglas.salik@uscg.mil patrick.j.grizzle@uscg.mil	All Situations
U.S. Army Corps of Engineers Louisville District Office	District L&D Manager Gene Dowell	502-315-6694	Eugene.A.Dowell@usace.army.mil	Lock & Dam Operations
U.S. Army Corps of Engineers Nashville District	Navigation Branch Ray Bess	615-736-7799	Ray.Bess@lrn02.usace.army.mil	All Situations
U.S. Army Corps of Engineers Louisville District Smithland Lock and Dam	Smithland Lockmaster Denny Craig	502-315-6731	William.D.Craig@usace.army.mil	Tennessee, Cumberland, Ohio River Low Water
U.S. Army Corps of Engineers Louisville District Area Lockmaster LD52/53/Olmsted	Area Lockmaster Jimmy Nix	618-564-2842	James.L.Nix@usace.army.mil	Tennessee, Cumberland, Ohio River Low Water
U.S. Army Corps of Engineers Louisville District Lock and Dam 52	52 Lockmaster Randy Robertson	618-564-2842	Charles.R.Robertson@usace.army.mil	Tennessee, Cumberland, Ohio River Low Water
U.S. Army Corps of Engineers Louisville District Lock and Dam 53	53 Lockmaster Ron Kelly	618-742-6213	Ronald.L.Kelly@usace.army.mil	Tennessee, Cumberland, Ohio River Low Water
U.S. Army Corps of Engineers Nashville District (Tennessee Locks / Cumberland Locks and Dams)	Jeff Ross Gerald Choat	615-736-7996 615-347-1746 (cell) 615-736-5972 615-892-0216 (cell)	Jeffrey.Ross@usace.army.mil Gerald.D.Choat@usace.army.mil	Tennessee, Cumberland, Ohio River Low / High Water
Tennessee Valley Authority (Tennessee Locks and Dams)	Nikki Berger Lead Engineer, Navigation Program Supervisor	865-632-8980 865-322-0013 (cell)	ncberger@tva.gov	Tennessee, Cumberland, Ohio River Low / High Water

3.D.3. Cumberland River Internet Information Communications Plan

INTERNET SITE PURPOSE	ADDRESS
River Industry Bulletin Board (R.I.B.B.)	http://www.ribb.com/index.php
National Response Center (NRC) – Report Pollution / Terrorist Activity	http://www.nrc.uscg.mil/nrchp.html
Lock & Dam Vessel Queues	http://corpslocks.usace.army.mil/lpwb/f?p=121:3:0:
Kentucky / Barkley Lock & Dam Information	http://explorekentuckylake.com/weather.htm
National Weather Service (NWS) – River Forecasts	http://water.weather.gov/ahps2/index.php?wfo=ohx
U.S. Army Corps of Engineers – River Gauges	http://www.lrd-wc.usace.army.mil/text/lourpti.txt
U.S. Army Corps of Engineers – River Navigation Charts	http://www.lrl.usace.army.mil/
Tennessee Valley Authority (TVA) – TNR / CMR	http://www.tva.gov/river/lakeinfo/index.htm
Tennessee Valley Authority (TVA) – Barkley L&D Flows	http://lakeinfo.tva.gov/htbin/lakeinfo?site=BAH&DataType=All&submit=View+info
Tennessee Valley Authority (TVA) – Kentucky L&D Flows	http://lakeinfo.tva.gov/htbin/lakeinfo?site=KYH&DataType=All&submit=View+info
The River School – River Training & Orientation	http://www.riverschool.com/
Incident Command System (ICS) Courses – Response Training	http://training.fema.gov/EMIWEB/IS/crslist.asp
National Incident Management System (NIMS) Courses – Response Training	http://training.fema.gov/IS/NIMS.asp
U.S. Coast Guard Port Security Directorate (MTSA Info)	https://homeport.uscg.mil/mycg/portal/ep/channelView.do?channelId=-24885&channelPage=%2Fep%2Fchannel%2Fdefault.jsp&pageTypeId=13489
U.S. Coast Guard – Eighth District Site – New Orleans, LA	Sector New Orleans Homeport Link
U.S. Coast Guard – Sector Ohio Valley – Louisville, KY	Sector Ohio Valley Homeport Link
U.S. Coast Guard - Marine Safety Unit – Paducah, KY	MSU Paducah Via Sector Ohio Valley Homeport

4. Action Plan

Actions taken during waterways crisis span a wide range of controls and responses from all involved parties including industry and federal government agencies. In general, actions taken by industry will be intended to reduce marine casualties during low & high water situations. Some actions taken by industry during extreme low water conditions include reducing loads or lightering barges, which reduce vessel drafts. During high water conditions, industry may reduce tow sizes to allow more positive control over the tow to more effectively utilize towboat horsepower. The federal government, including the U.S. Coast Guard, U.S. Army Corps of Engineers, and the Tennessee Valley Authority, is also required to take specific and timely actions to aid in preventing marine casualties while facilitating commerce. Some of these actions include the USCG's issuance of Broadcast Notice to Mariners (BNM), establishment of Safety Zones, dredging operations by the USACE, and adjustment of flow rates from locks and dams by the Tennessee Valley Authority (TVA). The enclosed Safety Advisory and Safety Zone templates are recommended for use, but can be modified or combined to meet the needs of the situation.

4.A. Ohio River Action Plan
4.A.1. Emsworth Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
EMSWORTH LOCK & DAM **OHIO RIVER** **MILE MARKER: 6.2** **FLOOD STAGE READING:** 30' LG **OTHER USEFUL DATA:** NORMAL POOL 16' ON UG & 12' ON LG MAX. DAM OPENING 105' CEASE LOCKING 30' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH THE LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **CAUTIONARY NOTE 1:** SEVERE OUTDRAFT DURING HIGH WATER. **USACE GAUGE READINGS REPORT**	65' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	65'+DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAP will initiate a phone conference between CG, USACE and WAP. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	85'+ DAM OPENING	Rising & projected to continue rising rapidly	Extreme High Water/Extreme High Flow Conditions	Action	Continue monitoring river conditions. MSU Pittsburgh will submit a Safety Advisory request to the SCC. The SCC will initiate a Safety Advisory (Enc. 2) and cancel Safety Advisory (Enc. 1). Note: Double lockages restricted to a maximum of three barge lengths at 90' of dam opening and a maximum of two barge lengths between 90' – 94'. * No restrictions with helper boat.
	95'+ DAM OPENING	Rising & projected to continue rising rapidly	Extreme High Water/Extreme High Flow Conditions	Action	Continue monitoring river conditions, continue broadcasting Safety Advisories (Enc. 2). Note: Small lock chamber taken out of operation when dam openings exceed 95'. Double lockages restricted to a maximum of one barge length at and above 95' of dam opening. * No restrictions with helper boat.
	95'- DAM OPENING	Falling	High Water/ High Flow Conditions	Watch	Continue monitoring river conditions, continue broadcasting Safety Advisories (Enc. 2).
	85'- DAM OPENING	Falling	High Water/ High Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory (Enc. 2) when below 85' and initiating Safety Advisory (Enc. 1). Consider canceling Safety Advisory (Enc. 1) when below 65'.

OHIO RIVER - EMSWORTH L&D

HIGH WATER Enclosure 1 (example)
Broadcast Notice To Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT EMSWORTH DAM MILE MARKER 6.2 OHIO RIVER. THE GATE OPENING AT EMSWORTH DAM READS GREATER THAN 65 FEET. FOR VESSELS TRANSITING THE OHIO RIVER, WHEN TRANSITING DOWNRIVER WITH THE INTENTION OF USING THE FRONT CHANNEL PAST BRUNOT ISLAND, MILE MARKER 1.5, KEEP TOWARDS THE RIGHT DESCENDING BANK WHILE ENTERING THE FRONT CHANNEL TO AVOID SEVERE SET TOWARDS THE ISLAND. WHEN TRANSITING UPRIVER WITH THE INTENTION OF USING THE BACK CHANNEL PAST BRUNOT ISLAND, MILE MARKER 3, EXERCISE CAUTION WHILE ENTERING THE BACK CHANNEL TO PREVENT BEING SET AGAINST THE LEFT DESCENDING BANK. EXERCISE CAUTION AND ENSURE VERTICAL CLEARANCE IS SUFFICIENT WHILE TRANSITING UNDER BRIDGES LOCATED BETWEEN MILE MARKERS 0 AND 3 ALLEGHENY RIVER AND BETWEEN MILE MARKERS 0 AND 9 MONONGAHELA RIVER.

HIGH WATER Enclosure 2 (example)
Broadcast Notice To Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT EMSWORTH DAM MILE MARKER 6.2 OHIO RIVER. THE GATE OPENING AT EMSWORTH DAM READS GREATER THAN 85 FEET. FOR VESSELS TRANSITING THE OHIO RIVER, WHEN TRANSITING DOWNRIVER WITH THE INTENTION OF USING THE FRONT CHANNEL PAST BRUNOT ISLAND, MILE MARKER 1.5, KEEP TOWARDS THE RIGHT DESCENDING BANK WHILE ENTERING THE FRONT CHANNEL TO AVOID SEVERE SET TOWARDS THE ISLAND. WHEN TRANSITING UPRIVER WITH THE INTENTION OF USING THE BACK CHANNEL PAST BRUNOT ISLAND, MILE MARKER 3, EXERCISE CAUTION WHILE ENTERING THE BACK CHANNEL TO PREVENT BEING SET AGAINST THE LEFT DESCENDING BANK. ENSURE VERTICAL CLEARANCE IS SUFFICIENT WHILE TRANSITING UNDER BRIDGES LOCATED BETWEEN MILE MARKERS 0 AND 3 ALLEGHENY RIVER AND BETWEEN MILE MARKERS 0 AND 9 MONONGAHELA RIVER. EXERCISE CAUTION WHILE TRANSITING IN THE AREA OF THE EMSWORTH AND DASHIELDS LOCK AND DAMS, MILE MARKERS 13.3 TO 15, DUE TO THE STRONG CURRENTS IN THE AREA. SOUTHBOUND TOW VESSELS ARE RECOMMENDED TO HAVE A HELPER BOAT PRESENT TO ASSIST WHEN EITHER, (1) PUSHING A TOW CONSISTING OF TWO BARGE LENGTHS OR GREATER WHEN AT LEAST ONE BARGE IS A TANK BARGE OR, (2) CONDUCTING A DOUBLE LOCKAGE THROUGH EMSWORTH, DASHIELDS, OR MONTGOMERY LOCKS.

4.A. Ohio River Action Plan
4.A.2. Dashields Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
DASHIELDS LOCK & DAM **OHIO RIVER** **MILE MARKER: 13.3** **FLOOD STAGE READING:** 23'UG **OTHER USEFUL DATA:** NORMAL POOL 12' ON UG & 12' ON LG CEASE LOCKING 23' UG TABLE USES UPPER AND LOWER GAUGE READINGS TO MONITOR RIVER CONDITIONS. THE POTENTIAL FOR VESSEL ALLISIONS WITH THE LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **CAUTIONARY NOTE 1:** SEVERE OUTDRAFT DURING HIGH WATER. OUTDRAFT INCREASES AS RIVER RISES. **CAUTIONARY NOTE 2:** MARINERS ARE ALSO ADVISED TO CLOSELY MONITOR CONDITIONS AND DAM OPENINGS AT EMSWORTH LOCK AND DAM, WHILE TRANSITTING IN THE VICINITY OF DASHIELDS. UNEXPECTED INCREASES IN FLOW, CURRENT AND SEVERE OUTDRAFTS DURING HIGH WATER CONDITIONS, MAY BE ENCOUNTERED. **USACE GAUGE READINGS REPORT**	20' UG	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	20'+ UG	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAP will initiate a phone conference between CG, USACE and WAP. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	24'+ UG	Rising & projected to continue rising rapidly	Extreme High Water/ Extreme High Flow Conditions	Action	Continue monitoring river conditions, continue broadcasting Safety Advisory (Enc. 1).
	24'- UG	Falling	High Water/ High Flow Conditions	Watch	Continue monitoring river conditions and consider canceling Safety Advisory (Enc. 1).
	20'- UG	Falling	Normal Operations/ Flow Conditions	Recovery	Locking operations normal.

OHIO RIVER - DASHEILDS L&D

HIGH WATER Enclosure 1 (example)
Broadcast Notice To Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT DASHIELDS DAM MILE MARKER 13.3 OHIO RIVER. THE UPPER GAUGE AT DASHIELDS DAM READS GREATER THAN 20 FEET. FLEETING FACILITIES ARE ADVISED TO (1) REVIEW AND ACT IN ACCORDANCE WITH THEIR WATERFRONT FLEET OPERATIONS GUIDE AND ANY COMPANY CONTINGENCY PLANS, (2) TO ASSIGN A PERSON TO BE IN CONTINUOUS SURVEILLANCE AND TO OBSERVE THE BARGES IN THE FLEETING FACILITY, (3) DOUBLE-UP LINES ON THE HEAD OF THE FLEET AND PROVIDE AN ADEQUATE NUMBER OF SPRING AND BREAST LINES BETWEEN THE DOCK AND THE BARGES IN THE FLEET, AND (4) REVIEW THEIR NEED TO SECURE TOWBOAT ASSISTANCE.

4.A. Ohio River Action Plan
4.A.3. Montgomery Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
MONTGOMERY LOCK & DAM **OHIO RIVER** **MILE MARKER: 31.7** **FLOOD STAGE READING:** 33' LG **OTHER USEFUL DATA:** NORMAL POOL 12' ON UG & 12' ON LG CEASE LOCKING 20' UG MAX. DAM OPENING 100' THE POTENTIAL FOR VESSEL ALLISIONS WITH THE LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **CAUTIONARY NOTE 1**: SEVERE OUTDRAFT DURING HIGH WATER. **USACE GAUGE READINGS REPORT**	40' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	40'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAP will initiate a phone conference between CG, USACE and WAP. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	65'+ DAM OPENING	Rising & projected to continue rising rapidly	Extreme High Water/ Extreme High Flow Conditions	Action	Continue monitoring river conditions. MSU Pittsburgh will submit a Safety Advisory request to the SCC. The SCC will initiate a Safety Advisory (Enc. 2) and cancel Safety Advisory (Enc. 1). When dam openings exceed 65', small lock chamber taken out of operations and no up bound double lockages without the assistance of a helper boat.
	65'- DAM OPENING	Falling	High Water/ High Flow Conditions	Watch	Continue monitoring river conditions, cancel Safety Advisory (Enc. 2) and initiate Safety Advisory (Enc. 1).
	40'- DAM OPENING	Falling	Normal Operations/ Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory (Enc. 1).

OHIO RIVER - MONTGOMERY L&D

HIGH WATER Enclosure 1 (example)
Broadcast Notice To Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT MONTGOMERY DAM, MILE MARKER 31.7, OHIO RIVER. THE GATE OPENING AT MONTGOMERY DAM IS GREATER THAN 40 FEET. EXERCISE CAUTION WHILE TRANSITING UNDER THE NEWELL HIGHWAY BRIDGE MILE MARKER 44.5 DUE TO THE STRONG SET AND CURRENTS IN THAT AREA. UPBOUND TOW VESSELS ARE ADVISED THAT WHEN PERFORMING A SET OVER OR KNOCK OUT THROUGH THE MONTGOMERY LOCKS, TO SECURE THE HEAD OF THEIR TOWS TO THE LOCK WALL USING THE CLOSEST PIN POSSIBLE BEFORE THE SET OVER OR KNOCK OUT IS INITIATED, AND ENSURE THAT TOWS ARE FULLY SECURED PRIOR TO LEAVING THE VICINITY OF THE LOCKS. DOWNBOUND TOW VESSELS PERFORMING A DOUBLE LOCKAGE ARE STRONGLY ADVISED TO HAVE A HELPER BOAT ASSIST THE TOWS IN KEEPING ALONGSIDE THE GUIDE WALL WHILE ENTERING THE LOCKS.

Broadcast Notice To Mariners
Safety Marine Information Broadcast (Local Safety)

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT MONTGOMERY DAM, MILE MARKER 31.7, OHIO RIVER. THE GATE OPENING AT MONTGOMERY DAM IS GREATER THAN 65 FEET. EXERCISE CAUTION WHILE TRANSITING UNDER THE NEWELL HIGHWAY BRIDGE, MILE MARKER 44.5, AND THE P.L.&E. RAILROAD BRIDGE, MILE MARKER 25.8, DUE TO THE STRONG SET AND CURRENTS IN THOSE AREAS. TOW VESSELS ARE RECOMMENDED TO HAVE A HELPER BOAT WHEN TRANSITING THROUGH THE MONTGOMERY LOCKS, IF THEY ARE PUSHING TWO BARGE LENGTHS OR GREATER. UPBOUND TOW VESSELS ARE ADVISED THAT WHEN PERFORMING A SET OVER OR KNOCK OUT THROUGH THE MONTGOMERY LOCKS, TO SECURE THE HEAD OF THEIR TOWS TO THE LOCK WALL USING THE CLOSEST PIN POSSIBLE BEFORE THE SET OVER OR KNOCK OUT IS INITIATED, AND ENSURE THAT TOWS ARE FULLY SECURED PRIOR TO LEAVING THE VICINITY OF THE LOCKS. DOWNBOUND TOW VESSELS PERFORMING A DOUBLE LOCKAGE ARE STRONGLY ADVISED TO HAVE A HELPER BOAT ASSIST THE TOWS IN KEEPING ALONGSIDE THE GUIDE WALL WHILE ENTERING THE LOCKS.

4.A. Ohio River Action Plan
4.A.4. New Cumberland Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
NEW CUMBERLAND LOCK & DAM **OHIO RIVER** **MILE MARKER: 54.4** **FLOOD STAGE READING:** 37' LG **OTHER USEFUL DATA:** NORMAL POOL 12' ON UG & 12' ON LG CEASE LOCKING 37' LG MAX. DAM OPENING 143' THE POTENTIAL FOR VESSEL ALLISIONS WITH THE LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **CAUTIONARY NOTE 1:** OUTDRAFTS DURING HIGH WATER. **USACE GAUGE READINGS REPORT**	50' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	50'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAP will initiate a phone conference between CG, USACE and WAP. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	50'- DAM OPENING	Falling	Normal Operations/ Flow Conditions	Recovery	Continue monitoring river conditions, consider canceling Safety Advisory (Enc. 1).

OHIO RIVER - NEW CUMBERLAND L&D

HIGH WATER Enclosure 1 (example)
Broadcast Notice To Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT NEW CUMBERLAND DAM, MILE MARKER 54.4, OHIO RIVER. THE GATE OPENING AT NEW CUMBERLAND DAM IS GREATER THAN 50 FEET. EXERCISE CAUTION WHILE TRANSITING PAST BROWNS ISLAND, MILE MARKERS 60.5 TO 64, DUE TO THE NARROW CHANNEL, ABUNDANCE OF FLEETING AREAS, AND FAST CURRENTS IN THAT AREA. EXERCISE CAUTION WHILE TRANSITING PAST CABLES EDDY, MILE MARKERS 64.5 TO 65.5, DUE TO THE NARROW CHANNEL AND SHARP BEND IN THAT AREA.

4.A. Ohio River Action Plan
4.A.5. Pike Island Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
PIKE ISLAND LOCK & DAM **OHIO RIVER** **MILE MARKER: 54.4** **FLOOD STAGE READING:** 37' LG **OTHER USEFUL DATA:** NORMAL POOL 12' ON UG & 12' ON LG CEASE LOCKING 37' LG MAX. DAM OPENING 194' THE POTENTIAL FOR VESSEL ALLISIONS WITH THE LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **CAUTIONARY NOTE 1:** OUTDRAFTS DURING EXTREME HIGH WATER. **CAUTIONARY NOTE 2:** DURING LOW WATER, UPBOUND TOWS ARE REMINDED TO BE CAUTIOUS OF OUTDRAFTS TOWARDS THE RIVER WALL. **USACE GAUGE READINGS REPORT**	50' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	50'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAP will initiate a phone conference between CG, USACE and WAP. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	50'- DAM OPENING	Falling	Normal Operations/ Flow Conditions	Recovery	Continue monitoring river conditions, consider canceling Safety Advisory (Enc. 1).

OHIO RIVER - PIKE ISLAND L&D

HIGH WATER Enclosure 1 (example)
Broadcast Notice To Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT PIKE ISLAND DAM, MILE MARKER 84.2, OHIO RIVER. THE GATE OPENING AT PIKE ISLAND DAM IS GREATER THAN 50 FEET. EXERCISE CAUTION WHILE TRANSITING UNDER THE I-470 BRIDGE, MILE MARKER 91.8, DUE TO THE STRONG SET TOWARDS THE LEFT DESCENDING BANK IN THAT AREA. EXERCISE CAUTION WHILE TRANSITING UNDER THE CSX RAILROAD BRIDGE, MILE MARKER 94.5, DUE TO ITS LIMITED HORIZONTAL CLEARANCE OF 320 FEET. IF PUSHING AHEAD, TOW VESSELS ARE RECOMMENDED TO HAVE A HELPER BOAT WHEN TRANSITING UNDER THE CSX RAILROAD BRIDGE TO ENSURE THEY MAINTAIN PROPER COURSE AND SPEED.

4.A. Ohio River Action Plan
4.A.6. Hannibal Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
HANNIBAL LOCK & DAM **OHIO RIVER** **MILE MARKER: 126.4** **FLOOD STAGE READING: 35.0 LG.** **OTHER USEFUL DATA:** MAX OPENING 172.8' GATES ALL OUT 32.0' CEASE LOCKING 37.0' LG 17.0' UG THE POTENTIAL FOR VESSEL ALLISIONS WITH HANNIBAL L&D TENDS TO INCREASE AS WATER RISES AND CURRENTS INCREASE. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** DRIFT TENDS TO ACCUMULATE IN THE UPPER APPROACH **CAUTIONARY NOTE 2:** WHEN MAKING A SOUTHBOUND APPROACH BE ALERT TO CURRENTS S SETTING TOWARD THE ARRIVIAL CELLS. **CAUTIONARY NOTE 3:** OUTDRAFTS MAY BE SEVERE WHEN GATE OPEING IS GREATER THAN 40' **CAUTIONARY NOTE 4:** 3000 CFS THROUGH THE HYDRO IS EQUAL TO 1' OF GATE OPENING **USACE GAUGE READINGS REPORT**	< 40' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	40' + DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. Sector Ohio Valley Command Center will initiate a SMIB.
	100'+ DAM OPENING	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, and presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics.
	100' - DAM OPENING	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate.
	40' - DAM OPENING	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

4.A. Ohio River Action Plan
4.A.7. Willow Island Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
WILLOW ISLAND LOCK & DAM **OHIO RIVER** **MILE MARKER: 161.7** **FLOOD STAGE READING: 37**'LG **OTHER USEFUL DATA:** MAX OPENING 176' GATES ALL OUT 34.5' LG CEASE LOCKING 41.4' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH WILLOW ISLAND L&D TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** DRIFT TENDS TO ACCUMULATE IN THE UPPER APPROACH. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE AT APPROXIMATELY 150' OF GATE OPENING. **GAUGE READINGS REPORT:** **USACE GAUGE READINGS REPORT**	<50' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	50'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for up river high water conference calls. MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Huntington will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a SMIB.
	100'+ DAM OPENING	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics.
	100'- DAM OPENING	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate.
	50'- DAM OPENING	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

4.A. Ohio River Action Plan
4.A.7.a. Parkersburg-Belpre Highway Bridge High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
Parkersburg-Belpre Highway Bridge B&O Rail Road Bridge Parkersburg Highway Bridge **MILE MARKER:185-183** **Reference: WILLOW ISLAND LOCK & DAM** **FLOOD STAGE READING:** **37**'LG off of WILLOW ISLAND L&D **OTHER USEFUL DATA Attained Willow Island L&D:** MAX OPENING 176' GATES ALL OUT 33' LG CEASE LOCKING 33' LG THE TABLE USES DAM OPENING AT WILLIOW ISLAND L&D. THE POTENTIAL FOR VESSEL ALLISIONS WITH THESE BRIDGES TENDS TO INCREASE AS WATER RISES AND CURRENTS INCREASE. VESSELS EXPERIENCE HAZARDOUS CONDITIONS ASSOCIATED WITH STRONG CURRENTS AND INCREASED DRAFTING TOWARD BRIDGE PIERS. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT MINIMUM SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** CONSIDER HORSEPOWER CAPABILITY, TOW SIZE, RECENCY THROUGH THE AREA, AND POTENTIAL EFFECTS OF STRONG CURRENTS WHILE NAVIGATING. **CAUTIONARY NOTE 2:** WHEN THE GATE OPENING AT WILLOW ISLAND L&D EXCEEDS 100' THE COAST GUARD, IN CONJUNCATION WITH THE HDWA, RECOMMENDS LOADED TOWS OF 800' OR GREATER CONSIDER TRANSITING MILES 183-185 OHIO RIVER DAYLIGHT HOURS ONLY. **USACE GAUGE READINGS REPORT**	<50' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	50'+ DAM OPENING	Rising & projected to continue rising rapidly.	High Water/ High Flow Conditions	Watch	When Watch Phase conditions exist at Willow Island L/D the COTP will coordinate with industry to determine the need to initiate the calling tree and /or a phone conference between the CG, USACE, and HDWA. During this phone conference, topics that will be discussed are the water conditions, tow restrictions or assistance needed for navigating under the Parkersburg-Belpre Highway Bridge, B&O Rail Road Bridge and the Parkersburg Highway Bridge. All concerns and future actions should also be discussed. Future weather forecasts and river stages will be reviewed and river conditions will be assessed for future actions/considerations. MSU Huntington will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a SMIB.
	100'+ DAM OPENING	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, US USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, presence of ice, weather conditions, and tow restrictions or assistance needed for navigating under the Parkersburg-Belpre Highway, B&O Rail Road Bridge and the Parkersburg Highway Bridge. In extreme ice conditions consider providing local Pilot knowledge of river characteristics. Cancel SMIB and issue Safety Advisory (Enc. 1)
	100'- DAM OPENING	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions/assistance as appropriate. Consider canceling Safety Advisory (Enc. 1) and issuing SMIB.
	50'- DAM OPENING	Falling	Normal Operations / Normal Flow Conditions	Recovery	When Recovery Phase conditions exist at Willow Island L/D, the CG, USACE and HDWA will coordinate to ensure a proper recovery and timely return to normal operations. Topics of discussion should be current and future river conditions, channel surveys if necessary, recovery/salvage of sunken barges, and discuss any changes necessary for future events. Consider canceling SMIB.

OHIO RIVER - PARKERSBURG-BELPRE HIGHWAY BRIDGE

HIGH WATER Enclosure 1 (example)
Broadcast Notice To Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER THAT EXISTS IN THE VICINITY OF THE BRIDGES AT PARKERSBURG, MILE MARKERS 183 TO 185, OHIO RIVER. THE GATE OPENING AT WILLOW ISLAND LOCK AND DAM, MILE MARKER 161.7, EXCEEDS 100 FEET. TOWS OF 800 FEET OR GREATER ARE RECOMMENDED TO TRANSIT MILE MARKERS 183 TO 185 DURING DAYLIGHT HOURS ONLY. MARINERS ARE ADVISED TO EXERCISE CAUTION DUE TO THE HAZARDOUS CONDITIONS ASSOCIATED WITH STRONG CURRENTS, INCREASED DRIFT, INCREASED DRAFTING TOWARD BRIDGE PIERS, AND SEVERE OUTDRAFTS. MARINERS ARE ADVISED TO CONSIDER HORSEPOWER CAPABILITY AND TOW SIZE. FLEET OPERATORS SHOULD REGULARLY CHECK THEIR FLEETS AND IMMEDIATELY REPORT BARGE BREAK-AWAYS TO THE U.S. COAST GUARD.

4.A. Ohio River Action Plan
4.A.8. Belleville Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
BELLEVILLE LOCK & DAM **OHIO RIVER** **MILE MARKER: 203.9** **FLOOD STAGE READING: 45**'LG **OTHER USEFUL DATA:** MAX OPENING: 176' GATES ALL OUT 33' LG CEASE LOCKING 43.0' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH BELLEVILLE L&D TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** DRIFT TENDS TO ACCUMULATE IN THE UPPER APPROACH. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE AT APPROXIMATELY 150' OF GATE OPENING. **USACE GAUGE READINGS REPORT**	60' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	60'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for up river high water conference calls. MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Huntington will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a SMIB.
	90'+ DAM OPENING	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, and presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics. Note: Ohio River MM 209 – 211(long bottom bend) recommended one way traffic
	90'- DAM OPENING	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate.
	60' DAM OPENING	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

4.A. Ohio River Action Plan
4.A.9. Racine Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
RACINE LOCK & DAM **OHIO RIVER** **MILE MARKER: 237** **FLOOD STAGE READING:** 38'LG **OTHER USEFUL DATA:** MAX OPENING: 200' GATES ALL OUT: 34' LG CEASE LOCKING: 49.9' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH RACINE L&D TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** DRIFT TENDS TO ACCUMULATE IN THE UPPER APPROACH. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE AT APPROXIMATELY 180' OF GATE OPENING. **CAUTIONARY NOTE 3:** MM 265 TO 267 (MOUTH OF THE KANAWHA RIVER) IS A HIGH TRAFFIC AREA **USACE GAUGE READINGS REPORT**	<50' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	50'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for up river high water conference calls. MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Huntington will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a SMIB.
	150' DAM OPENING	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, and presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics. Note: MM 245 to 247 (sliding hill bend) recommended one way traffic.
	150'- DAM OPENING	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate.
	50'- DAM OPENING	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

4.A. Ohio River Action Plan
4.A.10. Robert C. Byrd Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
ROBERT C. BYRD LOCK & DAM **OHIO RIVER** **MILE MARKER: 279.2** **FLOOD STAGE READING:** 50'LG **OTHER USEFUL DATA:** MAX OPENING 144' GATES ALL OUT 33.5' LG CEASE LOCKING 53' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH ROBERT C. BYRD L&D TENDS TO INCREASE AS WATER RISES AND CURRENTS INCREASE. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** EXERCISE CAUTION DEPARTING CANAL UPBOUND IN HIGH FLOW CONDITIONS; HEAD OF LOADED TOW MAY DIVE. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE AT APPROXIMATELY 130' OF GATE OPENING. **CAUTIONARY NOTE 3:** MM 265 TO 267 (MOUTH OF THE KANAWHA RIVER) IS A HIGH TRAFFIC AREA **CAUTIONARY NOTE 4:** MM 304 TO 328 (HUNTINGTON CATLETTSBURG HARBOR) IS A HIGH TRAFFIC AREA **USACE GAUGE READINGS REPORT**	<40' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	40'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for up river high water conference calls. MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Huntington will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a SMIB.
	144'+ DAM OPENING	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, and presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics.
	144'- DAM OPENING	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate.
	40'- DAM OPENING	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

4.A. Ohio River Action Plan
4.A.11. Greenup Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
GREENUP LOCK & DAM **OHIO RIVER** **MILE MARKER: 341.0** **FLOOD STAGE READING:** 54'LG **OTHER USEFUL DATA:** MAX OPENING 242' GATES ALL OUT 42' LG CEASE LOCKING 59' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH GREENUP L&D TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** DRIFT TENDS TO ACCUMULATE IN THE UPPER APPROACH. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE AT APPROXIMATELY 180' OF GATE OPENING. **CAUTIONARY NOTE 3:** MM 304 TO 328 (HUNTINGTON CATLETTSBURG HARBOR) IS A HIGH TRAFFIC AREA **USACE GAUGE READINGS REPORT**	<100' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	100'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for up river high water conference calls. MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Huntington will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a SMIB.
	200'+ DAM OPENING	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, and presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics.
	200'- DAM OPENING	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate.
	100'- DAM OPENING	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

4.A. Ohio River Action Plan
4.A.12. Meldahl Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
MELDAHL LOCK & DAM **OHIO RIVER** **MILE MARKER: 436.2** **FLOOD STAGE READING:** 51' LG **OTHER USEFUL DATA:** MAX OPENING 360' GATES ALL OUT 41.6' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH MELDAHL L&D TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFT WHILE ENTERING SOUTHBOUND LOCK CHAMBER. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** OUTDRAFT IS SEVERE AT APPROXIMATELY 300' OF GATE OPENING. **CAUTIONARY NOTE 2:** WHEN TRANSITING BETWEEN MM 462 AND MM 473 MARINERS SHOULD BE ARWARE OF A HIGH CONCENTRATION OF PLEASURE CRAFTS DURING SUMMER MONTHS AND SPECIAL EVENTS. **CAUTIONARY NOTE 3:** RADIO COMMUNICATIONS ARE POOR BETWEEN MM 462 AND MM 473. MARINERS ARE ADVISED TO USE ALL AVAILABLE MEANS OF COMMUNICATION TO ENSURE SAFE TRANSIT. **USACE GAUGE READINGS REPORT**	60' DAM OPENING	Rising	Normal Operations/ Flow Conditions **Note 1**		Locking operations normal.
	60'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Sector Ohio Valley Command Center will initiate a SMIB.
	90'+ DAM OPENING	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	COTP Ohio Valley and/or CORMIG will initiate a phone conference between CG, USACE and CORMIG. Factors to evaluate include rate of rise, amount of drift, presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics. Note: RNA (Enc. 1) is initiated when the Cincinnati Gauge reads 45'.
	90'- DAM OPENING	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate. Consider SMIB.
	60'- DAM OPENING	Falling	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling SMIB.

OHIO RIVER - MELDAHL LOCK & DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice To Mariners

CINCINNATI REGULATED NAVIGATION AREA

DUE TO THE HIGH WATER LEVEL AT THE CINCINNATI GAUGE BEING 45 FEET OR GREATER, A REGULATED NAVIGATION AREA IS IN EFFECT IN THE CINCINNATI HARBOR FROM MI 466.0 TO 473.0. ENTRY INTO THIS ZONE BY ALL D/B VESSELS TOWING CARGOES REGULATED BY TITLE 46 CFR SUBCHAPTER D AND O WITH A TOW LENGTH EXCEEDING 600 FEET, EXCLUDING TOWBOAT, ARE PROHIBITED FROM 1/2 HOUR BEFORE SUNSET TO 1/2 HOUR AFTER SUNRISE. IAW THE PROVISIONS OUTLINED IN TITLE 33 CFR 165.821, THIS REGULATED NAVIGATION AREA WILL REMAIN IN EFFECT UNTIL THE CINCINNATI GAUGE DROPS BELOW 45 FEET. ALL MARINERS ARE URGED TO USE CAUTION WHEN TRANSITING THIS AREA.

4.A. Ohio River Action Plan
4.A.13. Markland Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
MARKLAND LOCK & DAM **OHIO RIVER** **MILE MARKER: 531.5** **FLOOD STAGE READING:** 16' UG **OTHER USEFUL DATA:** MAX OPENING 480' GATES ALL OUT 47' LG CEASE LOCKING 55' LG TABLE USES A COMBINATION OF DAM OPENING AND LOWER GAUGE READINGS. THE POTENTIAL FOR VESSEL ALLISIONS WITH MARKLAND L&D TENDS TO INCREASE AS WATER RISES ANDCURRENTS INCREASE. VESSELS EXPERIENCE OUTDRAFT WHILE ENTERING SOUTHBOUND LOCK CHAMBER. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** DOWNBOUND MARINERS NEED TO BE AWARE OF POCKET AND PROTRUDING POINT THAT HAS A POTENTIAL TO SADDLEBAG THE TOW ON THE LEFT DESCENDING BANK AT MM 531. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE AT APPROXIMATELY 400' OF GATE OPENING. **CAUTIONARY NOTE 3:** WHEN TRANSITING BETWEEN MM 462 AND MM 473 MARINERS SHOULD BE AWARE OF A HIGH CONCENTRATION OF PLEASURE CRAFTS DURING SUMMER MONTHS AND SPECIAL EVENTS. **CAUTIONARY NOTE 4:** RADIO COMMUNICATIONS ARE POOR BETWEEN MM 462 AND MM 473. MARINERS ARE ADVISED TO USE ALL AVAILABLE MEANS OF COMMUNICATION TO ENSURE SAFE TRANSIT **USACE GAUGE READINGS REPORT**	50' DAM OPENING	Rising	Normal Operations/Flow Conditions	Watch	Locking operations normal.
	50'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/Increased Flow Conditions	Watch	. Sector Ohio Valley Command Center will initiate a SMIB.
	120'+ DAM OPENING	Rising	Extreme High Water/Extreme High Flow Conditions	Action	COTP Ohio Valley and/or CORMIG will initiate a phone conference between CG, USACE and CORMIG. Factors to evaluate include rate of rise, amount of drift, presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics. Note: RNA (Encl. 1) is initiated when the Cincinnati Gauge reads 45'.
	120'- DAM OPENING	Falling	High Water/Increased Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate. Consider SMIB.
	50'- DAM OPENING	Falling	Normal Operations/Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling SMIB.

OHIO RIVER - MARKLAND LOCK & DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice To Mariners

CINCINNATI REGULATED NAVIGATION AREA

DUE TO THE HIGH WATER LEVEL AT THE CINCINNATI GAUGE BEING 45 FEET OR GREATER, A REGULATED NAVIGATION AREA IS IN EFFECT IN THE CINCINNATI HARBOR FROM MI 466.0 TO 473.0. ENTRY INTO THIS ZONE BY ALL D/B VESSELS TOWING CARGOES REGULATED BY TITLE 46 CFR SUBCHAPTER D AND O WITH A TOW LENGTH EXCEEDING 600 FEET, EXCLUDING TOWBOAT, ARE PROHIBITED FROM 1/2 HOUR BEFORE SUNSET TO 1/2 HOUR AFTER SUNRISE. IAW THE PROVISIONS OUTLINED IN TITLE 33 CFR 165.821, THIS REGULATED NAVIGATION AREA WILL REMAIN IN EFFECT UNTIL THE CINCINNATI GAUGE DROPS BELOW 45 FEET. ALL MARINERS ARE URGED TO USE CAUTION WHEN TRANSITING THIS AREA.

4.A. Ohio River Action Plan
4.A.14. McAlpine Lock and Dam High/Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
MCALPINE LOCK & DAM **OHIO RIVER** **MILE MARKER: 606.8** **FLOOD STAGE READING:** 23' UG **OTHER USEFUL DATA:** MAX OPENING 113' GATES ALL OUT 28'-30' LG CEASE LOCKING 66' LG TABLE USES A COMBINATION OF DAM OPENING AND LOWER GUAGE READING. THE POTENTIAL FOR VESSEL ALLISIONS WITH MCALPINE L&D TENDS TO INCREASE AS WATER RISES AND CURRENTS INCREASE. VESSELS EXPERIENCE OUTDRAFT WHILE ENTERING SOUTHBOUND PORTLAND CANAL. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** THE VANE DYKE AT THE ENTRANCE TO THE LOUISVILLE AND PORTLAND CANAL AT OHR MM 604.3 EXPERIENCES STRONG OUTDRAFTS ON THE UP STREAM END DURING HIGH FLOWS. **CAUTIONARY NOTE 2:** SEDIMENT SHOALING FROM MM 606 TO 609 RESTRICTS VESSEL TRAFFIC AT 10' ON THE LOWER GAUGE; VESSELS SHOULD USE CAUTION WHEN TRANSITING THIS AREA. **USACE GAUGE READINGS REPORT**	60' DAM OPENING	Rising	Normal Operations/ Flow Conditions	Watch	Locking operations normal.
	60'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	. Sector Ohio Valley Command Center will initiate a SMIB
	100'+ DAM OPENING or 13' UG	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	COTP Ohio Valley and/or CORMIG will initiate a phone conference between CG, USACE and CORMIG. Factors to evaluate include rate of rise, amount of drift, and presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics. Note: Safety Zone (Encl. 1) is initiated when the McAlpine L&D reaches 13.0' UG (VTS Louisville activated).
	100'- DAM OPENING or < 13' UG	Falling	High Water/Increased Flow Conditions	Watch	Continue conference calls, monitor conditions, and adjust restrictions as appropriate. Consider Safety Advisory, (Enc. 1) and cancel Safety Zone (Encl. 1) once river levels fall below 13' UG.
	60'- DAM OPENING	Falling	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.
	9.0' LG >20' DAM OPENING	Falling	Normal Operations/ Normal Flow Conditions	Watch	Locking operations normal.
	8.9' – 8.5' LG	Falling	Low Water / Low Flow Conditions	Watch	COTP Ohio Valley issues SMIB.
	8.5'- LG	Falling	Extreme low Water/ Extreme low Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate. Consider Safety Zone (Enc. 2) verses SMIB. Mile marker 637-677 may warrant one-way traffic during low water conditions.
	8.5' + LG	Rising	Low Water/ Low Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

OHIO RIVER - McALPINE LOCK & DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice To Mariners

THE VESSEL TRAFFIC SYSTEM LOUISVILLE, KY WAS ACTIVATED ON **DD MMM YY**. THIS SYSTEM IS FROM MI 593.0 TO 606.8 AND WILL REMAIN IN EFFECT WHILE MCALPINE L/D UPPER GAUGE READS 13.0 FT AND ABOVE. OPERATING PROCEDURES AND INSTRUCTIONS TO MARINERS ARE DESCRIBED IN 33 CFR 161.

LOW WATER Enclosure 2 (example)
Broadcast Notice To Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE FROM MILE MARKER _____ TO _____ OHIO RIVER. ALL MARINERS ARE TO PROCEED WITH CAUTION AND REMAIN IN THE NAVIGABLE CHANNEL DUE TO DECREASING WATER LEVELS. ALL VESSELS MUST MONITOR CHANNEL DEPTHS AND ENSURE THAT ADEQUATE WATER EXISTS FOR THEIR VESSEL DRAFTS. VESSEL DRAFTS SHALL NOT EXCEED _____ FT. REPORT ALL GROUNDINGS TO THE U.S. COAST GUARD.

4.A. Ohio River Action Plan
4.A.15. Cannelton Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
CANNELTON LOCK & DAM **OHIO RIVER** **MILE MARKER: 720.7** **FLOOD STAGE READING:** 42' LG **OTHER USEFUL DATA:** MAX OPENING 420' GATES ALL OUT 34.5'-35.0' LG CEASE LOCKING 51' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH CANNELTON L&D TENDS TO INCREASE AS WATER RISES AND CURRENTS INCREASE. VESSELS EXPERIENCE OUTDRAFT WHILE ENTERING SOUTHBOUND LOCK CHAMBER. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** OUTDRAFT IS SEVERE AT APPROXIMATELY 400' OF GATE OPENING. **CAUTIONARY NOTE 2:** WHEN LEAVING THE LOCK NORTHBOUND WITH LOADED TOWS, MARINERS SHOULD BE AWARE OF AN AREA OF SLACK WATER FROM THE CHAMBERS TO A DIKE SEVERAL HUNDRED YARDS UPRIVER. MARINERS SHOULD CONSIDER REDUCING POWER IN ANTICIPATION OF INCREASED CURRENTS WHEN LEAVING SLACK WATER AS THEY PASS THE DIKE, TO PREVENT BREAKAWAYS OR DIVING. **USACE GAUGE READINGS REPORT**	80' DAM OPENING	Rising	Normal Operations/Flow Conditions	Watch	Locking operations normal.
	80'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/Increased Flow Conditions	Watch	Sector Ohio Valley Command Center will initiate a SMIB.
	120'+ DAM OPENING	Rising	Extreme High Water/Extreme High Flow Conditions	Action	COTP Ohio Valley and/or CORMIG will initiate a phone conference between CG, USACE and CORMIG. Factors to evaluate include rate of rise, amount of drift, presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics.
	120'- DAM OPENING	Falling	High Water/Increased Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate. Consider SMIB.
	80'- DAM OPENING	Falling	Normal Operations/Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

4.A. Ohio River Action Plan
4.A.16. Newburgh Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
NEWBURGH LOCK & DAM **OHIO RIVER** **MILE MARKER: 776.1** **FLOOD STAGE READING:** 38' LG **OTHER USEFUL DATA:** MAX OPENING 252' GATES ALL OUT 27.5'-28.0' LG CEASE LOCKING 47' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH NEWBURGH L&D TENDS TO INCREASE AS WATER RISES AND CURRENTS INCREASE. VESSELS EXPERIENCE OUTDRAFT WHILE ENTERING SOUTHBOUND LOCK CHAMBER. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** THERE IS NOTICEABLE SHOALING DURING LOW WATER CONDITIONS FROM MM 723 TO MM 737. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE ON THE UPPER SIDE OF THE LOCK DUE TO HIGH FLOWS. **USACE GAUGE READINGS REPORT**	60' DAM OPENING	Rising	Normal Operations/Flow Conditions	Watch	Locking operations normal.
	60'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/Increased Flow Conditions	Watch	Sector Ohio Valley Command Center will initiate a SMIB.
	100'+ DAM OPENING	Rising	Extreme High Water/Extreme High Flow Conditions	Action	COTP Ohio Valley and/or CORMIG will initiate a phone conference between CG, USACE and CORMIG. Once the LG reaches 47' LG implement Broadcast Notice to Mariners (Encl. 1) advising mariners that the Newburgh L&D has ceased locking and the weir is navigable. Consider implementing the following restrictions: 250 HP minimum per loaded barge, daylight transits only for tows comprised of barges carrying cargoes regulated under Title 46 CFR Subchapter D & O and/or more than 6 barges loaded with any product, and/or a standby assist vessel of appropriate HP to provide assistance as needed. Factors to evaluate include rate of rise, amount of drift, presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics. Note: High/low water conditions may warrant one way traffic due to ATON changes from MM 791 to MM 795.
	100' - DAM OPENING	Falling	High Water/Increased Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate. Cancel Broadcast Notice to Mariners (Encl. 1) Consider SMIB.
	60'- DAM OPENING	Falling	Normal Operations/Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

OHIO RIVER - NEWBURG LOCK & DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER THAT EXISTS IN THE VICINITY OF NEWBURGH LOCK AND DAM, MILE MARKER 776.1 OHIO RIVER. MARINERS ARE ADVISED THAT NEWBURGH LOCK AND DAM HAS CEASED LOCKING OPERATIONS DUE TO HIGH WATER AND MARINERS SHOULD CONTACT THE LOCK OPERATOR TO DETERMINE IF IT IS SAFE TO NAVIGATE OVER THE WEIR

4.A. Ohio River Action Plan
4.A.17. J. T. Myers Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
J. T. MYERS LOCK & DAM **OHIO RIVER** **MILE MARKER: 846** **FLOOD STAGE READING:** 37' LG **OTHER USEFUL DATA:** MAX OPENING 270' GATES ALL OUT 30' LG CEASE LOCKING 47' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH J. T. MYERS L&D TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFTS WHILE ENTERING SOUTHBOUND LOCK CHAMBER. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** SHALLOW WATER OFTEN EXISTS BELOW THE LOCK FROM MM 847 TO MM 851 DUE TO OUT FLOW FROM THE WABASH RIVER **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE ON THE UPPER SIDE OF THE LOCK DUE TO HIGH FLOWS. **USACE GAUGE READINGS REPORT**	100' DAM OPENING	Rising	Normal Operations/Flow Conditions	Watch	Locking operations normal.
	100'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/Increased Flow Conditions	Watch	Sector Ohio Valley Command Center will initiate a SMIB.
	150'+ DAM OPENING	Rising	Extreme High Water/Extreme High Flow Conditions	Action	COTP Ohio Valley and/or CORMIG will initiate a phone conference between CG, USACE and CORMIG. Once the LG reaches 47' LG implement Safety Zone (Encl. 1) advising mariners that the J. T. Myers L&D has ceased locking and the weir is navigable. Consider implementing the following restrictions: 250 HP minimum per loaded barge, daylight transits only for tows compromised of barges carrying cargoes regulated under Title 46 CFR Subchapter D & O and/or more than 6 barges loaded with any product, and/or a standby assist vessel of appropriate HP to provide assistance as needed. Additional factors to evaluate include rate of rise, amount of drift, presence of ice and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics. Note: High/low water conditions may warrant one way traffic due to ATON changes from MM 791 to MM 795.
	150'- DAM OPENING	Falling	High Water/Increased Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate. Cancel Safety Zone (Enc. 1), Consider SMIB.
	100'- DAM OPENING	Falling	Normal Operations/Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

OHIO RIVER – J. T. MYERS LOCK & DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SPECIAL LOCAL REGULATION FOR J. T. MYERS LOCK AND DAM, MILE MARKER 845, OHIO RIVER. THE J. T. MYERS LOCK AND DAM HAS CEASED LOCKING. THE J. T. MYERS WEIR IS NAVIGABLE UNDER THE FOLLOWING CONDITIONS: MINIMUM HORSE POWER PER LOADED BARGE IS 250 HP. TOWS COMPRISED OF BARGES CARRYING CARGOES REGULATED UNDER TITLE 46 CFR SUCHAPTER D AND O (KNOWN AS RED FLAG BARGES) AND/OR WITH MORE THAN 6 BARGES LOADED WITH ANY PRODUCT, ARE RESTRICTED TO DAYLIGHT TRANSIT ONLY. A STANDBY ASSIST BOAT WITH APPROPRIATE HORSE POWER IS ON SCENE TO PROVIDE ASSISTANCE AS NEEDED. AT FIRST LIGHT, NORTH BOUND TOWS WILL BE CLEARED FIRST, FOLLOWED BY SOUTHBOUND TOWS. THE J. T. MYERS LOCK OPERATOR WILL ESTABLISH THE TRANSIT QUEUE. TOWS SHOULD NOTIFY THE LOCK OPERATOR WHEN APPROACHING J. T. MYERS L/D. A CARRIER MAY REQUEST AN EXCEPTION TO THE ABOVE. REQUESTS SHOULD BE MADE DURING NORMAL BUSINESS HOURS TO THE CAPTAIN OF THE PORT AT 1-800-253-7465. THE CAPTAIN OF THE PORT MAY CONSULT WITH THE CENTRAL OHIO RIVER MARINE INDUSTRY GROUP (CORMIG) CHAIRMAN, BUT IT WILL BE THE CAPTAIN OF THE PORT WHO WILL MAKE A FINAL DETERMINATION ON EACH REQUEST. MARINERS ARE ADVISED THAT FAILURE TO FOLLOW THIS REGULATION MAY RESULT IN A CIVIL PENALTY.

4.A. Ohio River Action Plan
4.A.18. Smithland Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING UPPER GAUGE	TREND	DESCRIPTION	PHASE	ACTION
SMITHLAND LOCK & DAM **OHIO RIVER** **MILE MARKER**: 918.5 **FLOOD STAGE READING**: 20'0" **OTHER USEFUL DATA**: VESSEL ALLISIONS WITH SMITHLAND L&D TEND TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFT WHILE ENTERING SOUTHBOUND LOCK CHAMBER. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS (LOCAL PRACTICE IS TO USE THE LAND CHAMBER DOWNBOUND) **USACE GAUGE READINGS REPORT** **Lock #: 618-564-2315**	12'3"	Rising	Normal Operations	Watch	Locking Operations Normal.
	15'5"	Rising & projected to continue rising rapidly	High Water	Watch	Lockmaster contacts MSU Paducah. Notify ICE Committee. Consider ICE Committee Meeting with MSU Paducah and CGC CHIPPEWA. SOHV CC will release high water SMIB.
	20'0"	Rising	Extreme High Water	Watch	Lockmaster contacts CG MSU Paducah. Hold ICE Committee conference call with MSU Paducah and CGC CHIPPEWA. Safety Advisory in effect.
	27'4"	Rising	Max Locking Ability	Action	Lockmaster contacts CG MSU Paducah. Smithland L&D ceases locking vessels. MSU Paducah will submit a BNM request to the Sector Command Center (SCC). The SCC will initiate a Safety Zone (Encl. 1). Hold ICE Committee conference call. Vessels will experience delays. Consider pre-identified lay-up areas in the event of river closure.
	29'0" & above	Rising	Potential Weir Navigation Weir elevation is 14 ft	Action	Lockmaster contacts CG MSU Paducah. Hold ICE Committee meeting to determine potential for weir navigation. If the weir is navigable MSU Paducah implements Safety Zone. Consider assist vessel on stand-by for up-bound traffic. Determine appropriate horsepower per tow restrictions and one way traffic patterns in order to navigate weir. Consider providing local Pilot knowledge of weir characteristics.
	29'0"	Falling	Potential Weir Navigation	Action	Lockmaster contacts CG MSU Paducah. Hold ICE Committee meeting to determine potential for weir navigation. Safety Zone in effect.
	27'4"	Falling	Resume Locking Ability	Recovery	Lockmaster contacts CG MSU Paducah. Smithland L&D resumes locking vessels. Notify ICE Committee. Sector Command Center cancels Safety Zone (Encl. 1) and re-issues SMIB.
	20'0"	Falling	Extreme High Water	Recovery	SMIB in remains in effect
	12'5" - 15'5"	Falling	High Water	Recovery	Continue monitoring river condition and cancel SMIB.
	12'0"	Falling	Normal Operations	Watch	Locking Operations Normal.

4.A. Ohio River Action Plan

4.A.19. Smithland Lock and Dam Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING LOWER GAUGE	TREND	DESCRIPTION	PHASE	ACTION
SMITHLAND LOCK & DAM **OHIO RIVER** **MILE MARKERS:** 918.5 **OTHER USEFUL DATA:** TO DETERMINE NAVIGABILITY OVER MITER SILLS CONSULT LOCKMASTER. L&D 52 MAINTAINS AN AVERAGE LOWER GAUGE OF 12'4" AT SMITHLAND L&D. LOWER SIDE OF SMITHLAND L&D TO THE FOOT OF CUMBERLAND ISLAND IS ONE WAY TRAFFIC AT ALL TIMES. **USACE GAUGE READINGS REPORT**	12'0" and above	Falling	Normal Operations	Watch	Lock Operations Normal.
	11'0"	Falling	Low Water	Watch	Lockmaster contacts CG MSU Paducah. Notify ICE Committee. Notify division USACE, TVA. Discuss draft and tow size recommendations under falling river conditions. The SCC will initiate a SMIB.
	10'5"	Falling	Extreme Low Water	Action	Lockmaster contacts CG MSU Paducah. Notify ICE Committee consider meeting. Discuss draft and tow size recommendations under falling river conditions. Safety Advisory in effect. Note: Vessels draft must have **one foot of clearance** over miter sills to enter and exit lock chamber.
	10'0"	Falling	Restrict Lock Operations	Action	Lockmaster contacts CG MSU Paducah. Hold ICE Committee Meeting with MSU Paducah and CGC CHIPPEWA. Smithland L&D considers ceasing locking vessels. SMIB in effect.
	9'8" and below	Falling	Restrict Lock Operations	Action	Lockmaster contacts CG MSU Paducah. MSU Paducah will submit a Safety Zone request to the Sector Command Center (SCC) due to extreme low water between MM 918.5 – MM 934.0 OHR. . The SCC will initiate a Safety Zone (Enc. 2) and cancel Safety Advisory SMIB. Vessels will experience delays.
	9'8" and below	Rising	Restrict Lock Operations	Recovery	Safety Zone in effect. Vessels will experience delays.
	10'0"	Rising	Resume Lock Operations	Recovery	Notify ICE Committee. Smithland L&D resumes locking vessels CG MSU Paducah cancels Safety Zone; re-issues Safety Advisory SMIB; indicate low water, exercise caution.
	10'5"	Rising	Extreme Low Water	Recovery	Lockmaster contacts CG MSU Paducah. Notify ICE Committee. Discuss draft and tow size recommendations under rising river conditions. Safety Advisory in effect.
	11'0"	Rising	Low Water	Watch	Lockmaster contacts CG MSU Paducah. SCC will cancel SMIB.
	12'0" and above	Rising	Normal Operations	Watch	Lock Operations Normal.

OHIO RIVER – SMITHLAND LOCK & DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE ON THE OHIO RIVER FROM MILE MARKER 917 TO MILE MARKER 922 IN THE VICINITY OF SMITHLAND LOCK AND DAM. THIS SAFETY ZONE INCLUDES THE CLOSURE OF SMITHLAND LOCK AND DAM DUE TO HIGH WATER WITH THE UPPER GAUGE READING 29.0 FEET. NORTHBOUND VESSELS ARE PROHIBITED FROM NAVIGATION OVER THE WEIR PASS. SOUTHBOUND VESSELS WITH 9'0" DRAFT AND ADEQUATE HORSEPOWER ARE AUTHORIZED NAVIGATION OVER THE WEIR WITH AN ASSIST VESSEL IMMEDIATELY AVAILABLE IN CASE OF EMERGENCY.

LOW WATER Enclosure 2 (example)
Broadcast Notice to Mariners

Low Water Safety Zone BNM to be developed by MSU Paducah on case by case basis.

4.A. Ohio River Action Plan
4.A.20. Lock & Dam 52 Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING UPPER & LOWER GAUGE	TREND	DESCRIPTION	PHASE	ACTION
LOCK & DAM 52 **OHIO RIVER** **MILE MARKERS:** 939.0 **FLOOD STAGE READING:** 37'0" **REFERENCE GAUGE**: L & D 52 **OTHER USEFUL DATA:** ONE GAGE READING EXISTS WHEN WICKETS ARE DOWN. WHEN WICKETS ARE RAISED THERE IS AN UPPER AND LOWER GAGE READING. IDEAL POOL CONDITIONS FOR LOCK & DAM 52 WHEN WICKETS ARE RAISED: 18.6 ON THE UPPER GAGE AND 10.0 OR GREATER ON THE LOWER GAGE. NAVIGATION OVER THE BEAR TRAPS WILL BE CONSIDERED WHEN THE UPPER GAGE REACHES 36.0. MINIMUM LOCKING ABILITY ON LOWER GAGE IS 9.0. ZERO GAGE'S L&D 52 UPPER - 283.3' L&D 52 LOWER - 273.1' **USACE GAGE READINGS REPORT**	U 16.0	Falling	Normal Operations	Watch	Wicket dam is normally down. Vessels navigating the wicket pass. Vessels not required to use lock chamber.
	U 15.5 – 15.0	Falling	Low Water	Watch	Lockmaster contacts CG MSU Paducah and ICE Committee Chairman. L&D 52 Lockmaster considers raising wickets. Vessels may experience delays during this stage. Sector Command Center will initiate a Safety Advisory SMIB. Evaluate need to reset buoys.
	U 14.9 L 10.0	Falling	Low Water	Watch	Wickets unable to maintain pool. Lockmaster contacts CG MSU Paducah & ICE Comm Chairman. Vessels exercise caution within buoyed areas within L&D 52 pool (MM 927 OHR). L&D 52 pool experiences draw down condition prior to pool regenerating resulting in low water in the tail end of the pool near Smithland L&D. Draft over miter sill limits drafts IAW Army Corps restrictions (Encl. 2).
	U 14.7 and below L 9.0 and below	Falling	Extreme Low Water	Action	Wickets unable to maintain pool. Lockmaster contacts CG MSU Paducah. CG MSU Paducah and ICE Comm assess the need for Safety Zone (Encl. 1). Emergency situation. Hold ICE Committee conference call with MSU Paducah & CGC CHIPPEWA and determine meeting schedule. Vessels will experience delays. Draft restrictions continue (Encl. 2). Lock chamber may be unable to accommodate commercial vessels. Note: Vessels draft must have **one foot of clearance** over miter sills to enter & exit lock chamber.
	U 15.5 L 10.0	Rising	Low Water	Action	MSU Paducah requests SCC cancel Safety Zone if implemented and SCC issues Safety Advisory SMIB Notify ICE Committee. Resume locking of commercial vessels. USACE draft restrictions removed.
	U 15.6 L 12.0	Rising	Low Water	Recovery	Locking vessels. Mariners should consider potential out-drafts. CG MSU Paducah cancels low water SMIB.
	U 18.6 L 15.0	Rising	Normal Operations	Recovery	Lockmaster considers lowering all wickets. Locking vessels. Notify ICE Chairman
	U 18.8	Rising	Normal Operations	Recovery	Lockmaster lowers wickets. Notify ICE Chairman
	U 19.1	Rising	Normal Operations	Recovery	Wicket dam is normally down. Vessels navigating the pass. Vessels not using lock chambers.

OHIO RIVER –LOCK AND DAM 52

LOW WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE ON THE OHIO RIVER FROM MILE MARKER _____ TO MILE MARKER _____ EXTENDING THE ENTIRE WIDTH OF THE RIVER DUE TO EXTREME LOW WATER CONDITIONS. COMMERCIAL VESSELS ARE PROHIBITED FROM ENTERING OR TRANSITING IN THIS SAFETY ZONE UNLESS PERMITTED BY THE U.S. COAST GUARD CAPTAIN OF THE PORT. COMMERCIAL VESSELS REQUESTING TO ENTER OR TRANSIT IN THIS SAFETY ZONE MUST CONTACT THE COAST GUARD (MSU PADUCAH, SOHV, OR CG PERSONNEL AT THE LOCK AS THE SITUATION DICTATES) AT XXX-XXX-XXXX.

USACE draft restrictions for L&D 52 - Enclosure 2

MAIN 1200’ CHAMBER DRAFT RESTRICTIONS

Lower Gage (ft)	Draft in Tenths (ft)	Draft in ft & in
8.5	9.0	9'-0"
8.6	9.1	9'-1.2"
8.7	9.2	9'-2.4"
8.8	9.3	9'-3.6"
8.9	9.4	9'-4.8"
9.0	9.5	9'-6"
9.1	9.6	9'-7.2"
9.2	9.7	9'-8.4"
9.3	9.8	9'-9.6"
9.4	9.9	9'-10.8"
9.5	10.0	10'-0"
9.6	10.1	10'-1.2"
9.7	10.2	10'-2.4"
9.8	10.3	10'-3.6"
9.9	10.4	10'-4.8"

AUXILIARY 600’ CHAMBER DRAFT RESTRICTIONS

Lower Gage (ft)	Draft in Tenths (ft)	Draft in ft & in
8.0	9.1	9'-1.2"
8.1	9.2	9'-2.4"
8.2	9.3	9'-3.6"
8.3	9.4	9'-4.8"
8.4	9.5	9'-6"
8.5	9.6	9'-7.2"
8.6	9.7	9'-8.4"
8.7	9.8	9'-9.6"
8.8	9.9	9'-10.8"
8.9	10.0	10'-0"
9.0	10.1	10'-1.2"
9.1	10.2	10'-2.4"
9.2	10.3	10'-3.6"
9.3	10.4	10'-4.8"
9.4	10.5	10'-6"
9.5	10.6	10'-7.2"
9.6	10.7	10'-8.4"
9.7	10.8	10'-9.6"
9.8	10.9	10'-10.8"
9.9	11.0	11'-0"

4.A. Ohio River Action Plan
4.A.21. Lock & Dam 53 Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING OLMSTED UPPER GAGE	L&D 53 UPPER GAGE EQUIVLENT READING	TREND	DESCRIPTION	PHASE	ACTION
OLMSTED LOCK & DAM (INTERIM; DURING CONSTRUCTION) **OHIO RIVER** **MILE MARKER**: 964.4 **REFERENCE GAGES**: Olmsted, L & D 53 **OTHER USEFUL DATA**: This action table is not the traditional WAP action table. It is intended to provide an overview of underwater navigation hazards at various river stages during construction activities at Olmsted Lock and Dam. Exact actions will vary based on river conditions and construction progress. **USACE GAGE READINGS REPORT** **Phone #: 502-315-7200**	24.5’	30.4’	Rising	Top of finished right & left boat abutments start going under water	Watch	USACE advises ICE of planned construction/changes to traffic routing if river forecasted to continue to rise. Evaluate buoy locations; USACE/USCG formulate plan for resetting if traffic shift is expected. USACE in conjunction with ICE and the USCG generates Notice to Mariners if necessary; MSU Paducah generates Safety Advisory based on generated Notice to Navigation.
	27.0’	32.9’	Rising	Traffic starts navigating navigable pass	Watch	Construction work ceases; construction office notifies MSU Paducah. Hold ICE Committee conference call as necessary to discuss planned traffic routing or other issues. USACE in conjunction with ICE and the USCG generates Notice to Mariners if necessary; MSU Paducah generates Safety Advisory based on generated Notice to Navigation.
	31.0’	36.9’	Rising	Lock walls start going under water along with unfinished dam piers.	Watch	Hold ICE Committee conference call as necessary to discuss planned traffic routing or other issues. USACE in conjunction with ICE and the USCG generates Notice to Mariners if necessary; MSU Paducah generates Safety Advisory based on generated Notice to Navigation.
	36.0’	41.9’	Rising	Top of fixed weir cells on the Kentucky bank start going underwater	Action	Hold ICE Committee conference call as necessary to discuss planned traffic routing or other issues. USACE in conjunction with ICE and the USCG generates Notice to Mariners if necessary; MSU Paducah generates Safety Advisory based on generated Notice to Navigation.
	41.0’	46.9’	Rising	Downstream mooring cells and Cat Barge test piles start going underwater	Action	Hold ICE Committee conference call as necessary to discuss planned traffic routing or other issues. USACE in conjunction with ICE and the USCG generates Notice to Mariners if necessary; MSU Paducah generates Safety Advisory based on generated Notice to Navigation.

CRITICAL AREA DESCRIPTION	TRIGGER READING UPPER & LOWER GAUGE	OLMSTED L&D UPPER GAGE EQUIVELENT	TREND	DESCRIPTION	PHASE	ACTION
LOCK & DAM 53 and OLMSTED LOCK AND DAM **OHIO RIVER** **MILE MARKER:** 963.0 to 964.4 **OTHER USEFUL DATA:** ONE GAGE READING EXISTS WHEN WICKETS ARE DOWN. WHEN WICKETS ARE RAISED THERE IS AN UPPER AND LOWER GAGE READING. IDEAL POOL CONDITIONS FOR LOCK & DAM 53: 16.9 ON THE UPPER GAGE AND 10.0 ON THE LOWER GAGE. NAVIGATION OVER THE BEAR TRAPS WILL BE CONSIDERED WHEN THE UPPER GAGE REACHES 32.0. MINIMUM LOCKING ABILITY ON LOWER GAUGE IS 4.0. ZERO GAGE'S L&D 53 UPPER - 273.1' L&D 53 LOWER - 273.1' OLMSTED UPPER – 279.0' OLMSTED LOWER – 270.9' **USACE GAGE READINGS REPORT**	U 16.0 & above		Falling	Normal Operations	Watch	Vessels navigating the pass at L&D 53 and the pass at Olmsted as construction activities allow.
	U 16.0 – 14.0		Falling	Normal Operations	Watch	Lockmaster contacts MSU Paducah. Lockmaster considers raising wickets at L&D 53. Notify ICE Committee. MSU Paducah will submit a BNM request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory SMIB. Evaluate need to reset buoys. Lockmaster, USCG and ICE will start communications via conference call to discuss draft and tow size recommendations and propose BNM content Vessels may experience delays during this stage.
	U 13.6 L 10.0	U – 4.1	Falling	Low Water	Watch	L&D 53 upper gage reading leaves inadequate water in L&D 53 pool for normal navigation. Lockmaster contacts MSU Paducah. Lockmaster, USCG and ICE will meet either via conference call or in person to access situation and propose BNM content. Vessels exercise caution within buoyed areas between L&D 53 to mouth of OHR. USACE briefs planned construction ops/traffic routing at Olmsted; if transiting nav. pass on Kentucky bank, industry preps for voluntary two foot buffer over 350' wide nav pass (14.1 ft. of water over Olmsted nav. pass at this trigger). Monitor buoy conditions. MSU Paducah will submit a BNM request to SCC as needed (Enc. 2)
	U 13.3 and below L 9.0 and below	U – 3.1	Falling	Extreme Low Water	Action	L&D 53 upper gage reading leaves inadequate water in L&D 53 pool for normal navigation. USACE, USCG and ICE access the need to implement a Safety Zone (Enc. 1) due to extreme low water. Hold ICE Committee meeting with MSU Paducah, CGC CHIPPEWA, and USACE to access the need to cease locking of commercial vessels at L&D 53. Note: Vessels draft must have **one foot of clearance** over miter sills to enter and exit L&D 53 lock chamber. Evaluate need to lock vessels at Olmsted if conditions continue to deteriorate; prep for resetting of buoys as necessary. MSU Paducah cancels safety advisory for nav pass and issues safety advisory for locking as necessary (Enc. 3).
	L – 6.9	U – 1		Historically Low Water	Action	Minimum depth vessels with 9' draft can navigate 350' wide pass at Olmsted with voluntary 2' safety

						buffer. Commerce extremely inhibited unless locking through Olmsted.
	U 13.4 L 9.0	U – 3.1	Rising	Extreme Low Water	Action	Lockmaster contacts MSU Paducah and ICE Committee MSU Paducah requests SCC cancel Safety Zone, if implemented, and issue Safety Advisory SMIB Lock chamber at L&D 53 unable to accommodate commercial vessels.
	U 13.6 L 10.0	U – 4.1	Rising	Low Water	Recovery	Locking vessels at L&D 53. USACE provides current status of Olmsted activities. Coast Guard modifies or cancels Safety Advisories as necessary. Mariners should consider potential out drafts.
	U 16.9 L 11.0	U – 5.1	Rising	Normal Operations	Recovery	Locking vessels at L&D 53.
	U 17.0 L 12.0	U – 6.1	Rising	Normal Operations	Recovery	Lockmaster considers lowering some wickets at L&D 53 to maintain upper pool. Locking vessels at L&D 53.
	U 17.2		Rising	Normal Operations	Recovery	Lockmaster contacts MSU Paducah and ICE Committee. Lockmaster considers lowering all wickets at L&D 53. Vessels navigating the pass. Vessels not locking at L&D 53.

OHIO RIVER –LOCK AND DAM 53

LOW WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE ON THE OHIO RIVER FROM MILE MARKER _____ TO MILE MARKER _____ EXTENDING THE ENTIRE WIDTH OF THE RIVER DUE TO EXTREME LOW WATER CONDITIONS. COMMERCIAL VESSELS ARE PROHIBITED FROM ENTERING OR TRANSITING IN THIS SAFETY ZONE UNLESS PERMITTED BY THE U.S. COAST GUARD CAPTAIN OF THE PORT. COMMERCIAL VESSELS REQUESTING TO ENTER OR TRANSIT THIS SAFETY ZONE MUST CONTACT THE COAST GUARD (MSU PADUCAH, SOHV, OR CG PERSONNEL AT THE LOCK AS THE SITUATION DICTATES) AT XXX-XXX-XXXX.

LOW WATER Enclosure 2 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT OHIO HAS ISSUED THIS SAFETY ADVISORY DUE TO LOW WATER CONDITIONS IN THE VICINITY OF THE OLMSTED LOCK AND DAM CONSTRUCTION SITE AT MILE 964.4 OHR. VESSEL TRAFFIC IS CURRENTLY TRANSITING THROUGH THE CONSTRUCTION SITE IN THE MARKED CHANNEL ALONG THE KENTUCKY BANK. IT IS RECOMMENDED VESSELS AND BARGES MAINTAIN A DRAFT OF LESS THAN 9 FT. WHEN THE LOWER GAGE L&D 53 IS 6.9 FT, WHICH EQUATES TO AN OLMSTED UPPER GAGE READING OF 1 FT. IT IS ANTICIPATED THAT VESSEL TRAFFIC WILL BE SHIFTED TO THE RIVERSIDE LOCK CHAMBER. THE ARMY CORPS OF ENGINEERS REQUIRES ALL VESSELS TO CHECK IN AT THE DESIGNATED APPROACH POINTS OF L&D53 FOR DOWNBOUND VESSELS AND THE OLMSTED BOAT RAMP FOR UPBOUND VESSELS. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION WHILE TRANSITING THIS AREA, AND CONSIDER RISKS OF NAVIGATING LOW WATER WHEN PUSHING CERTAIN DANGEROUS CARGOES.

LOW WATER Enclosure 3 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT OHIO HAS ISSUED THIS SAFETY ADVISORY DUE TO LOW WATER CONDITIONS IN THE VICINITY OF THE OLMSTED LOCK AND DAM CONSTRUCTION SITE AT MILE 964.4 OHR. VESSEL TRAFFIC IS CURRENTLY TRANSITING THROUGH THE CONSTRUCTION SITE IN THE RIVER SIDE LOCK CHAMBER. IT IS ANTICIPATED VESSELS WILL CONTINUE TO LOCK UNTIL THE L&D 53 LOWER GAGE IS 6.9 FT. AND RISING, WHICH EQUATES TO AN OLMSTED UPPER GAGE READING OF 1. THE ARMY CORPS OF ENGINEERS REQUIRES ALL VESSELS TO CHECK IN AT THE DESIGNATED APPROACH POINTS OF L&D53 FOR DOWNBOUND VESSELS AND THE OLMSTED BOAT RAMP FOR UPBOUND VESSELS. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION WHILE TRANSITING THIS AREA, AND CONSIDER RISKS OF NAVIGATING LOW WATER WHEN PUSHING CERTAIN DANGEROUS CARGOES.

4.A. Ohio River Action Plan
4.A.22. Irvin Cobb Bridge Operations

CRITICAL AREA DESCRIPTION	TRIGGER	TREND	DESCRIPTION	PHASE	ACTION
IRVIN COBB BRIDGE **OHIO RIVER MILE MARKERS:** 937.4 **OTHER USEFUL DATA:** MARINERS SHOULD EXERCISE EXTREME CAUTION WHEN NAVIGATING THESE SPANS AND ENSURE ADEQUATE CLEARENCE OF VESSEL UNDER BRIDGE DURING HIGH WATER CONDITIONS	Locking at 52	Locking at 52	Normal Operations	Watch	Vessels normally run Illinois channel span when L&D 52 is locking.
	Not locking at 52	Not locking at 52	Normal Operations	Watch	Vessels normally run Kentucky channel span when L&D 52 is not locking

4.A. Ohio River Action Plan
4.A.23. I-24 Bridge

CRITICAL AREA DESCRIPTION	TRIGGER	TREND	DESCRIPTION	PHASE	ACTION
I-24 BRIDGE OHIO RIVER MILE MARKERS: 940.9 **OTHER USEFUL DATA** MARINERS SHOULD EXERCISE EXTREME CAUTION WHEN NAVIGATING THESE SPANS AND ENSURE ADEQUATE CLEARENCE OF VESSEL UNDER BRIDGE DURING HIGH**:** WATER CONDITIONS.	Locking at 52	Locking at 52	Normal Operations	Watch	Vessels normally run Illinois channel span when L&D 52 is locking. Vertical clearance is 20' less on Illinois span and may not be adequate to transit high water conditions.
	Not locking at 52	Not locking at 52	Normal Operations	Watch	Vessels normally run Kentucky channel span when L&D 52 is not locking

4.A. Ohio River Action Plan
4.A.24. I.C. Railroad Bridge & Route 60/62 Bridge

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	TRIGGER CURRENT	DESCRIPTION	PHASE	ACTION
I.C. RAILROAD BRIDGE AND ROUTE 60 / 62 BRIDGE **OHIO RIVER** **MILE MARKERS:** 977.7 980.4 **FLOOD STAGE READING:** 40'0" REFERENCE GAUGE: CAIRO & L & D 53 **OTHER USEFUL DATA:** THIS CHART USES THE CAIRO GAUGE AND THE LOCK AND DAM 53 GAUGE. THE L&D 53 GAUGE CAN BE COMPARED TO THE CAIRO GAUGE TO DETERMINE HAZARDOUS CONDITIONS / FLOWS. SIMILAR CONDITIONS EXIST FOR THE CAIRO HIGHWAY BRIDGE AT MM 980.4 FOR VESSELS TRANSITING DOWNBOUND. UNDER THESE CONDITIONS MARINERS SHOULD NAVIGATE WITH CAUTION. HIGH CONSEQUENCE ALLISIONS MAY OCCUR IN THIS AREA UNDER HIGH WATER AND HIGH CURRENT CONDITIONS RESULTING IN MARINE CASUALTIES AND VESSEL SINKINGS. HARRAHS CASINO STOPS PASSENGER OPERATIONS WHEN L&D 52 GAUGE REACHES 51'0". **BIRDS POINT FLOOD PLAIN OFFICE:** 901-544-3401 **CAIRO GAUGE READING:** PHONE #: 1-618 – 734 – 0577 **USACE GAUGE READINGS REPORT**	35'0" & below	Rising	3.0 mph	Normal Operations	Watch	Operations normal.
	35'0"	Rising & projected to continue rising rapidly	3.0 mph	High Current	Watch	MSU Paducah will contact ICE chairman to discuss need for Safety Advisory; if needed contact Sector Command Center (SCC) to release high water SMIB based on overall conditions of OHR/UMR; be alert for swift currents, report unusual conditions to Coast Guard. Transit area with extreme caution.
	38'0"	Rising	4.0 mph	High Current	Watch	Notify ICE Committee. Initiate Safety Advisory if needed. Discuss horsepower and tow size recommendations. Consider use of assist vessel.
	40'0"	Rising	5.0 mph	Very High Current	Action	Safety Advisory in effect. Hold ICE Committee conference call with MSU Paducah and CGC CHIPPEWA. Consider transit of vessels based on horsepower, tow size, cargo, and visibility. Fleet managers secure fleeting areas.
	40'0" & above	Rising	5.0 mph	Very High Current	Action	Consider need for Safety Zone (Enc. 1). Hold ICE Committee Meeting. Consider transit of vessels based on horsepower, tow size, cargo, and visibility. Fleet managers secure fleeting areas. Note: At 49' on Cairo gauge, consult Birds Point Floodway Plan. At 56' on Cairo gauge, CG requested on scene.
	39'0"	Falling	4.0 mph	Very High Current	Recovery	MSU Paducah requests SCC cancel Safety Zone (Enc. 1), if implemented as conditions allow, and SCC issues Safety Advisory SMIB. Notify ICE Committee.
	38'0"	Falling	3.5 mph	Very High Current	Recovery	Safety Advisory in effect. Notify ICE Committee. Consider transit of vessels based on horsepower, tow size, cargo, and visibility.
	35'0"	Falling	3.0 mph	High Current	Recovery	Continue monitoring river conditions, cancel Safety Advisory when conditions permit. Notify ICE Committee.
	35'0" & below	Falling	3.0 mph	Normal Operations	Recovery	Operations normal.

OHIO RIVER – I.C. RAILROAD BRIDGE AND ROUTE 60 / 62 BRIDGE

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT OHIO HAS ESTABLISHED A SAFETY ZONE ON THE OHIO RIVER FROM MILE MARKER _____ TO MILE MARKER _____ IN THE VICINITY OF THE I.C. RAILROAD BRIDGE AND ROUTE 60 / 62 BRIDGE. NORTHBOUND VESSELS ARE PROHIBITED FROM NAVIGATION OVER THE LOCK AND DAM 53 WEIR PASS. SOUTHBOUND VESSELS WITH 9'0" DRAFT AND ADEQUATE HORSEPOWER ARE AUTHORIZED NAVIGATION OVER THE WEIR WITH AN ASSIST VESSEL IMMEDIATELY AVAILABLE IN CASE OF EMERGENCY.

4.A. Ohio River Action Plan
4.A.25. Grand Chain & Post Creek Vicinity

CRITICAL AREA DESCRIPTION	TRIGGER READING L&D 53 UPPER GAUGE	TREND	DESCRIPTION	PHASE	ACTION
GRAND CHAIN & POST CREEK VICINITY **OHIO RIVER** **MILE MARKERS:** 959.0 – 962.0 **REFERENCE GAGE**: L & D 53 **NAVIGATION CHANNEL PROJECT DEPTH OR OTHER USEFUL DATA:** THIS AREA EXPERIENCES EXCESSIVE SHOALING RESULTING IN VESSEL GROUNDINGS WITHIN THE CHANNEL. DURING LOW WATER OR WHEN ALL L&D 53 WICKETS ARE DOWN, GROUNDINGS MAY INCREASE SIGNIFICANTLY. VESSEL DRAFTS SHOULD BE CAREFULLY WATCHED WHEN TRANSITING THIS AREA. VESSELS MAY REQUIRE LIGHTERING DURING EXTENDED PERIODS OF LOW WATER. ZERO GAGE'S L&D 53 UPPER - 273.1' L&D 53 LOWER - 273.1' **USACE GAGE READINGS REPORT**	16'0" and above	Falling	Normal Operations	Watch	Operations Normal. CG, Industry chairman, & USACE monitor L&D 53 GAGE. Mariners report all missing Aids to Navigation to CG Sector Ohio Valley.
	15'0"	Falling	Low Water	Action	Open Communications between USACE, MSU Paducah CG Buoy Tender and ICE Committee. Evaluate the need for draft and tow sizes recommendations under falling river conditions. Sector Command Center (SCC) will initiate a Safety Advisory SMIB. Notify USACE discuss surveys and dredging. Notify CG Buoy Tender to evaluate need to re-set buoys.
	14'8"	Falling	Low Water	Action	CG, Industry chairman, & USACE monitor L&D 53 gage. Notify ICE Committee. Safety Advisory in effect. Notify USACE discuss surveys and dredging. Notify CG Buoy Tender to evaluate need to set buoys.
	14'2"	Falling	Extreme Low Water	Action	Hold ICE Committee call with MSU Paducah and CGC CHIPPEWA. Evaluate the need for draft and tow size recommendations under falling river conditions. Safety Advisory in effect. CG Buoy Tender on scene. USACE plan potential dredging.
	13'8"	Falling	Extreme Low Water	Action	CG, Industry chairman, ICE Committee & USACE monitor L&D 53 gage. Hold ICE Committee meeting as needed. Identify specific critical low water areas. Review surveys. Safety Advisory in effect. Consider need for Safety Zone (Enc. 1).
	13'5" and below	Falling	Restrict Navigation	Action	CG MSU Paducah in conjunction with ICE Committee evaluates the need for a Safety Zone due to extreme low water. Vessels will experience delays.
	13'5" and below	Rising	Restrict Navigation	Recovery	MSU Paducah and industry evaluates need for Safety Zone. Vessels will experience delays.
	13'8"	Rising	Extreme Low Water	Recovery	Notify ICE Committee. MSU Paducah requests SCC cancel Safety Zone (Enc. 1), if implemented, and issue Safety Advisory SMIB Discuss draft and tow size recommendations.
	14'2"	Rising	Extreme Low Water	Recovery	CG, Industry chairman, & USACE monitor L&D 53 gage. Hold ICE Committee conference call. Discuss draft and tow size recommendations under rising river conditions. Safety Advisory in effect. USACE plan potential dredging.
	14'8"	Rising	Low Water	Recovery	Discuss draft and tow size recommendations. Safety Advisory in effect. Notify USACE discuss surveys and dredging.
	15'0"	Rising	Low Water	Recovery	Continue monitoring river conditions, cancel Safety Advisory SMIB. CG Buoy Tender survey area for missing buoys.
	16'0" and above	Rising	Normal Operations	Recovery	Operations Normal.

OHIO RIVER – GRAND CHAIN & POST CREEK VICINITY

LOW WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE ON THE OHIO RIVER FROM MILE MARKER _____ TO MILE MARKER _____ EXTENDING THE ENTIRE WIDTH OF THE RIVER DUE TO EXTREME LOW WATER CONDITIONS. COMMERCIAL VESSELS ARE PROHIBITED FROM ENTERING OR TRANSITING IN THIS SAFETY ZONE UNLESS PERMITTED BY U.S. COAST GUARD CAPTAIN OF THE PORT. COMMERCIAL VESSELS REQUESTING TO ENTER OR TRANSIT IN THIS SAFETY ZONE MUST CONTACT THE COAST GUARD (MSU PADUCAH, SOHV, OR CG PERSONNEL AT THE LOCK AS THE SITUATION DICTATES) AT XXX-XXX-XXXX.

4.A. Ohio River Action Plan
4.A.26. American Bar & Mound City Bar Vicinity Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING CAIRO GAUGE	TREND	DESCRIPTION	PHASE	ACTION
AMERICA BAR & MOUND CITY BAR VICINITY **OHIO RIVER MILE MARKERS:** 969.0 – 972.0 973.0 – 975.0 **REFERENCE GAGE**: CAIRO ZERO GAGE – 270.9 **OTHER USEFUL DATA:** THIS AREA EXPERIENCES EXCESSIVE SHOALING RESULTING IN VESSEL GROUNDINGS WITHIN THE CHANNEL. DURING LOW WATER OR WHEN ALL L&D 53 WICKETS ARE UP, GROUNDINGS MAY INCREASE IN THIS AREA. VESSEL DRAFTS SHOULD BE CAREFULLY WATCHED WHEN TRANSITING THIS AREA. VESSELS MAY REQUIRE LIGHTERING DURING EXTENDED PERIODS OF LOW WATER. HISTORICAL LOWS: 1988 – CAIRO GAUGE – 5’5” 1997 – CAIRO GAUGE – 6’8” 2005 – CAIRO GAUGE – 7’5” EMERGENCY CONDITIONS EXIST WHEN THE CAIRO GAGE FALLS BELOW 9’0” FOR AN EXTENDED PERIOD OF TIME. **CAIRO GAGE READING:** PHONE #: 1-618 – 734 – 0577 **USACE GAGE READINGS REPORT**	11’0” and above	Falling	Normal Operations	Watch	Operations Normal. CG, Industry chairman, & USACE monitor Cairo GAGE. Mariners report all missing Aids to Navigation to CG Sector Ohio Valley.
	10’0”	Falling	Low Water	Watch	Notify MSU Paducah of Cairo GAGE reading 10’0”.Sector Command Center (SCC) will initiate a Safety Advisory SMIB. Report missing Aids to Navigation to CG.
	9’5”	Falling	Low Water	Watch	CG, Industry chairman, & USACE monitor Cairo GAGE. Notify ICE Committee. and access the need for draft and tow size recommendations under falling river conditions. Safety Advisory in effect. Notify USACE discuss surveys and dredging. Notify CG Buoy Tender to survey & set buoys.
	9’0”	Falling	Extreme Low Water	Action	Hold ICE Committee conference call. Evaluate the need for draft and tow size recommendations under falling river conditions. Safety Advisory in effect. CG Buoy Tender on scene. USACE plan / begin dredging.
	8’8”	Falling	Extreme Low Water	Action	CG, Industry chairman, & USACE monitor Cairo GAGE. Hold ICE Committee call with MSU Paducah and CGC CHIPPEWA. Identify specific critical low water areas. Review surveys. Safety Advisory in effect. Evaluate the need for Safety Zone (Enc. 1). CG Buoy Tender on scene as needed. USACE plan / begin dredging.
	8’3” and below	Falling	Restrict Navigation	Action	CG, Industry chairman, & USACE monitor Cairo GAGE. CG MSU Paducah in conjunction with the ICE Committee considers implementation of Safety Zone due to extreme low water. Vessels may experience delays. USACE continue dredging. CG Buoy Tender on-scene as needed.
	8’3” and below	Rising	Restrict Navigation	Recovery	Industry complies with Safety Zone if in effect. Vessels may experience delays.
	8’8”	Rising	Extreme Low Water	Recovery	MSU Paducah requests SCC cancel Safety Zone (Enc. 1), if implemented, and SCC issues Safety Advisory SMIB. Notify ICE Committee. CG Buoy Tender coordinates with USACE on scene to re-open channel and survey existing ATON. Discuss draft and tow size recommendations under rising river conditions.
	9’0”	Rising	Extreme Low Water	Recovery	CG, Industry chairman, & USACE monitor Cairo GAUGE. Hold ICE Committee conference call. Discuss draft and tow size recommendations if any under rising river conditions. Safety Advisory in effect.
	9’5”	Rising	Low Water	Recovery	Notify ICE Committee. Consider removal of any draft and tow size recommendations. Safety Advisory in effect. Notify USACE discuss surveys and dredging.
	10’0”	Rising	Low Water	Recovery	CG, Industry chairman, & USACE monitor Cairo GAGE. Cancel Safety Advisory SMIB CG Buoy Tender survey area for missing buoys.
	11’0” and above	Rising	Normal Operations	Recovery	Operations Normal. CG, Industry chairman, & USACE monitor Cairo GAUGE. Mariners report all missing Aids to Navigation to CG Sector Ohio Valley.

OHIO RIVER – AMERICA BAR & MOUND CITY BAR VICINITY

LOW WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE ON THE OHIO RIVER FROM MILE MARKER _____ TO MILE MARKER _____ EXTENDING THE ENTIRE WIDTH OF THE RIVER DUE TO EXTREME LOW WATER CONDITIONS. COMMERCIAL VESSELS ARE PROHIBITED FROM ENTERING OR TRANSITING IN THIS SAFETY ZONE UNLESS PERMITTED BY THE U.S. COAST GUARD CAPTAIN OF THE PORT. COMMERCIAL VESSELS REQUESTING TO ENTER OR TRANSIT IN THIS SAFETY ZONE MUST CONTACT THE COAST GUARD (MSU PADUCAH OR SOHV AS THE SITUATION DICTATES) AT XXX-XXX-XXXX

4.B. Mississippi River Action Plan
4.B.1. Chester Highway Bridge High Water / High Current Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING CHESTER GAUGE	TREND	TRIGGER CURRENT	DESCRIPTION	PHASE	ACTION
CHESTER HIGHWAY BRIDGE **UPPER MISSISSIPPI RIVER MILE MARKER:** 109.9 **FLOOD STAGE READING:** 29'0" **REFERENCE GAUGE**: CHESTER **OTHER USEFUL DATA:** DURING HIGH WATER CONDITIONS VESSELS MAY EXPERIENCE SET WHILE NAVIGATING CHANNEL SPAN OF THE CHESTER HIGHWAY BRIDGE. DURING HIGH CURRENT AND HIGH WATER MARINERS ARE ADVISED TO NAVIGATE THIS AREA AT SLOWEST SAFE SPEED AND EXERCISE EXTREME CAUTION DUE TO POTENTIAL OUTDRAFTS. **CAPE GIRARDEAU FLOOD PLAIN OFFICE:** 1-573-339-6351 **NOAA GAUGE READINGS REPORT**	20'0"	Rising	2.5 mph	Normal Operations	Watch	Operations Normal.
	22'5"	Rising and projected to rise rapidly	3.5 mph	High Water	Watch	MSU Paducah will contact RIAC to discuss overall river conditions. Sector Command Center (SCC) will initiate a Safety Advisory SMIB; indicate swift currents, report unusual conditions to Coast Guard. Transit area with extreme caution. Discuss voluntary horsepower and tow size recommendations.
	24'5"	Rising	4.0 mph	Extreme High Water	Action	Safety Advisory in effect. Consider RIAC phone conference call. Discuss industry actions. Consider use of assist vessel. Notify levee mangers. Discuss levee concerns and future actions.
	27'0" & above	Rising	5.0 mph	Extreme High Water	Action	Safety Advisory in effect. Hold RIAC phone conference call. Notify levee mangers. Discuss potential for a reducing tow sizes. Consider use of assist vessel.
	27'0"	Falling	5.0 mph	Extreme High Water	Action	Safety Advisory in effect. Continue potential for a Regulated Navigation Area restricting tow sizes. Consider use of assist vessel. Discuss levee concerns and future actions.
	24'5"	Falling	4.0 mph	Extreme High Water	Recovery	Safety Advisory in effect. Consider RIAC conference call. Discuss industry actions. Consider use of assist vessel. Discuss levee concerns and future actions.
	22'5"	Falling	3.5 mph	High Water	Recovery	Cancel Safety Advisory SMIB. Notify RIAC.
	20'0"	Falling	2.5 mph	Normal Operations	Watch	Operations Normal.

4.B. Mississippi River Action Plan
4.B.2. Grays Point & Thebes Railroad Bridge High Water / High Current Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING CAPE GIRARDEAU GAUGE	TREND	TRIGGER CURRENT	DESCRIPTION	PHASE	ACTION
GRAYS POINT & THEBES RAILROAD BRIDGE **UPPER MISSISSIPPI RIVER MILE MARKER:** 43.2 **FLOOD STAGE READING:30'0" REFERENCE GAUGE:** CAPE GIRARDEAU **OTHER USEFUL DATA:** VESSELS MAY EXPERIENCE SET WHILE NAVIGATING GRAYS POINT AND CHANNEL SPAN OF THE THEBES RAILROAD BRIDGE. DURING HIGH WATER MARINERS ARE ADVISED TO NAVIGATE THIS AREA AT SLOWEST SAFE SPEED AND EXERCISE EXTREME CAUTION DUE TO POTENTIAL OUTDRAFTS. **CAPE GIRARDEAU FLOOD PLAIN OFFICE:** 1-573-339-6351 **NOAA GAUGE READINGS REPORT**	12'0"	Rising	2.5 mph	Normal Operations	Watch	Operations Normal.
	20'0"	Rising & projected to continue rising rapidly	3.5 mph	High Water	Watch	MSU Paducah will contact RIAC to discuss overall river conditions. Sector Command Center will initiate a Safety Advisory SMIB; indicate swift currents, report hazardous conditions to Coast Guard. Discuss fleeting areas.
	27'4"	Rising	4.0 mph	Extreme High Water	Action	Safety Advisory in effect. Consider RIAC phone conference call. Discuss industry actions. Discuss horsepower and tow size recommendations. Notify levee mangers. Discuss levee concerns and future actions. Secure fleeting areas.
	29'0" & above	Rising	5.0 mph	Extreme High Water	Action	Safety Advisory in effect. Hold RIAC phone conference call. Discuss horsepower and tow size recommendations. Consider use of assist vessel. Notify levee mangers. Secure fleeting areas. Contact Cape G. Flood Plain Office (1-573-339-6351).
	29'0"	Falling	5.0 mph	Extreme High Water	Action	Safety Advisory in effect. Discuss horsepower and tow size recommendations. Consider use of assist vessel. Secure fleeting areas. Discuss levee concerns and future actions.
	27'4"	Falling	4.0 mph	Extreme High Water	Recovery	Safety Advisory in effect. Consider RIAC phone conference call. Discuss industry actions. Discuss horsepower and tow size recommendations. Secure fleeting areas. Discuss levee concerns and future actions.
	20'0"	Falling	3.5 mph	High Water	Recovery	Cancel Safety Advisory SMIB. Notify RIAC.
	12'0"	Falling	2.5 mph	Normal Operations	Watch	Operations Normal.

4.B. Mississippi River Action Plan
4.B.3. Route 60 / 62 Bridge High Water / High Current Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING CAIRO GAUGE	TREND	TRIGGER CURRENT	DESCRIPTION	PHASE	ACTION
ROUTE 60 / 62 BRIDGE UPPER MISSISSIPPI RIVER MILE MARKERS: 1.3 FLOOD STAGE READING: 40'0" REFERENCE GAUGE: CAIRO OTHER USEFUL DATA: THE CAPE GIRARDEAU GAUGE CAN BE COMPARED TO THE CAIRO GAUGE TO DETERMINE HAZARDOUS CONDTIONS / FLOWS. SIMILAR CONDITIONS EXIST FOR THE LOWER OHIO RIVER BRIDGES FOR VESSELS TRANSITING DOWNBOUND. UNDER THESE CONDTIONS MARINERS SHOULD NAVIGATE AT SLOWEST SAFE SPEED. HIGH CONSEQUENCE ALLISIONS MAY OCCUR IN THIS AREA UNDER HIGH WATER CONDITIONS RESULTING IN HIGH CONSEQUENCE MARINE CASUALTIES AND VESSEL SINKINGS. BIRDS POINT FLOOD PLAIN OFFICE: 901-544-3401 CAIRO GAUGE READING PHONE #: 1- 618 – 734 - 0577 NOAA GAUGE READINGS REPORT	35'0" & below	Rising	3.0 mph	Normal Operations	Watch	Operations normal.
	35'0"	Rising & projected to continue rising rapidly	3.0 mph	High Current	Watch	MSU Paducah will contact RIAC to discuss overall river conditions. Sector Command Center (SCC) will initiate a Safety Advisory SMIB; indicate swift currents, report hazardous conditions to Coast Guard. Notify RIAC Committee.
	38'0"	Rising	3.5 mph	High Current	Watch	Safety Advisory SMIB in effect. Fleet managers secure fleeting areas.
	39'0"	Rising	5.0 mph	Very High Current	Action	Safety Advisory in effect. Hold RIAC Committee conference call. Discuss horsepower and tow size recommendations. Consider use of assist vessel. Fleet managers secure fleeting areas.
	40'0" & above	Rising	5.0 mph	Very High Current	Action	CG MSU Paducah considers implementation of Safety Zone (Enc. 1) Hold RIAC Committee meeting. Consider coordination of vessel traffic on a vessel-by-vessel basis. Consider use of assist vessel. Vessels may experience delays. Fleet managers secure fleeting areas. Note: **At 49' on Cairo gauge, consult Birds Point Floodway Plan.** At 56' on Cairo gauge, CG requested on scene.
	39'0"	Falling	4.0 mph	Very High Current	Recovery	MSU Paducah requests SCC cancel Safety Zone (Enc. 1), if implemented, and SCC issues Safety Advisory SMIB; indicate swift currents, report hazardous conditions to Coast Guard. Notify RIAC Committee. Consider use of assist vessel.
	38'0"	Falling	3.5 mph	Very High Current	Recovery	Safety Advisory in effect. Notify RIAC Committee. Discuss horsepower and tow size recommendations.
	35'0"	Falling	3.0 mph	High Current	Recovery	Cancel Safety Advisory SMIB. Notify RIAC Committee.
	35'0" & below	Falling	3.0 mph	Normal Operations	Recovery	Operations normal.

UPPER MISSISSIPPI RIVER – ROUTE 60 / 62 BRIDGE

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE ON THE UPPER MISSISSIPPI RIVER FROM MILE MARKER _____ TO MILE MARKER _____ IN THE VICINITY OF THE ROUTE 60/62 BRIDGE. NORTHBOUND VESSELS ARE PROHIBITED FROM NAVIGATION OVER THE LOCK AND DAM 53 WEIR PASS. SOUTHBOUND VESSELS WITH 9'0" DRAFT AND ADEQUATE HORSEPOWER ARE AUTHORIZED NAVIGATION OVER THE WEIR WITH AN ASSIST VESSEL IMMEDIATELY AVAILABLE IN CASE OF EMERGENCY.

4.B. Mississippi River Action Plan
4.B.4. Cairo Point Vicinity Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING CAIRO GAUGE	TREND	DESCRIPTION	PHASE	ACTION
CAIRO POINT VICINITY **UPPER MISSISSIPPI RIVER MILE MARKERS:** 0.3 REFERENCE GAGE: CAIRO ZERO GAGE – 270.9 **OTHER USEFUL DATA:** THIS AREA EXPERIENCES EXCESSIVE SHOALING RESULTING IN VESSEL GROUNDINGS WITHIN THE CHANNEL TYPICALLY ALONG THE RIGHT DESCENDING BANK. DURING LOW WATER OR WHEN ALL L&D 53 WICKETS ARE UP, GROUNDINGS MAY INCREASE SIGNIFICANTLY. VESSEL DRAFTS SHOULD BE CAREFULLY WATCHED WHEN TRANSITING THIS AREA DURING LOW WATER CONDITIONS. MARINERS ARE ADVISED TO NAVIGATE THIS AREA WHILE ADHEREING TO THE CENTER OF THE CHANNEL DURING LOW WATER. HISTORICAL LOWS: 1988 – CAIRO GAGE – 5'5" 1997 – CAIRO GAGE – 6'8" 2005 – CAIRO GAGE – 7'5" EMERGENCY CONDITIONS EXIST WHEN THE CAIRO GAGE FALLS BELOW 9'0" FOR AN EXTENDED PERIOD OF TIME. **CAIRO GAGE READING** PHONE #: 1- 618 – 734 – 0577 **NOAA GAGE READINGS REPORT**	11'0" and above	Falling	Normal Operations	Watch	Operations Normal. CG, Industry chairman, & USACE monitor Cairo GAGE. Mariners report all missing Aids to Navigation to CG Sector Ohio Valley.
	10'0"	Falling	Low Water	Watch	Notify MSU Paducah of Cairo GAGE reading 10'0". Sector Command Center (SCC) will initiate a Safety Advisory SMIB. Report missing Aids to Navigation to CG.
	9'5"	Falling	Low Water	Watch	Notify ICE Committee. Discuss draft and tow size recommendations under falling river conditions. Safety Advisory in effect. Notify USACE discuss surveys and dredging. Notify CG Buoy Tender to survey & set buoys.
	9'0"	Falling	Extreme Low Water	Action	CG, Industry chairman, & USACE monitor Cairo GAGE. Hold ICE Committee conference call. Discuss draft and tow size recommendations under falling river conditions. Safety Advisory in effect. CG Buoy Tender on scene. USACE plan / begin dredging.
	8'8"	Falling	Extreme Low Water	Action	Consider ICE Committee meeting. Identify specific critical low water areas. USACE discuss surveys and dredging. Safety Advisory in effect. Consider need for Safety Zone (Enc. 1). CG Buoy Tender on scene as needed. USACE plan / begin dredging.
	8'3" and below	Falling	Restrict Navigation	Action	CG, Industry chairman, & USACE monitor Cairo GAGE. Hold ICE Committee meeting. MSU Paducah considers implementation of Safety Zone due to extreme low water. Vessels will experience delays. USACE continue dredging. CG Buoy Tender on-scene as needed.
	8'3" and below	Rising	Restrict Navigation	Recovery	Safety Zone in effect. Vessels may experience delays.
	8'8"	Rising	Extreme Low Water	Recovery	Notify ICE Committee. MSU Paducah requests SCC cancel Safety Zone (Enc. 1), if implemented, and SCC issues Safety Advisory SMIB. CG Buoy Tender coordinates with USACE on scene to re-open channel and survey existing ATON.
	9'0"	Rising	Extreme Low Water	Recovery	CG, Industry chairman, & USACE monitor Cairo GAGE. Hold ICE Committee conference call. Discuss draft and tow size recommendations under rising river conditions. Safety Advisory in effect.
	9'5"	Rising	Low Water	Recovery	Notify ICE Committee. Discuss draft and tow size recommendations. Safety Advisory in effect. Notify USACE discuss surveys and dredging.
	10'0"	Rising	Low Water	Recovery	CG, Industry chairman, & USACE monitor Cairo GAGE. Cancel Safety Advisory SMIB. Notify ICE Committee. CG Buoy Tender survey area for missing buoys.
	11'0" and above	Rising	Normal Operations	Recovery	Operations Normal. CG, Industry chairman, & USACE monitor Cairo GAGE. Mariners report all missing Aids to Navigation to CG Sector Ohio Valley.

UPPER MISSISSIPPI RIVER – CAIRO POINT

LOW WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE ON THE MISSISSIPPI RIVER FROM MILE MARKER _____ TO MILE MARKER _____ EXTENDING THE ENTIRE WIDTH OF THE RIVER DUE TO EXTREME LOW WATER CONDITIONS. COMMERCIAL VESSELS ARE PROHIBITED FROM ENTERING OR TRANSITING IN THIS SAFETY ZONE UNLESS PERMITTED BY THE U.S. COAST GUARD CAPTAIN OF THE PORT. COMMERCIAL VESSELS REQUESTING TO ENTER OR TRANSIT IN THIS SAFETY ZONE MUST CONTACT THE COAST GUARD (MSU PADUCAH OR SOHV AS THE SITUATION DICTATES) AT XXX-XXX-XXXX

ACTION PLAN TABLE – LOW WATER CONDITIONS UPPER MISSISSIPPI RIVER

CRITICAL REACH DESCRIPTION	THEBES TRIGGER READING	TREND	DEPTH OVER PINNACLES IN THEBES 300' CHANNEL	DESCRIPTION	PHASE	ACTION
UPPER MISSISSIPPI RIVER **Miles 0.0 to 109.9** **Reference Gage: Thebes Bridge RM 43.7** **Low Water Reference Plane for Thebes Bridge: 4.8ft.**	**10'**	Falling	**18.5'**	Normal Operations	Watch	Monitor channel conditions and traffic. Consider initiating communications plan. USACE to plan additional channel reconnaissance surveys and obtain river forecasts. Continue standard methods of survey and communication practices to maintain awareness of channel conditions and known buoy locations. Prioritize dredging, aids to navigation (buoys), and data collection. Realign buoys at Thebes and Grand Tower as a precautionary measure, if necessary.
	5'	Falling	**13.5'**	Low Water Channel narrows in various conditions	Action	Communications between USACE, USCG and RIAC as needed to discuss problem areas, potential impacts and possible solutions. Reset buoys as needed. Issue advisories to indicate low water between UMR miles 0 to 109.9, and mariners should exercise caution, beware of shifting channels, and transit at slow speed near fleet areas. Consider tow size and draft recommendations in coordination with RIAC (encl. 1). USACE initiates increased channel reconnaissance surveys, monitors potential problem areas, and provides updates on dredging actions. USACE assesses boat ramp availability for survey vessel access. Additional rock encroaches on the channel at multiple locations between MM 38.5 and 46 as well as between MM 79.0and 81.0 as the river continues to fall. USACE provides most recent survey data to USCG and industry for buoy placement and operational decision making. Industry considers moving deep draft barges out of lower reaches of UMR.

UPPER MISSISSIPPI RIVER **Miles 0.0 to 109.9**						Based on river forecast, evaluate need for press release, Joint Information Center, MTSRU, Unified Command/Incident Command Post, vessel reporting scheme, and/or vessel management system. Request inorganic resources if necessary.
	2’	Falling	**10.5’**	Extreme Low Water Channel continues to narrow and channel depth decreases	Action	Issue advisories (Encl. 2) or establish safety zones (encl. 3), if necessary, to indicate extreme low water between UMR miles 0 and 109.9. Consult with RIAC for one way traffic, draft limits, tow size restrictions, and industry desire for marking channel (wider channel allows larger tow sizes and shallower drafts; at 2.5’ on Thebes gage the 300’ wide channel provides 11’ of water, which allows 10’ drafts w/1’ buffer) Adjust buoys throughout UMR, paying particular attention to rock encroaching on channel at Thebes and Grand Tower. Reiterate for mariners to be mindful of speed and wake near fleeting areas. Reset buoys as needed throughout UMR. USACE will continue increased channel reconnaissance. Emergency dredging may be required at some locations. Consider press release, Joint Information Center, MTSRU, Unified Command/Incident Command Post, vessel reporting scheme, and/or vessel management system. Continue to assess boat ramps. Industry confirms fuel/water and fleet area/space logistics in the event of prolonged closures/restrictions. ***Note: At Thebes gage 1.5’, and Grand Tower gage 1.0’, there is 10’ of water over the rocks in the minimum navigation channel within the respective reach. This would allow a 9’ draft w/1’ buffer.***
	0’	Falling	**8.5’**	**Minimum Navigation** **In many areas of zone,**	Action	Establish safety zones (encl. 3) between UMR miles 0 and 109.9 with restrictions if conditions warrant. Fleeting may continue if conditions warrant. Survey, dredge (if possible) and re-buoy critical areas. Monitoring channel conditions and communication

UPPER MISSISSIPPI RIVER **Miles 0.0 to 109.9**				**channel is at best 300-ft wide by 9-ft deep**		between USACE, USCG, RIAC and other affected agencies likely occurs on a daily basis. Consider USCG/USACE/Industry Joint Information Center, Incident Command Post, Marine Transportation System Recovery Unit, and Vessel Management System. Continue to assess boat ramps. Consider ice effects on drafts. Consider any combination of these actions: • draft restrictions (Industry should be prepared for a 1-foot under keel safety factor at discretion of COTP with consultation of RIAC, e.g. 8-ft draft restriction in 9-ft channel depth) • restrictions on tow size (equate to dry cargo barge dimensions) • helper boat requirements • daylight only operations Discuss with industry for feedback from mariners that have transited the route recently.
	0'	Rising	**8.5'**	**Minimum Navigation** Channel improves and channel depth increases	Recovery	Issue advisories to indicate extreme low water between UMR mile 0 and 109.9. USACE continues channel reconnaissance surveys and identifies/monitors potential problem areas. Continue communications between USACE, USCG and RIAC as needed to discuss specific problem areas, potential impacts and possible solutions.
UPPER MISSISSIPPI RIVER	**5'**	Rising	**13.5'**	Low Water Channel returning to normal	Recovery	Continue advisories to indicate low water. Continue to monitor channel conditions for possible repeat of extreme low water. USCG will monitor buoys in narrow channel locations within reach. USACE will continue increased level of channel reconnaissance. Lift advisories as river conditions warrant. Continue communications as needed. Cancel any notices, advisories and safety zones as channel conditions improve. Adjust buoys as possible to provide wider channel.

Miles 0.0 to 109.9	**8’**	Rising	**16.5’**	Normal Operations	Recovery	Cancel all advisories and commence normal operations. Report any hazardous conditions to USCG.

UPPER MISSISSIPPI RIVER

LOW WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT OHIO VALLEY HAS ISSUED THIS SAFETY ADVISORY DUE TO LOW WATER CONDITIONS ON THE UPPER MISSISSIPPI RIVER. TOW SIZE RECOMMENDATIONS ARE FOR NO MORE THAN 20 BARGES DOWNBOUND, AND 25 BARGES UPBOUND WITH NO MORE THAN 15 LOADED. IT IS RECOMMENDED THAT TOW CONFIGURATIONS BE LIMITED TO A MAXIMUM OF 5 WIDE BY 6 LONG BASED ON THE STANDARD DIMENSIONS OF A DRY CARGO BARGE. ADDITIONALLY, THE ARMY CORPS OF ENGINEERS REPORTS NUMEROUS ROCK PINNACLES IN THE THEBES AREA BETWEEN MILE 38.5 AND MILE 46 AND GRAND TOWER BETWEEN MILE 79 AND MILE 81. MARINERS ARE REQUESTED TO TRANSIT AT THEIR SLOWEST SAFE SPEED NEAR FLEETING AREAS, AND REPORT MISSING OR OFF STATION BUOYS IMMEDIETLY TO THE SECTOR OHIO VALLEY COMMAND CENTER VIA VHF-FM CHANNEL 16. MARINERS ARE ADVISED TO USE EXTREME CAUTION WHILE TRANSITING THROUGHOUT THE UPPER MISSISSIPPI RIVER, AND BE MINDFUL OF DRAFTS DUE TO CHANGING CONDITIONS.

LOW WATER Enclosure 2 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT OHIO VALLEY HAS ISSUED THIS SAFETY ADVISORY DUE TO LOW WATER CONDITIONS IN THE UPPER MISSISSIPPI RIVER, AND ROCKS IN THE RIVER IN THE VICINITY OF THEBES AND GRAND TOWER, IL, MILES 38.5 TO 46 UMR, AND MILES 79 TO 81 UMR. THE ARMY CORPS OF ENGINEERS REPORTS NUMEROUS AREAS OF ROCK PINNACLES AND ROCK SHELF IN THESE AREAS. THE COAST

GUARD MARKED THESE AREAS WITH BUOYS ON _____. ADDITIONALLY, THE ARMY CORPS OF ENGINEERS REPORTS WHEN THE THEBES GAGE READS 0.5' THERE IS 9 FEET OF WATER OVER THE ROCKS IN THE NAVIGABLE CHANNEL IN THAT REACH, AND WHEN THE GRAND TOWER GAGE READS 0.0 THERE IS 9 FEET OF WATER OVER THE ROCKS IN THE NAVIGABLE CHANNEL IN THAT REACH. TOW SIZE RECOMMENDATIONS ARE FOR NO MORE THAN 20 BARGES DOWNBOUND, AND 25 BARGES UPBOUND WITH NO MORE THAN 15 LOADED. IT IS RECOMMENDED THAT TOW CONFIGURATIONS BE LIMITED TO A MAXIMUM OF 5 WIDE BY 6 LONG BASED ON THE STANDARD DIMENSIONS OF A DRY CARGO BARGE. MARINERS ARE REQUESTED TO TRANSIT AT THEIR SLOWEST SAFE SPEED NEAR FLEETING AREAS, AND REPORT MISSING OR OFF STATION BUOYS IMMEDIETLY TO THE SECTOR OHIO VALLEY COMMAND CENTER VIA VHF-FM CHANNEL 16. MARINERS ARE ADVISED TO USE EXTREME CAUTION WHILE TRANSITING THROUGHOUT THE UPPER MISSISSIPPI RIVER, AND BE MINDFUL OF DRAFTS DUE TO CHANGING CONDITIONS.

LOW WATER Enclosure 3 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT OHIO VALLEY HAS ESTABLISHED A SAFETY ZONE FOR MILES 38.5 TO 46 UMR AND MILES 79 TO 81 UMR. THE ARMY CORPS OF ENGINEERS REPORTS NUMEROUS AREAS OF ROCK PINNACLES AND ROCK SHELF IN THESE AREAS, AND THE COAST GUARD MARKED THESE AREAS WITH BUOYS ON _____. VESSELS AND BARGES ARE REQUIRED TO MAINTAIN A ONE FOOT UNDER KEEL CLERANCE AT ALL RIVER STAGES, BASED ON U.S. ARMY CORPS OF ENGINEERS REPORTS OF 9 FEET OF WATER IN THE NAVIGABLE CHANNEL BETWEEN MILES 38.5 AND 46 WHEN THEBES GAGE READS 0.5', AND 9 FEET OF WATER IN THE NAVIGABLE CHANNEL BETWEEN MILES 79 AND 81 WHEN THE GRAND TOWER GAGE READS 0.0 FEET. ADDITIONALLY, DOWNBOUND TOWS MAY NOT TRANSIT WITH MORE THAN 20 BARGES, AND UPBOUND TOWS MAY NOT TRANSIT WITH MORE THEN 25 BARGES, 15 OF WHICH MAY BE LOADED. TOW CONFIGURATIONS SHALL BE RESTRICTED TO NO MORE THAN 5 WIDE BY 6 LONG. ALL RESTRICTIONS ARE BASED ON THE DIMENSIONS OF A STANDARD DRY CARGO BARGE MEASURING 200 FEET LONG BY 35 FEET WIDE. MARINERS ARE REQUESTED TO TRANSIT AT THEIR SLOWEST SAFE SPEED NEAR FLEETING AREAS, AND REPORT MISSING OR OFF STATION BUOYS IMMEDIETLY TO THE SECTOR OHIO VALLEY COMMAND CENTER VIA VHF-FM CHANNEL 16. MARINERS ARE ADVISED TO USE EXTREME CAUTION WHILE TRANSITING THROUGHOUT THE UPPER MISSISSIPPI RIVER, AND BE MINDFUL OF DRAFTS DUE TO CHANGING CONDITIONS.

4.C. Tennessee River Action Plan
4.C.1. I-24 / 62 / 641 Bridge High Water / High Current Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING KENTUCKY L&D FLOW RATE	TREND	TRIGGER CURRENT	DESCRIPTION	PHASE	ACTION
I-24 BRIDGE & 62 / 641 BRIDGE **TENNESSEE RIVER MILE MARKER:** 21.1**,** 22.4 **FLOOD STAGE READING:** 200 CFS **REFERENCE GAUGE:** KENTUCKY LOCK & DAM GIVEN IN THOUSANDS OF (CFS). **OTHER USEFUL DATA:** TABLE USES FLOW THROUGH CURRENTS ESTIMATED BY KENTUCKY LOCK & DAM. CFS RATES CAN BE USED TO DETERMINE HAZARDOUS CONDITIONS / FLOWS. UNDER THESE CONDITIONS MARINERS SHOULD NAVIGATE AT SLOWEST SAFE SPEED. AREA MAY CONTAIN HIGH CURRENT CAUSING VESSELS TO EXPERIENCE UNEXPECTED SET RESULTING IN ADVERSE CONSEQUENCE. **USACE GAUGE READINGS REPORT**	140 CFS and below	Rising	4.0 mph	Normal Operations	Watch	Operations Normal. TVA, CG, Industry chairman, & USACE monitor CFS rates.
	160 CFS	Rising & projected to continue rising rapidly	4.2 mph	Normal Operations	Watch	Notify ICE Committee and TCIC.
	180 CFS	Rising	4.4 mph	Strong Current	Watch	Lockmaster contacts MSU Paducah. Sector Command Center (SCC) will initiate Safety Advisory SMIB.
	200 CFS	Rising	4.6 mph	Strong Current	Watch	Safety Advisory in effect. Notify ICE Committee and TCIC. Discuss horsepower and tow size recommendations.
	220 CFS	Rising	4.8 mph	Extreme Strong Current	Action	Safety Advisory in effect. Hold ICE Committee and TCIC conference call. Consider need for assist vessel on stand-by when reaching 220 CFS.
	240 CFS and above	Rising	5.0 mph or greater	Extreme Strong Current	Action	Lockmaster contacts CG MSU Paducah. Safety Advisory in effect. Consider ICE Committee and TCIC meeting. Consider implementation of assist vessel.
	220 CFS	Falling	4.8 mph	Extreme Strong Current	Action	Safety Advisory in effect. Notify ICE Committee and TCIC. Consider need for assist vessel on stand-by when reaching 220 CFS.
	200 CFS	Falling	4.6 mph	Strong Current	Recovery	Safety Advisory in effect. Notify ICE Committee and TCIC. Discuss horsepower and tow size recommendations.
	180 CFS	Falling	4.4 mph	Strong Current	Recovery	Lockmaster contacts CG MSU Paducah. Cancel Safety Advisory SMIB. Notify ICE Committee and TCIC.
	160 CFS	Falling	4.2 mph	Normal Operations	Recovery	Notify ICE Committee and TCIC.
	140 CFS and below	Falling	4.0 mph	Normal Operations	Recovery	Operations Normal. TVA, CG, Industry chairman, & USACE monitor CFS rates.

4.C. Tennessee River Action Plan
4.C.2. Kentucky Lock & Dam Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING LOWER GAUGE	TREND	DESCRIPTION	PHASE	ACTION
KENTUCKY LOCK & DAM **TENNESSEE RIVER MILE MARKERS:** 22.4 **REFERENCE GAUGE**: KENTUCKY LOCK AND DAM LOWER GAUGE. **OTHER USEFUL DATA:** THIS CHART USES THE KENTUCKY LOCK AND DAM LOWER GAUGE. THE GAUGE IS GIVEN IN FEET ABOVE SEA LEVEL. TO DETERMINE DEPTH OVER MITER SILL ADD THE STAFF GAUGE READING + 289 FEET. 289 FEET = THE MITER SILL ELEVATION ABOVE SEA LEVEL. WHEN THE STAFF GAUGE REACHES 11 FEET VESSEL MAY BE RESTRICTED FROM ENTERING LOCK CHAMBER DUE TO LOW WATER. **USACE GAUGE READINGS REPORT**	302’ & above 13ft	Falling	Normal Operations	Watch	Lock Operations Normal
	301’ 12ft	Falling	Low Water	Watch	Lockmaster contacts MSU Paducah. Sector Command Center will initiate a Safety Advisory SMIB.
	300’ 11ft	Falling	Low Water	Watch	Safety Advisory in effect. Notify ICE Committee and TCIC. Note: Vessels exercise caution at MM 17.0 TNR due to low water. When the staff gauge falls to or below 11’ vessels may be restricted from entering the lock chamber based on draft and water level.
	299’ 10ft	Falling	Extreme Low Water	Action	Safety Advisory in effect. Hold ICE Committee and TCIC conference call. Discuss draft and tow size recommendations. Limited locking ability based on vessel s draft. Note: At Kentucky lock & dam **one foot of clearance over the miter sill** is required for vessels to enter and exit lock chambers.
	298’ 9ft	Falling	Restrict Lock Operations	Action	Lockmaster contacts CG MSU Paducah. Hold ICE Committee and TCIC meeting. Limited locking ability based on vessel s draft. Consider need for Safety Zone (Enc. 1) for lower TNR.
	297’ and below 8ft	Falling	Restrict Lock Operations	Action	MSU Paducah considers implementation of Safety Zone between MM 00.0 – MM 22.4TNR.
	297’ and below 8ft	Rising	Restrict Lock Operations	Recovery	Consider need for Safety Zone between MM 00.0 – MM 22.4TNR. Manage vessel traffic on a case-by-case basis.
	298’ 9ft	Rising	Restrict Lock Operations	Recovery	Lockmaster contacts MSU Paducah. Notify ICE Committee and TCIC. Limited locking ability based on vessel s draft. Consider lifting Safety Zone for lower TNR; re-issue Safety Advisory.
	299’ 10ft	Rising	Extreme Low Water	Recovery	Lockmaster contacts MSU Paducah. Notify ICE Committee and TCIC. Limited locking ability based on vessel s draft. MSU Paducah requests SCC cancel Safety Zone (Enc. 1), if implemented, and issue Safety Advisory SMIB.
	300’ 11ft	Rising	Extreme Low Water	Recovery	Safety Advisory in effect. Notify ICE Committee and TCIC. Vessels exercise caution MM 17.0 TNR.
	301’ 12ft	Rising	Low Water	Recovery	Lockmaster contacts MSU Paducah. Cancel Safety Advisory SMIB.
	302’ & above 13ft	Rising	Normal Operations	Watch	Lock Operations Normal.

TENNESSEE RIVER – KENTUCKY LOCK & DAM

LOW WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE ON THE TENNESSEE RIVER FROM MILE MARKER _____ TO MILE MARKER _____ EXTENDING THE ENTIRE WIDTH OF THE RIVER DUE TO EXTREME LOW WATER CONDITIONS. COMMERCIAL VESSELS ARE PROHIBITED FROM ENTERING OR TRANSITING IN THIS SAFETY ZONE UNLESS PERMITTED BY THE U.S. COAST GUARD CAPTAIN OF THE PORT. COMMERCIAL VESSELS REQUESTING TO ENTER OR TRANSIT IN THIS SAFETY ZONE MUST CONTACT THE MSU PADUCAH COMMAND DUTY OFFICER FOR PERMISSION AT 1-270-994-7385.

4.C. Tennessee River Action Plan
4.C.3. Kentucky Lock & Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING LOWER GAUGE	TREND	DESCRIPTION	PHASE	ACTION
KENTUCKY LOCK & DAM **TENNESSEE RIVER MILE MARKER:** 22.4 **FLOOD STAGE READING:** **REFERENCE GAUGE:** KENTUCKY LOCK AND DAM LOWER GAUGE. **OTHER USEFUL DATA:** THIS CHART USES THE KENTUCKY LOCK AND DAM LOWER GAUGE. THE GAUGE IS GIVEN IN FEET ABOVE SEA LEVEL. ADD THE ACTUAL STAFF GAUGE READING + 289 FEET TO DETERMINE THE GAUGE READING. MONITOR TVA FLOW RATES. REFERENCE PADUCAH GAUGE (335) & KENTUCKY LOCK & DAM LOWER GAUGE (334). **USACE GAUGE READINGS REPORT**	302’ 13ft	Rising	Normal Operations	Watch	Locking Operations Normal.
	335’	Rising & projected to continue rising rapidly	High Water	Watch	Lockmaster contacts MSU Paducah. Sector Command Center (SCC) will initiate a Safety Advisory SMIB.
	340’	Rising	High Water	Action	Safety Advisory in effect. Consider ICE Committee and TCIC conference call.
	341’ 1ft height of guard wall remaining.	Rising	Extreme High Water	Action	Lockmaster contacts MSU Paducah. Safety Advisory in effect. Hold ICE Committee and TCIC conference call. Consider assist vessel on stand-by for up-bound. 1ft height of guide wall remaining.
	342’ Top of guard wall submerged	Rising	Restrict Lock Operations	Action	Lockmaster contacts MSU Paducah. Kentucky L&D may cease locking vessels. Hold ICE Committee and TCIC meeting. Consider assist vessel on stand-by for up-bound. MSU Paducah considers implementation of Safety Zone (Enc. 1). Vessels will experience delays.
	342’ & above	Rising	Restrict Lock Operations	Action	Lockmaster contacts MSU Paducah. Kentucky L&D ceases locking vessels. Hold ICE Committee and TCIC meeting. MSU Paducah requests SCC initiate Safety Zone (Enc. 1) and cancel Safety Advisory SMIB. USACE may buoy guide wall. Note: When the upper gauge reaches 374 feet Kentucky L&D closes due to debris in gate gears.
	342’ Top of guard wall submerged	Falling	Restrict Lock Operations	Action	Lockmaster contacts MSU Paducah. Kentucky L&D ceases locking vessels. CG MSU Paducah considers cancellation of Safety Zone.
	341’ 1ft height of guard wall remaining.	Falling	Resume Locking Ability	Recovery	Lockmaster contacts MSU Paducah. Kentucky L&D resumes locking vessels. Hold ICE Committee Meeting. SCC cancels Safety Zone (Enc 1); if implemented and re-issues Safety Advisory SMIB; indicate high water, report hazardous conditions to Coast Guard.
	340’	Falling	Extreme High Water	Recovery	Lockmaster contacts MSU Paducah. Safety Advisory in effect.
	335’	Falling	High Water	Recovery	Lockmaster contacts MSU Paducah. Cancel Safety Advisory SMIB.
	302’ 13ft	Falling	High Water	Recovery	Locking Operations Normal.

TENNESSEE RIVER – KENTUCKY LOCK & DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED A SAFETY ZONE AT KENTUCKY L/D MILE MARKER 22.4 TENNESSEE RIVER. THE KENTUCKY L/D HAS CEASED LOCKING. HIGH WATER CONDITIONS AND VESSEL WAKES HAVE CAUSED DAMAGE TO SURROUNDING STRUCTURES. VESSEL TRANSITS ARE CEASED UNTIL WATER CONDITIONS SUBSIDE AND DAMAGE CAN BE PREVENTED.

4.C. Tennessee River Action Plan
4.C.4. The Gorge High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING Chickamauga Lock and Dam	TREND	DESCRIPTION	PHASE	ACTION
THE GORGE **TENNESSEE RIVER MILE MARKERS:** 446.0 – 454.5 **OTHER USEFUL DATA:** TABLE USES FLOWS THROUGH THE GORGE GIVEN IN THOUSANDS OF CUBIC FEET PER SECOND (CFS). CFS RATES CAN BE USED TO DETERMINE HAZARDOUS CONDITIONS / FLOWS. UNDER THESE CONDITIONS MARINERS SHOULD NAVIGATE AT SLOWEST SAFE SPEED. AREA MAY CONTAIN HIGH CURRENT CAUSING VESSELS TO EXPERIENCE UNEXPECTED SET RESULTING IN ADVERSE CONSEQUENCE. **TVA GAUGE READINGS REPORT**	46,000 CFS	Rising	High Current	Watch	Operations normal. CG, TVA, USACE and TCIC chairman monitor CFS rates and begin holding conference calls as needed. The Sector Command Center will initiate a SMIB.
	85,000 CFS	Rising	High Current	Action	Lockmaster contacts the Sector Command Center. The Sector Command Center will initiate a BNM (Enc. 1), recommending commercial traffic transit through the Gorge during daylight hours only. TCIC holds conference call.
	100,000 CFS and above	Rising	Very High Current	Emergency	Lockmaster contacts the Sector Command Center. Chickamauga L&D ceases locking vessels. The Sector Command Center initiates a Safety Zone BNM (Enc. 2), ceasing navigation through the Gorge and cancels BNM (Enc. 1). TCIC holds conference call.
	below 100,000 CFS	Falling	High Current	Action	Lockmaster contacts the Sector Command Center. Chickamauga L&D resumes locking vessels. The Sector Command Center cancels Safety Zone BNM (Enc. 2) and reissues BNM (Enc. 1), recommending commercial traffic transit through the Gorge during daylight hours only. TCIC holds conference call.
	85,000 CFS	Falling	High Current	Action	Lockmaster contacts the Sector Command Center. The Sector Command Center cancels BNM (Enc. 1)
	46,000 CFS	Falling	Normal Operations	Recovery	Operations normal. CG, TVA, USACE and TCIC chairman monitor CFS rates. The Sector Command Center cancels SMIB.

TENNESSEE RIVER – THE GORGE

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners (BNM)

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER THAT EXISTS IN THE VICINITY OF THE TENNESSEE RIVER GORGE, MILE MARKER 446 TO MILE MARKER 454.5. HEAVY RAINFALL HAS CAUSED RELEASES FROM CHICKAMAUGA DAM, TNR MM 471, TO GO ABOVE 85,000CFS. IAW THE WATERWAY MANAGEMENT PLAN, IT IS RECOMMENDED THAT COMMERCIAL TRAFFIC TRANSIT THROUGH THE GORGE AREA DURING DAYLIGHT HOURS ONLY. MARINERS ARE ADVISED TO EXERCISE CAUTION DUE TO THE HAZARDOUS CONDITIONS ASSOCIATED WITH STRONG CURRENTS, INCREASED DRIFT, AND SEVERE OUTDRAFTS. MARINERS ARE ADVISED TO CONSIDER HORSEPOWER CAPABILITY AND TOW SIZE WHEN NAVIGATING THIS AREA. FLEET OPERATORS SHOULD REGULARLY CHECK THEIR FLEETS AND IMMEDIATELY REPORT BARGE BREAK-AWAYS TO THE U.S. COAST GUARD. THIS ADVISORY WILL REMAIN IN EFFECT UNTIL CHICKAMAUGA DAM REDUCES FLOWS BELOW 85,000 CFS.

HIGH WATER Enclosure 2 (example)
Broadcast Notice to Mariners (BNM)

HEAVY RAINFALL HAS CAUSED RELEASES FROM CHICKAMAUGA DAM, TNR MM 471 TO GO ABOVE 100,000 CFS. IAW THE WATERWAY MANAGEMENT PLAN, THE USCG COTP OHIO VALLEY HAS ESTABLISHED A SAFETY ZONE ON THE TNR FROM MM 446 TO MM 454.5, EXTENDING THE ENTIRE WIDTH OF THE RIVER. NAVIGATION OF THE GORGE HAS CEASED BETWEEN THESE MILE MARKERS. FLEET OPERATORS SHOULD REGULARLY CHECK THEIR FLEETS AND IMMEDIATELY REPORT BARGE BREAK-AWAYS TO THE USCG. THIS SAFETY ZONE WILL REMAIN IN EFFECT UNTIL CHICKAMAUGA DAM REDUCES FLOWS BELOW 100,000 CFS.

4.D. Cumberland River Action Plan
4.D.1. Barkley Lock & Dam Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING LOWER GAUGE	TREND	DESCRIPTION	PHASE	ACTION
BARKLEY LOCK & DAM **CUMBERLAND RIVER MILE MARKER:** 30.6 **OTHER USEFUL DATA:** THIS CHART USES THE BARKLEY LOCK AND DAM LOWER GAUGE. THE GAUGE IS GIVEN IN FEET ABOVE SEA LEVEL. TO DETERMINE DEPTH OVER MITER SILL ADD THE STAFF GAUGE READING + 289 FEET. 289 FEET = THE MITER SILL ELEVATION ABOVE SEA LEVEL. WHEN THE STAFF GAUGE REACHES 11 FEET VESSEL MAY BE RESTRICTED FROM ENTERING LOCK CHAMBER DUE TO LOW WATER. **USACE GAUGE READINGS REPORT**	302’ & above 13ft over sill	Falling	Normal Operations	Watch	Lock Ops Normal.
	301’ 12ft over sill	Falling	Low Water	Watch	Lockmaster contacts MSU Paducah. Sector Command Center (SCC) initiate a Safety Advisory SMIB; indicate low water, exercise caution.
	300’ 11ft over sill	Falling	Low Water	Watch	Lockmaster contacts MSU Paducah. Safety Advisory in effect. Note: When the staff gauge falls to or below 11’ vessels may be restricted from entering the lock chamber based on draft and water level.
	299’ 10ft over sill	Falling	Extreme Low Water	Action	Safety Advisory in effect. Hold ICE Committee and TCIC conference call. Discuss draft and tow size recommendations. Limited locking ability based on vessel s draft. Note: At Barkley lock & dam **one foot of clearance over the miter sill** is required for vessels to enter and exit lock chambers.
	298’ 9ft over sill	Falling	Restrict Lock Operations	Action	Lockmaster contacts MSU Paducah. Hold ICE Committee and TCIC meeting. Limited locking ability based on vessel s draft. Consider need for Safety Zone (Enc. 1) for lower CMR.
	297’ 8ft over sill	Falling	Restrict Lock Operations	Action	MSU Paducah considers implementation of Safety Zone between MM 00.0 – MM 30.6 CMR.
	297’ 8ft over sill	Rising	Restrict Lock Operations	Recovery	Consider need for Safety Zone between MM 00.0 – MM 30.6 CMR. Manage vessel traffic on a case-by-case basis.
	298’ 9ft over sill	Rising	Restrict Lock Operations	Recovery	Lockmaster contacts MSU Paducah. Notify ICE Committee and TCIC. Limited locking ability based on vessel s draft. Consider lifting Safety Zone for lower TNR; re-issue Safety Advisory.
	299’ 10ft over sill	Rising	Extreme Low Water	Recovery	Lockmaster contacts CG MSU Paducah. Notify ICE Committee and TCIC. Limited locking ability based on vessel s draft. SCC cancels Safety Zone (Enc 1); if implemented and re-issues Safety Advisory SMIB; indicate low water, exercise caution, detail draft & tow size recommendations.
	300’ 11ft over sill	Rising	Low Water	Recovery	Safety Advisory in effect. Notify ICE Committee and TCIC. Vessels exercise caution on lower CMR.
	301’ 12ft over sill	Rising	Low Water	Recovery	Lockmaster contacts MSU Paducah. Cancel Safety Advisory SMIB.
	302’ & above 13ft over sill	Rising	Normal Operations	Watch	Lock Ops Normal.

CUMBERLAND RIVER – BARKLEY LOCK & DAM

LOW WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE ON THE CUMBERLAND RIVER FROM MILE MARKER _____ TO MILE MARKER _____ EXTENDING THE ENTIRE WIDTH OF THE RIVER DUE TO EXTREME LOW WATER CONDITIONS. COMMERCIAL VESSELS ARE PROHIBITED FROM ENTERING OR TRANSITING IN THIS SAFETY ZONE UNLESS PERMITTED BY U.S. COAST GUARD CAPTAIN OF THE PORT. COMMERCIAL VESSELS REQUESTING TO ENTER OR TRANSIT IN THIS SAFETY ZONE MUST CONTACT THE MSU PADUCAH COMMAND DUTY OFFICER FOR PERMISSION AT 1-270-994-7385.

4.D. Cumberland River Action Plan
4.D.2. Barkley Lock & Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING LOWER GAUGE	TREND	DESCRIPTION	PHASE	ACTION
BARKLEY LOCK & DAM **CUMBERLAND RIVER** **MILE MARKER:** 30.6 **FLOOD STAGE READING:** 345' **OTHER USEFUL DATA:** THIS CHART USES THE BARKLEY LOCK AND DAM LOWER GAUGE. THE GAUGE IS GIVEN IN FEET ABOVE SEA LEVEL ADD THE ACTUAL STAFF GAUGE READING + 289 FEET TO DETERMINE THE GAUGE READING. 289 FEET = THE MITER SILL ELEVATION ABOVE SEA LEVEL. MONITOR TVA FLOW RATES. FLOWS FROM CUMBERLAND RIVER INTO THE OHIO RIVER CAN POSE HAZARDOUS CONDITIONS. **USACE GAUGE READINGS REPORT**	302'	Rising & continues to rise rapidly	Normal Operations	Watch	Locking Operations Normal.
	345'	Rising	High Water	Watch	Lockmaster contacts MSU Paducah. Sector Command Center (SCC) initiate a Safety Advisory SMIB; indicate high water, exercise caution.
	350'	Rising	Extreme High Water	Watch	Safety Advisory in effect. Consider ICE Committee and TCIC conference call.
	351' 1ft height of guide wall remaining.	Rising	Extreme High Water	Watch	Lockmaster contacts MSU Paducah. Safety Advisory in effect. Hold ICE Committee and TCIC conference call. Consider assist vessel on stand-by for up-bound. 1ft height of guide wall remaining.
	352' Top of guide wall submerged	Rising	Restrict Lock Operations	Action	Lockmaster contacts MSU Paducah. Barkley L&D may cease locking vessels. Hold ICE Committee and TCIC meeting. Consider assist vessel on stand-by for up-bound. MSU Paducah considers implementation of Safety Zone (Enc. 1). Vessels will experience delays. Note: At 352 feet on the upper gauge Barkley L&D closes due to debris in the gate gears.
	352' & above	Rising	Restrict Lock Operations	Action	Lockmaster contacts MSU Paducah. Hold ICE Committee and TCIC meeting. MSU Paducah requests SCC initiate Safety Zone (Enc. 1) and cancel Safety Advisory SMIB USACE may buoy guide wall. Note: At 352 feet on the upper gauge Barkley L&D closes due to debris in the gate gears.
	352' Top of guide wall submerged	Falling	Restrict Lock Operations	Action	Lockmaster contacts MSU Paducah. MSU Paducah considers cancellation of Safety Zone.
	351' 1ft height of guide wall remaining.	Falling	Resume Locking Ability	Recovery	Lockmaster contacts MSU Paducah. Barkley L&D resumes locking vessels. Hold ICE Committee and TCIC conference call. SCC cancels Safety Zone (Enc 1); if implemented and re-issues Safety Advisory SMIB; indicate high water, report hazardous conditions to Coast Guard.
	350'	Falling	Extreme High Water	Recovery	Lockmaster contacts CG MSU Paducah. Safety Advisory in effect. Consider ICE Committee and TCIC conference call.
	345'	Falling	High Water	Recovery	Lockmaster contacts MSU Paducah. Cancel Safety Advisory SMIB.
	302' 13ft	Falling	Normal Operations	Recovery	Locking Operations Normal.

CUMBERLAND RIVER – BARKLEY LOCK & DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ESTABLISHED A SAFETY ZONE AT BARKLEY LOCK AND DAM, MILE MARKER 30.6, CUMBERLAND RIVER. THE BARKLEY LOCK AND DAM HAS CEASED LOCKING. HIGH WATER CONDITIONS AND VESSEL WAKES HAVE CAUSED DAMAGE TO SURROUNDING STRUCTURES. VESSEL TRANSITS ARE CEASED UNTIL WATER CONDITIONS SUBSIDE AND DAMAGE CAN BE PREVENTED.

4.E. Allegheny River Action Plan
4.E.1. Lock 4 Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
LOCK 4 **ALLEGHENY RIVER** **MILE MARKER: 24.2** **FLOOD STAGE READING:** 18' UG **OTHER USEFUL DATA:** NORMAL POOL 10.1' ON UG & 9' LG TABLE USES LOWER GAUGE READINGS TO MONITOR RIVER CONDITIONS. THE POTENTIAL FOR VESSEL GROUNDINGS INCREASES AS THE WATER FALLS. **USACE GAUGE READINGS REPORT**	9.8' LG	Falling	Normal Operations/ Flow Conditions		Locking operations normal
	9.8'- LG	Falling & projected to continue falling rapidly	Low Water/ Low Flow Conditions	Watch	Consider for low water conference calls. MSU Pittsburgh and/or WAP will initiate a phone conference between CG, USACE and WAP. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. Sector Ohio Valley Command Center will initiate a Safety Advisory (Enc. 1).
	9.8+ LG	Rising	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory.

ALLEGHENY RIVER – LOCK 4

LOW WATER Enclosure 1 (example)
Safety Marine Information Broadcast (Local Safety)

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO LOW WATER / LOW FLOW CONDITIONS AT DAM FOUR, MILE MARKER 24.2, ALLEGHENY RIVER. THE LOWER GUAGE AT DAM FOUR READS LESS THAN 9.8 FEET. PROCEED WITH CAUTION AND REMAIN IN THE NAVIGABLE CHANNEL DUE TO DECREASING WATER LEVELS. ALL VESSELS MUST MONITOR CHANNEL DEPTHS AND ENSURE THAT ADEQUATE WATER EXISTS FOR THEIR VESSEL DRAFTS. REPORT ALL GROUNDINGS TO THE U.S. COAST GUARD.

4.E. Allegheny River Action Plan
4.E.2. Lock 7 High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
LOCK 7 **ALLEGHENY RIVER MILE MARKER: 45.7** **FLOOD STAGE READING:** 17’ UG **OTHER USEFUL DATA:** NORMAL POOL 9’ ON UG & LG TABLE USES UPPER GAUGE READINGS TO MONITOR RIVER CONDITIONS. THE POTENTIAL FOR VESSEL ALLISIONS WITH LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENTS INCREASE. **USACE GAUGE READINGS REPORT**	16’ UG	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	16+ UG	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAP will initiate a phone conference between CG, USACE and WAP. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. Sector Ohio Valley Command Center will initiate a Safety Advisory (Enc. 1). Note: Cease locking at 17’ on upper gauge.
	16’ UG	Falling	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory.

ALLEGHENY RIVER – LOCK 7

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT DAM SEVEN MILE MARKER 45.7 ALLEGHENY RIVER. THE UPPER GAUGE AT DAM SEVEN READS GREATER THAN 16 FEET. FLEETING FACILITIES ARE ADVISED TO (1) REVIEW AND ACT IN ACCORDANCE WITH THEIR WATERFRONT FLEET OPERATIONS GUIDE AND ANY COMPANY CONTINGENCY PLANS. (2) ASSIGN A PERSON TO BE IN CONTINUOUS SURVEILLANCE AND TO OBSERVE THE BARGES IN THE FLEETING FACILITY, (3) DOUBLE-UP THE LINES ON THE HEAD OF THE FLEET AND PROVIDE AN ADEQUATE NUMBER OR SPRING AND BREAST LINES BETWEEN THE DOCK AND THE BARGES IN THE FLEET, AND (4) REVIEW THEIR NEED TO SECURE TOWBOAT ASSISTANCE.

4.F. Monongahela River Action Plan
4.F.1. Braddock Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
BRADDOCK LOCK AND DAM **MONONGAHELA RIVER MILE MARKER: 11.3** **FLOOD STAGE READING:** 22' UG **OTHER USEFUL DATA:** NORMAL POOL 12' ON UG & 16.8' ON LG MAX. DAM OPENING 42' CEASE LOCKING 19' UG TABLE USES UPPER GAUGE AND DAM OPENINGS TO MONITOR RIVER CONDITIONS. THE POTENTIAL FOR VESSEL ALLISIONS WITH LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **CAUTIONARY NOTE 1:** SEVERE OUTDRAFT DURING HIGH WATER BY TURTLE CREEK ALONG UPPER GUIDE WALL **CAUTIONARY NOTE 2:** BRIDGE CLEARANCES AT FORT PERRY AROUND MM 11.6 RESTRICTED DURING HIGH WATER. **USACE GAUGE READINGS REPORT**	15' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	15+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAP will initiate a phone conference between CG, USACE and WAP. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	15 -' DAM OPENING	Falling	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory.
	12.5' UG	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	12.5'+ UG	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAP will initiate a phone conference between CG, USACE and WAPI. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 2).
	12.5'- UG	Falling	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory.

MONONGAHELA RIVER – BRADDOCK LOCK AND DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT BRADDOCK DAM, MILE MARKER 11.3, MONONGAHELA RIVER. THE GATE OPENING IS READING GREATER THAN 15 FEET. EXERCISE CAUTION WHILE TRANSITING UNDER THE MCKEESPORT-DUQUESNE HIGHWAY BRIDGE MILE MARKER 14.0 AND THE UNION RAILROAD BRIDGE MILE MARKER 14.2 DUE TO THE NARROW CHANNEL IN THAT AREA AND THE SHORT DISTANCE BETWEEN THESE TWO BRIDGES.

HIGH WATER Enclosure 2 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT BRADDOCK DAM MILE MARKER 11.3 MONONGAHELA RIVER. THE UPPER GAUGE AT BRADDOCK DAM READS GREATER THAN 12.5 FEET. EXERCISE CAUTION AND ENSURE VERTICAL CLEARANCE IS SUFFICIENT WHILE TRANSITING UNDER THE NORFOLK AND SOUTHERN BRIDGE MILE MARKER 11.7. WHEN THE UPPER GAUGE AT BRADDOCK DAM IS 12.5 FEET, THE VERTICAL CLEARANCE UNDER THIS BRIDGE IS 42.5 FEET.

4.F. Monongahela River Action Plan
4.F.2. Lock and Dam 4 High/Low Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
LOCK AND DAM 4 **MONONGAHELA RIVER MILE MARKER: 41.5** **FLOOD STAGE READING:** 28' LG **OTHER USEFUL DATA:** NORMAL POOL 10.5' ON UG & 10' ON LG MAX. DAM OPENING 80' CEASE LOCKING 12.5' UG TABLE USES UPPER AND LOWER GAUGE READINGS AND DAM OPENINGS TO MONITOR RIVER CONDITIONS. THE POTENTIAL FOR VESSEL ALLISIONS WITH LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **USACE GAUGE READINGS REPORT**	8' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	8'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAPI will initiate a phone conference between CG, USACE and WAPI. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	35'+ DAM OPENING	Rising & projected to continue rising rapidly	Extreme High Water/Extreme High Flow Conditions	Action	Continue monitoring river conditions and cancel Safety Advisory (Enc. 1). Issue Safety Advisory (Enc. 2).
	35'- DAM OPENING	Falling	High Water/ High Flow Conditions	Watch	Continue monitoring river conditions and consider canceling Safety Advisories.
	8'- DAM OPENING	Falling	Normal Operations/ Flow Conditions	Recovery	Locking operations normal.
	9.5' LG	Falling	Normal Operations/ Flow Conditions		Locking operations normal.
	9.5' - LG	Falling & projected to continue falling rapidly	Low Water/ Low Flow Conditions	Watch	Consider for low water conference calls. MSU Pittsburgh and/or WAPI will initiate a phone conference between CG, USACE and WAPI. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 3).
	9.5' + LG	Rising	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory (Enc. 3).

MONONGAHELA RIVER – LOCK 4

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT LOCK AND DAM 4, MILE MARKER 41.5 MONONGAHELA RIVER. THE GATE OPENING IS READING GREATER THAN 8 FEET. EXERCISE CAUTION WHILE DOUBLE LOCKING THROUGH LOCK 4.

HIGH WATER Enclosure 2 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT LOCK AND DAM 4 MILE MARKER 41.5 MONONGAHELA RIVER. THE GATE OPENING IS READING GREATER THAN 35 FEET. EXERCISE CAUTION WHILE TRANSITING THROUGH LOCK 4. EXERCISE CAUTION WHILE TRANSITING THROUGH THE AREA BETWEEN GREENFIELD BEND MILE MARKER 50 AND MAXWELL DAM MILE MARKER 61.2.

LOW WATER Enclosure 3 (example)
Broadcast Notice to Mariners **(NOTE: This BNM can be changed to reflect actual conditions and draft limitations)**

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO LOW WATER / LOW FLOW CONDITIONS AT LOCK AND DAM 4, MILE MARKER 41.5, MONONGAHELA RIVER. THE LOWER GAUGE READS LESS THAN 9.5 FEET **(NOTE: The lower gauge reading may change to reflect actual conditions).** PROCEED WITH CAUTION AND REMAIN IN THE NAVIGABLE CHANNEL DUE TO DECREASING WATER LEVELS. ALL VESSELS MUST MONITOR CHANNEL DEPTHS AND ENSURE ADEQUATE WATER EXISTS FOR THEIR VESSEL DRAFTS. VESSEL DRAFTS SHOULD NOT EXCEED _____ FEET **(NOTE: Draft limitations will depend on the conditions).** REPORT ALL GROUNDINGS TO THE U.S. COAST GUARD.

4.F. Monongahela River Action Plan
4.F.3. Maxwell Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
MAXWELL LOCK AND DAM **MONONGAHELA RIVER** **MILE MARKER: 61.0** **FLOOD STAGE READING:** 12' UG 31' LG **OTHER USEFUL DATA:** NORMAL POOL 9' ON UG & LG CEASE LOCKING 31' LG MAX. DAM OPENING 110' TABLE USES UPPER GAUGE TO MONITOR RIVER CONDITIONS. THE POTENTIAL FOR VESSEL ALLISIONS WITH LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **USACE GAUGE READINGS REPORT**	15' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	15'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAPI will initiate a phone conference between CG, USACE and WAPI. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	15'- DAM OPENING	Falling	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory (Enc. 1).

MONONGAHELA RIVER – MAXWELL LOCK AND DAM

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT MAXWELL DAM, MILE MARKER 61.2, MONONGAHELA RIVER. THE GATE OPENING IS GREATER THAN 15 FEET. EXERCISE CAUTION WHILE TRANSITING THROUGH THE AREA BETWEEN GATES LIGHT MILE MARKER 76.1 AND GRAYS LANDING DAM MILE MARKER 82.

4.F. Monongahela River Action Plan
4.F.4. Grays Landing Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
GRAYS LANDING LOCK AND DAM **MONONGAHELA RIVER** **MILE MARKER: 82** **FLOOD STAGE READING:** 17' UG **OTHER USEFUL DATA:** NORMAL POOL 9' ON UG & LG CEASE LOCKING 17' UG TABLE USES UPPER GAUGE TO MONITOR RIVER CONDITIONS. THE POTENTIAL FOR VESSEL ALLISIONS WITH LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **CAUTIONARY NOTE 1:** WHEN WATER LEVELS ARE EXPECTED TO REACH OR EXCEED 21' UG, ALL GATES ARE TIED BACK SO THAT WATER CAN FLOW FREELY **USACE GAUGE READINGS REPORT**	15' UG	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	15' + UG	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAPI will initiate a phone conference between CG, USACE and WAPI. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	15'- UG	Falling	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory.

MONONGAHELA RIVER – GRAYS LANDING

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT GRAYS LANDING DAM MILE MARKER 82.0 MONONGAHELA RIVER. THE UPPER GAUGE AT GRAYS LANDING DAM READS GREATER THAN 15 FEET. FLEETING FACILITIES ARE ADVISED TO (1) REVIEW AND ACT IN ACCORDANCE WITH THEIR WATERFRONT FLEET OPERATIONS GUIDE AND ANY COMPANY CONTINGENCY PLANS, (2) ASSIGN A PERSON TO BE IN CONTINUOUS SURVEILLANCE AND TO OBSERVE THE BARGES IN THE FLEETING FACILITY, (3) DOUBLE-UP LINES ON THE HEAD OF THE FLEET AND PROVIDE AN ADEQUATE NUMBER OR SPRING AND BREAST LINES BETWEEN THE DOCK AND THE BARGES IN THE FLEET, AND (4) REVIEW THEIR NEED TO SECURE TOWBOAT ASSISTANCE.

4.F. Monongahela River Action Plan
4.F.5. Point Marion Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
POINT MARION LOCK AND DAM **MONONGAHELA RIVER** **MILE MARKER: 90.8** **FLOOD STAGE READING:** 29' LG **OTHER USEFUL DATA:** NORMAL POOL 9' ON UG & LG CEASE LOCKING 11' UG MAX. DAM OPENING 33' TABLE USES UPPER GAUGE TO MONITOR RIVER CONDITIONS. THE POTENTIAL FOR VESSEL ALLISIONS WITH LOCK AND DAM TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. **USACE GAUGE READINGS REPORT**	20' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	20'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for high water conference calls. MSU Pittsburgh and/or WAPI will initiate a phone conference between CG, USACE and WAPI. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. MSU Pittsburgh will submit a Safety Advisory request to the Sector Command Center (SCC). The SCC will initiate a Safety Advisory (Enc. 1).
	20'- DAM OPENNG	Falling	Normal Operations/ Normal Flow Conditions	Recovery	Continue monitoring river conditions and consider canceling Safety Advisory.

MONONGAHELA RIVER – GRAYS LANDING

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER / HIGH FLOW CONDITIONS AT POINT MARION DAM, MILE MARKER 90.8, MONONGAHELA RIVER. THE GATE OPENING AT POINT MARION DAM READS GREATER THAN 20 FEET. EXERCISE CAUTION WHEN TRANSITING THROUGH COBURN BEND BETWEEN MILE MARKERS 93 TO 95.

4.G. Kanawha River Action Plan
4.G.1. Winfield Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
WINFIELD LOCK & DAM **KANAWHA RIVER** **MILE MARKER: 31.1** **FLOOD STAGE READING:** 46'LG **Reference:** WINFIELD DAM **OTHER USEFUL DATA:** MAX OPENING 110' GATES ALL OUT 35.5' LG CEASE LOCKING 39.8' LG TABLE USES DAM OPENING. THE POTENTIAL FOR VESSEL ALLISIONS WITH WINFIELD L&D TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** DRIFT TENDS TO ACCUMULATE IN THE UPPER APPROACH. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE AT APPROXIMATELY 30' OF GATE OPENING. **USACE GAUGE READINGS REPORT**	<25'	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	25'+	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for up river high water conference calls. MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. The SCC will initiate a Safety Advisory SMIB.
	40'	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, presence of ice, and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics.
	40'-	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate.
	25'-	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel Safety Advisory SMIB.

4.G. Kanawha River Action Plan
4.G.2. Marmet Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
MARMET LOCK & DAM **KANAWHA RIVER** **MILE MARKER: 67.7** **FLOOD STAGE READING: 43**'LG **Reference:** MARMET DAM **OTHER USEFUL DATA:** MAX OPENING 85' GATES ALL OUT 31' LG CEASE LOCKING 34' LG TABLE USES DAM OPENING. THE POTENTIAL FOR VESSEL ALLISIONS WITH MARMET L&D TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** DRIFT TENDS TO ACCUMULATE IN THE UPPER APPROACH. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE AT APPROXIMATELY 20' OF GATE OPENING. **CAUTIONARY NOTE 3:** NEW LOCK CHAMBER UNDER CONSTRUCTION LANDWARD OF PRESENT CHAMBERS. **USACE GAUGE READINGS REPORT**	<15.'	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	15.'+	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Consider for up river high water conference calls. MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. The SCC will initiate a SMIB.
	30.'	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, presence of ice, and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics.
	30.'-	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate.
	15.'-	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

4.G. Kanawha River Action Plan
4.G.3. London Lock and Dam High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
LONDON LOCK & DAM **KANAWHA RIVER** **MILE MARKER: 82.8** **FLOOD STAGE READING:** 43'LG **Reference:** LONDON DAM **OTHER USEFUL DATA:** MAX OPENING 85' GATES ALL OUT 33' LG CEASE LOCKING 33' LG THE POTENTIAL FOR VESSEL ALLISIONS WITH LONDON L&D TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBERS AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1:** DRIFT TENDS TO ACCUMULATE IN THE UPPER APPROACH. **CAUTIONARY NOTE 2:** OUTDRAFT IS SEVERE AT APPROXIMATELY 10' OF GATE OPENING. **CAUTIONARY NOTE 3:** DUE TO TOPOGRAPY, POOL LEVELS CAN RISE RAPIDLY. **USACE GAUGE READINGS REPORT**	<15' DAM OPENING	Rising	Normal Operations/ Flow Conditions		Locking operations normal.
	15'+ DAM OPENING	Rising & projected to continue rising rapidly	High Water/ High Flow Conditions	Watch	Participate in river high water conference calls. MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Topics to discuss: water conditions, concerns, future actions, weather forecasts and river stages. The SCC will initiate a Safety Advisory SMIB.
	30' DAM OPENING	Rising	Extreme High Water/ Extreme High Flow Conditions	Action	MSU Huntington and/or HDWA will initiate a phone conference between CG, USACE and HDWA. Factors to evaluate include rate of rise, amount of drift, presence of ice, and weather conditions. In extreme ice conditions consider providing local Pilot knowledge of river characteristics.
	30'- DAM OPENING	Falling	High Water/ High Flow Conditions	Action	Continue conference calls, monitor conditions, and adjust restrictions as appropriate.
	15'- DAM OPENING	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel Safety Advisory SMIB.

4.H. Green River Action Plan

4.H.1. Spottsville RR Bridge High Current Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
Spottsville RR Bridge **GREEN RIVER** **MILE MARKER: 8.3** **Reference:** Lock 1 LG & Newburgh L&D LG (Ohio River) **OTHER USEFUL DATA:** THE POTENTIAL FOR VESSEL ALLISIONS WITH SPOTTSVILLE RAILROAD BRIDGE ABUTMENTS TENDS TO INCREASE AS CURRENT INCREASES, SPECIFICALLY WHEN LOCK 1 LG (GREEN RIVER) IS TWO FEET OR HIGHER THAN NEWBURGH L&D LG (OHIO RIVER). VESSELS EXPERIENCE OUTDRAFT WHILE TRANSITING THE BRIDGE DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, PASS THE BRIDGE AT SLOWEST SAFE SPEED AND PREPARE FOR POTENTIAL OUTDRAFTS.	Lock 1 LG is < 1' higher than Newburgh L&D LG	Green River rising	Normal Operations / Flow Conditions		Navigation operations normal.
	Lock 1 LG is > 1' higher than Newburgh L&D LG	Rising & difference between Green & Ohio River levels increasing	High Flow Conditions	Watch	The Sector CC will initiate a Safety Advisory SMIB.
	Lock 1 LG is > 2' higher than Newburgh L&D LG	Green River levels 2' or higher than Ohio River levels.	High Flow Conditions	Action	Sector Ohio Valley and/or CORMIG will initiate a phone conference between CG, USACE and CORMIG. Factors to evaluate include rates of rise on Green and Ohio Rivers and weather conditions. Consider vessel restrictions including minimum horsepower per loaded barge, tow size limits or daylight operations. Consider establishing safety zone. Update safety advisory to reflect controls.
	Lock 1 LG is < 2' but >1' higher than Newburgh L&D LG	Difference between Green and Ohio River levels decreasing	High Flow Conditions	Watch	USACE, CG and/or CORMIG will initiate a phone conference. Factors to evaluate include river heights and weather conditions. Consider removing safety zone. Update safety advisory as appropriate.
	Lock 1 LG is < 1' higher than Newburgh L&D LG	Difference between Green and Ohio River levels decreasing	Normal Operations / Flow Conditions		Cancel safety zone if applicable. Cancel safety advisory SMIB. Navigation operations normal.

4.H. Green River Action Plan
4.H.2. Lock & Dam 1 High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
Lock 1 **GREEN RIVER** **MILE MARKER: 9.1** **Reference:** Lock 1 UG & LG **OTHER USEFUL DATA:** CEASE LOCKING 25.9' UG THE POTENTIAL FOR VESSEL ALLISIONS WITH L&D 1 TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES, SPECIFICALLY BETWEEN 16' AND 19' ON THE UPPER GAUGE. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION, ENTER CHAMBER AT SLOWEST SAFE SPEED, AND PREPARE FOR POTENTIAL OUTDRAFTS.	<13' Upper Gauge	Rising	Normal Operations / Flow Conditions		Locking operations normal.
	13'+ Upper Gauge	Rising & projected to continue rising rapidly	High Water / High Flow Conditions	Watch	The Sector CC will initiate a Safety Advisory SMIB.
	25.9' Upper Gauge > 33' Lower Gauge	Rising	Max Locking Ability / Potential Weir Navigation	Action	Sector Ohio Valley and/or CORMIG will initiate a phone conference between CG, USACE and CORMIG. Factors to evaluate include rate of rise and weather conditions. Lock ceases operations and vessels will experience delays. Consider river closure and identifying lay-up locations. The SCC will issue BNM (Encl 1).
	25.9' Upper Gauge > 33' Lower Gauge	Falling	High Water / High Flow Conditions	Action	USACE, CG and/or CORMIG will initiate a phone conference to discuss factors for ceasing weir navigation / resuming locking, considering current, rate of fall, and weather conditions. The SCC will cancel BNM (Encl 1).
	<13' Upper Gauge	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

GREEN RIVER – Lock 1

HIGH WATER Enclosure 1 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER THAT EXISTS IN THE VICINITY OF LOCK 1, MILE MARKER 9.1, GREEN RIVER. MARINERS ARE ADVISED THAT LOCK 1 HAS CEASED LOCKING OPERATIONS DUE TO HIGH WATER WITH AN UPPER GAGE READING ABOVE 25.9 FEET AND MARINERS SHOULD CONTACT THE LOCK OPERATOR TO DETERMINE IF IT IS SAFE TO NAVIGATE OVER THE WEIR.

4.H. Green River Action Plan
4.H.3. Lock & Dam 2 High Water Operations

CRITICAL AREA DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
Lock 2 **GREEN RIVER** **MILE MARKER: 63.1** **Reference: Lock 2** **OTHER USEFUL DATA:** CEASE LOCKING ANYWHERE BETWEEN 21.3 AND 22.5 UG DEPENDENING ON CONDITIONS. THE POTENTIAL FOR VESSEL ALLISIONS WITH L&D 2 TENDS TO INCREASE AS WATER RISES AND CURRENT INCREASES, SPECIFICALLY BETWEEN 16' AND 19' ON THE UPPER GAUGE. VESSELS EXPERIENCE OUTDRAFT WHILE APPROACHING LOCK DOWNBOUND. MARINERS ARE ADVISED TO EXERCISE EXTREME CAUTION AND PREPARE FOR POTENTIAL OUTDRAFTS. **CAUTIONARY NOTE 1: Mariners are advised to hug the right descending bank when approaching downbound.** **CAUTIONARY NOTE 2: Outdrafts are particularly strong beginning at 18' UG. Downbound mariners may need to push hard to get into the gate and then back off upon reaching the gate to prevent being overcome by outdrafts.**	<13' Upper Gauge	Rising	Normal Operations / Flow Conditions		Locking operations normal.
	13'+ Upper Gauge	Rising & projected to continue rising	High Water / High Flow Conditions – Outdraft starts	Watch	The Sector CC will initiate a SMIB.
	18'+ Upper gauge	Rising	High water / High Flow - Severe Outdrafts	Action	Sector Ohio Valley and/or CORMIG will initiate a phone conference between CG, USACE and CORMIG. Factors to evaluate include rate of rise, weather conditions, number of barges in tow, configuration of boxed vs. raked barges. Consider tow size limitations and/or horsepower per tow limitations.
	21.3' – 22.5' Upper Gauge / > 25' Lower gauge	Rising	Max Locking Ability / Potential Weir Navigation	Action	USACE, CG and/or CORMIG will initiate a phone conference. Factors to evaluate: rate of rise/weather conditions. Lock ceases operations and vessels will experience delays. Consider river closure and identifying lay-up locations. The SCC will issue BNM (Encl 1).
	21.5' - 23' Upper Gauge > 25' Lower Gauge	Falling	Potential Weir Navigation / High Water / High Flow Conditions	Action	USACE, CG and/or CORMIG will initiate a phone conference to discuss factors for ceasing weir navigation and resuming locking, considering current, rate of fall, and weather conditions. The SCC will update the safety advisory (encl. 1)
	< 18' Upper gauge	Falling	High water / High Flow - Outdrafts	Recovery	Continue conference calls, monitor conditions, and adjust restrictions.
	<13' Upper Gauge	Falling	Normal Operations / Normal Flow Conditions	Recovery	Continue monitoring river conditions and cancel SMIB.

GREEN RIVER – Lock 2

HIGH WATER Enclosure 2 (example)
Broadcast Notice to Mariners

THE U.S. COAST GUARD CAPTAIN OF THE PORT HAS ISSUED THIS SAFETY ADVISORY DUE TO HIGH WATER THAT EXISTS IN THE VICINITY OF LOCK 2, MILE MARKER 63.1, GREEN RIVER. MARINERS ARE ADVISED THAT LOCK 2 HAS CEASED LOCKING OPERATIONS DUE TO HIGH WATER WITH AN UPPER GAGE READING ABOVE 22.5 FEET AND MARINERS SHOULD CONTACT THE LOCK OPERATOR TO DETERMINE IF IT IS SAFE TO NAVIGATE OVER THE WEIR.

4.I. Ice Conditions: ALL ZONES

CRITICAL REACH DESCRIPTION	TRIGGER READING	TREND	DESCRIPTION	PHASE	ACTION
ALL OHIO VALLEY ZONES	No Ice		Normal Operations		Corps distributes informational navigation notice in early winter, prior to ice season.
	Ice Build-Up in Channel and Sheet Ice Formation	Predicted weather forecast indicates extreme temperatures. Ice buildup begins in the creeks and tributaries.	Mariners consulting with lock masters for indications of ice buildup. Ice Interferes with Normal Navigation. Sheet ice will at times prevent opening of the upper and lower lock gates. When the lock gates cannot be fully opened into recesses, they are highly vulnerable to extensive damage from tows entering or departing the lock chamber.	Watch	Consider advisories on missing buoys and safety zone restriction for tow width and length. Ice couplings for entering locks. Single-file traffic in ice-narrowed channels. Navigators are cautioned to exercise extreme care when entering or departing the lock chamber to avoid damage to the lock gates. When ice builds up to the extent that full usage of the lock chamber is prohibited, length and/or width restrictions may be imposed on lockages.
	Heavy Ice Gorges	Prolonged extreme temp.	Channel blocked in some locations. Gorged ice becomes a particular hazard when attempts are made to drive barges through the formation. Barges forced through or over gorged ice may be damaged.	Action	Consider river closure, restriction of types of traffic, or allow single lane traffic in open areas only. Navigators are advised to exercise due caution to avoid damaging barges and unusual currents and high localized flow or out draft conditions due to water bypassing the temporary dam formed by the gorge. Navigators approaching an ice gorge should make certain that the towboat has sufficient power to properly control the number of barges in tow under such unusual conditions of flow.
	Rotting ice, increased flow softening ice	Rising temperatures and rain flushing ice out.	Ice softening, water noticeable on top of the ice flow, channel conditions improving, and ice receding from channel.	Recovery	ATON checks, locks and dams flush ice; lock personnel will notify USCG to release a broadcast prior to prolonged flushing at the locks.

5. Drift Removal Procedures
5.A. Huntington District Drift Removal Procedures

During high river flow conditions both the USACE and navigation industry are challenged with drift and debris accumulation at locks on the Ohio River. In addition to river topography, variables such as pool stage, wind direction and wind velocity largely influence the accumulation and removal of drift from the approaches, fore bays and chambers of the locks. The primary methods of drift removal are by locking and flushing it through the lock chamber(s) but this is dependent upon the design and capabilities of each individual lock. The following guidance was prepared to communicate the expected drift removal practices and expectations for each lock within the Huntington District. They are guidelines only.

The characterization of drift accumulation at locks as "light", "moderate" and "heavy" is not an absolute determination. It is rather a qualitative comparison of drift accumulation observations over the years by a number of experienced navigation industry representatives.

5.A.1. Willow Island Locks and Dam
(Light Drift Accumulation)

Light drift accumulates in the upper approach with a lower gage of less than 16.0' and little wind. Drift will be passed using the valves in the auxiliary chamber.

Heavy drift accumulates in the upper approach with a lower gage of at least 20.0' and little wind. Drift will be flushed with the auxiliary chamber emergency gate. It may be necessary to use the main chamber emergency gates to flush drift through the lock. Drift has a tendency to hang at the edge of the lower river wall at the line between the river's flow and the slack water. When the wind is blowing upriver, it may not be possible to move the drift through the lock. Heavy drift does not accumulate typically until the dam openings are fully open in a rising river.

5.A.2. Belleville Locks and Dam
(Heavy Drift Accumulation)

Light drift accumulates in the upper approach with a lower gage of 12.0' to 26.0' and little wind. Drift will be passed using the valves in the auxiliary chamber.

When there is not sufficient lift to move the drift or the volume of the drift gets too great, two bulkheads are set in the auxiliary chamber using the bulkhead crane. Both upper and lower gates are then latched in the open position. Drift is flushed by leaving the bottom bulkhead on the sill and raising the top bulkhead to clear the upper pool elevation. If the upper pool exceeds 14.0' or 584 feet above sea level another bulkhead is added.

Drift has a tendency to hang at the edge of the lower river wall at the line between the river's flow and the slack water. If you have an upriver wind and it is working against you, it may be impossible to get rid of the drift. Heavy drift does not accumulate typically until the dam openings are fully open in a rising river.

5.A.3. Racine Locks and Dam
(Heavy Drift Accumulation)

Light drift accumulates in the upper approach with a lower gage of less than 14.0' and little wind. Drift will be passed using the valves in the auxiliary chamber.

Heavy drift accumulates in the upper approach with a lower gage of at least 33.0' and little wind. Drift will be flushed with the auxiliary chamber emergency gate. It may be necessary to use the main chamber emergency gates to flush drift through the lock. Drift has a tendency to hang at the edge of the lower river wall at the line between the river's flow and the slack water. When the wind is blowing upriver, it may not be possible to move the drift through the lock. Heavy drift does not accumulate typically until the dam openings are fully open in a rising river.

5.A.4. Robert C. Byrd Locks and Dam

(Light Drift Accumulation)

Due to the design and layout of the upper lock approach with regard to the dam and location of the filling intake system, this lock rarely has drift and debris accumulation within the lock approach.

Light drift can accumulate in the upper approach with a lower gage of less than 15.0' and little wind. Drift will be passed utilizing the valves in the auxiliary chamber.

The project is also equipped with emergency gates on both chambers to pass debris if needed.

5.A.5. Greenup Locks and Dam

(Heavy Drift Accumulation)

Light drift accumulates in the upper approach with a lower gage of less than 25.7' and little wind. Drift will be passed using the valves in the auxiliary chamber.

Heavy drift accumulates in the upper approach with a lower gage of at least 25.7' and little wind. Drift will be flushed with the auxiliary chamber emergency gate. It may be necessary to use the main chamber emergency gates to flush drift through the lock. Drift has a tendency to hang at the edge of the lower river wall at the line between the river's flow and the slack water. When the wind is blowing upriver, it may not be possible to move the drift through the lock. Heavy drift does not accumulate typically until the dam openings are fully open in a rising river.

5.A.6. Meldahl Locks and Dam

(Light Drift Accumulation)

Light drift accumulates in the upper approach with a lower gage of less than 35.0' and little wind. Drift will be passed using the valves in the auxiliary chamber.

Heavy drift accumulates in the upper approach with a lower gage of at least 40.6' and little wind. Drift will be flushed with the auxiliary chamber emergency gate. It may be necessary to use the main chamber emergency gates to flush drift through the lock. Drift has a tendency to hang at the edge of the lower river wall at the line between the river's flow and the slack water. When the wind is blowing upriver, it may not be possible to move the drift through the lock. Heavy drift does not accumulate typically until the dam openings are fully open in a rising river.

5.A.7. London Locks and Dam - (Kanawha River)

(Light Drift Accumulation)

Drift has to be dealt with promptly when it accumulates on the guard wall otherwise the barges will not lay flat on the wall. This complicates recoupling of tows and inhibits deck crew movement between barges.

Typically drift is pushed into the chamber by down bound tows and locked through with the tow. This clears the majority of the drift from the upper lock approach.

Drift can also be locked through the chamber by by-passing the valve-to-gate interlocks. The lock's emptying valves are utilized to draw the debris into the chamber. The filling valves are then opened to push the drift out of the chamber.

Under certain conditions, the roller dam gates can be utilized to draw the drift onto the dam. This does not clear any drift in the lock approach but may prevent additional drift from accumulating.

5.A.8. Marmet Locks and Dam - (Kanawha River)

(Light Drift Accumulation)

Marmet does not have a history with drift and debris accumulation. Should significant drift accumulation occur the lock's emptying valves could be used to draw the drift into the chamber followed by the filling valves use to flush the drift out of the chamber. Given the lock's through-the-sill intake system, this procedure has not been proven.

5.A.9. Winfield Locks and Dam - (Kanawha River)

(Moderate Drift Accumulation)

Usually drift and debris is pushed into the chamber by down bound tows and locked through with the tow. This will clear the majority of the drift from the upper approach.

Lock personnel utilize the subsurface air system to move the drift out of the miter gate recess to permit their full opening.

The emergency gate can also be used to pass drift through the 800' main chamber. Under most conditions, once the drift has passed through the lock chamber, the debris may linger in the lower approach.

5.B. Louisville District Drift Removal Procedures

During high river flow conditions both the USACE and navigation industry are challenged with drift and debris accumulation at locks on the Ohio River. In addition to river topography, variables such as pool stage, wind direction and wind velocity largely influence the accumulation and removal of drift from the approaches, fore bays and chambers of the locks. The primary methods of drift removal are by locking and flushing it through the lock chamber(s) but this is dependent upon the design and capabilities of each individual lock. The following guidance was prepared to communicate the expected drift removal practices and expectations for each lock within the Louisville District. They are guidelines only.

The characterization of drift accumulation at locks as "light", "moderate" and "heavy" is not an absolute determination. It is rather a qualitative comparison of drift accumulation observations over the years by a number of experienced navigation industry representatives.

5.B.1. Markland Lock

(Heavy Drift Accumulation)

Light drift accumulates in the upper approach with a lower gage of 20.0' with little. Drift will be passed using the valves in auxiliary chamber.

Heavy drift accumulates in the upper approach with a lower gage of at least 43.0' and little wind. Drift will be flushed with the auxiliary chamber emergency gate. It may be necessary to use the main chamber emergency gates to flush drift through the lock. Drift has a tendency to hang at the edge of the lower river wall at the line between the river's flow and the slack water. When the wind is blowing upriver, it may not be possible to move the drift through the lock.

5.B.2. McAlpine Lock

(Light Drift Accumulation)

McAlpine does not have a history with drift and debris accumulation. The dam gates do not sit closed for long periods of time as at other dams and the canal approach does not attract significant drift.

5.B.3. Cannelton Lock

(Heavy Drift Accumulation)

Flushing drift at Cannelton is an infrequent occurrence - usually 2-3 times in an average year. It takes approximately 2-3 hours to flush drift out of the fore bay.

Flushing of drift is not triggered by any specific pool level but rather when there is sufficient accumulation to hazard northbound navigation traffic departing the lock. After 1600 and on weekends lock operators are required to contact the lockmaster if drift is becoming a hazard to navigation. Flushing is accomplished by maintenance personnel through the auxiliary chamber.

5.B.4. Newburgh Lock

(Moderate Drift Accumulation)

Flushing drift at Newburgh occurs infrequently. When present in the approach lock personnel manage the drift as follows:

1. Advantageously utilize the wind, current, and cycling of the lock chambers to discharge drift.
2. Communicate with approaching tow boats advising them of the presence of drift.
3. Utilize the project's work boat to push drift through the chamber when feasible and safe to do so.
4. With a normal upper pool, place two emergency bulkheads in the auxiliary chamber.

5.B.5. John T. Myers Lock

(Light Drift Accumulation)

Drift is not a significant problem at JT Myers because the river bend at Highland Rocks just above the project directs most of it to the dam. Substantial drift is observed when the dam is in the all-out stage at 12.0' upper gage and 30.0' lower but it typically passes through the open dam gates.

Drift does not build up on the dam during higher flows from 100' to 270' dam opening because it gets sucked under and passes unassisted once the dam opening reaches 70'.

Drift can be flushed from the upper approach by setting the bulkheads above the auxiliary chamber but this is infrequently necessary.

5.B.6. Smithland Lock

(Light Drift Accumulation)

When drift accumulates in the upper approach, lock personnel open the upper gates and pin the top latch of the gate in the recess. With the filling valves closed and the interlock system bypassed, the emptying valves can be opened to draw the drift into the chamber. Once there, with the emptying valves closed and the upper gates unpinned and closed, the lower gates can be opened and pinned and the filling valves opened to flush the drift from the chamber.

The project's work boat can be used to work the drift into the chamber for locking through. The work boat can also be used to pull out large pieces of drift from the approach.

The river chamber is usually where most of the drift collects. Northbound towboats push it upstream as they leave and it flows around the end of the guard wall onto the dam.

Drift is flushed off the dam when running more than 15 feet of opening on a gate. One gate is opened with the adjacent two adjusted to draw the drift through the opened gate.

6. Risk Assessment
6.A. Casualty History by Location

FY 2003-2010 CAG Data				
River	**Pool**	**# of Collisions**	**# of Allisions**	**# of Groundings**
Monongahela River	MM0- Lock 2	0	10	13
	Lock 2	1	3	0
	Lock 3	0	2	3
	Lock 4	2	0	0
	Maxwell	1	6	2
Allegheny River	MM 0.0-6.7	0	0	1
	MM 6.7-14.5 Lock 2 Pool	0	1	0
	MM14.5 - 24.2 Lock 3 Pool	0	0	1
	MM24.2-30.4 Lock 4 Pool	0	0	0
	MM30.4-36.3 Lock 5 Pool	0	0	0
	MM36.3-45.7 Lock 6 Pool	0	0	0
	MM45.7-52.6 Lock 7 Pool	0	0	0
	MM52.6-62.2 Lock 8 Pool	0	0	0
	MM62.2 - 69 Lock 9 Pool	0	0	0
Ohio River	Emsworth	0	1	7
	Dashields	0	1	1
	Montgomery	0	12	6
	New Cumberland	1	2	5
	Pike Island	1	4	2
	Hannibal	0	6	3
	Willow	4	8	7
	Belleville	5	22	4
	Racine	3	19	12
	R.C.Byrd	0	5	21
	Greenup	1	4	7
	Meldahl	0	15	35
	Markland	0	5	24
	McAlpine	8	16	45
	Cannelton	2	21	34
	Newburgh	1	13	3
	J.T. Myers	0	2	2
	Smithland	0	8	3
	Lock 52	0	3	1
	Lock 53	2	5	1
	Lock 53 to Cairo	1	4	4
Upper Mississippi River	MM0.3 Cairo Point to Route 60	0	3	6
	MM1.3 Route 60 / 62 Bridge to Thebes	1	5	25
	MM43.2 Thebes Rail Road Bridge to Grays Point	2	3	5
	MM44.0-52.0 Grays Point to Chester	2	5	29

6. Risk Assessment
6.A. Casualty History by Location

FY 2003-2010 CAG Data				
River	**Pool**	**# of Collisions**	**# of Allisions**	**# of Groundings**
Lower Mississippi River	LMR Cairo to 109	4	4	17
Tennessee River	MM17.0-21.1 I-24 Bridge & Vicinity	0	2	3
	MM22.4-25.2 Kentucky Lock to Barkley Canal	1	2	6
	MM25.2-32 Barkley Canal to Smith Bay	0	0	0
	MM32-66.2 Smith Bay to RT 79 Bridge	0	5	2
	MM66.2-100.5 RT 79 Bridge to Johnsonville	0	1	3
	MM100.5-135 Johnsonville to Pickwick L & D	0	0	2
	MM135-180 Perryville to Cerro Gorde	0	1	1
	MM180-204.5 Cerro Gorde to Big Bend	0	1	5
	MM204.5-206.7 Big Bend to Pickwick L & D	0	7	14
	MM206.7-239 Pickwick to Krogers Island	0	0	2
	MM239-259 Krogers Island to Wilson	0	2	3
	MM259-275 Wilson to Wheeler	1	4	2
	MM275-305 Wheeler to Decatur	0	3	3
	MM305-349 Decatur to Guntersville	2	1	0
	MM349-386 Guntersville to B.B.Coomer Hwy	0	1	0
	MM386-424.5 B.B Coomer Hwy to Nickajack	1	2	0
	Nickajack to Chick including "The Gorge"	0	0	4
Cumberland River	Cumberland River canal	0	0	9
	Barkley Lock & Dam MM30.6-55	0	3	8
	Barkley Lock & Dam MM55-81.5	0	3	8
	Barkley Lock & Dam MM81.5-115	0	1	1
	Barkley Lock & Dam MM115 to Cheatham	1	2	5
	Cheatham to Old Hickory	0	14	5

6.B. Waterway Analysis
6.B.1. Tool Legend

Need for Precise Control	Navigational Complexity			Congestion	Casualty History (7 yr period)
	Obstructions to Nav	Channel Width (Full Banks)	Bend Radius		
High	Multiple Obstructions	Narrow (single passage)	sharp bend(>180 deg)	Traffic always present	>10
Medium	Single Obstruction	Medium (dual passage possible/likely)	gradual bend (btn 90 and 180 or	Traffic sometimes present	6><10
Low	No Obstructions	Wide (more than 2 vsl passage possible)	no bend (>90 deg) or no river crossing	Traffic rarely present	<6

6.B.2. Risk Factors
6.B.2.a. Monongahela River

Location	Factors to Increase Likelihood of Casualty					
	Obs to Nav	Channel Width	Bend Radius	Congestion	Casualty History	Risk Score
MM0-Lock 2 Pool	High	High	High	High	High	**600**
Lock 2 Pool	Medium	High	Medium	High	Low	**222**
Lock 3 Pool	Low	High	Low	High	Low	**204**
Lock 4 Pool	High	Medium	Low	High	Low	**213**
Maxwell Pool	Low	High	High	High	Low	**303**

6.B.2. Risk Factors
6.B.2.b. Allegheny River

Location	Factors to Increase Likelihood of Casualty					
	Obs to Nav	Channel Width	Bend Radius	Congestion	Casualty History	Risk Score
MM 0.0-6.7	Low	Medium	Low	High	Low	**114**
MM 6.7-14.5 Lock 2 Pool	Low	Medium	Medium	High	Low	**123**
MM14.5 - 24.2 Lock 3 Pool	Low	Low	Medium	High	Low	**114**
MM24.2-30.4 Lock 4 Pool	Low	Medium	Medium	High	Low	**123**
MM30.4-36.3 Lock 5 Pool	Low	Low	Low	Medium	Low	**15**
MM36.3-45.7 Lock 6 Pool	Low	High	Medium	Low	Low	**114**
MM45.7-52.6 Lock 7 Pool	Low	Medium	Medium	Low	Low	**24**
MM52.6-62.2 Lock 8 Pool	Low	Medium	High	Medium	Low	**123**
MM62.2 - 69 Lock 9 Pool	Low	High	High	Low	Low	**204**

6.B.2. Risk Factors

6.B.2.c. Ohio River

Location	Factors to Increase Likelihood of Casualty					
	Obs to Nav	Channel Width	Bend Radius	Congestion	Casualty History	Risk Score
EMSWORTH POOL	Medium	Low	Medium	High	Low	123
DASHIELDS POOL	High	Medium	Medium	High	High	420
MONTGOMERY POOL	High	Medium	Medium	High	Low	222
NEW CUMBERLAND POOL	Medium	High	Medium	High	Medium	240
PIKE ISL POOL	Medium	High	Medium	High	Medium	240
HANNIBAL POOL	High	High	Medium	High	Medium	330
WILLOW POOL	High	High	Medium	High	Low	312
BELLEVILLE POOL	High	High	Medium	High	High	510
RACINE POOL	High	High	High	High	Medium	420
R.C.BYRD POOL	High	Medium	Medium	High	Medium	240
GREENUP POOL	Low	Low	Low	High	Medium	123
MELDAHL POOL	Low	Low	Medium	High	High	312
MARKLAND POOL	High	Low	High	High	High	501
MCALPINE POOL	Medium	Low	Medium	High	High	321
CANNELTON POOL	Low	Medium	Medium	High	High	321
NEWBURGH POOL	Low	Medium	Low	High	High	312
J. T. MYERS POOL	Medium	Medium	Medium	High	High	330
SMITHLAND POOL	Low	Low	Medium	High	High	312
LOCK52 POOL	High	High	Low	High	High	501
LOCK 53 POOL	High	High	Low	High	High	501
LOCK 53 TO CAIRO	High	High	Low	High	High	501

6.B.2. Risk Factors
6.B.2.d. Mississippi River

Location	Factors to Increase Likelihood of Casualty					
	Obs to Nav	Channel Width	Bend Radius	Congestion	Casualty History	Risk Score
MM52.0-44.0 CHESTER TO GRAYS POINT	Medium	Medium	Medium	High	High	330
MM44.0-43.2 GRAYS POINT TO THEBES RAIL BRIDGE	Medium	Medium	Low	High	High	321
MM43.2-1.3 THEBES TO ROUTE 60 / 62 BRIDGE	High	Medium	Medium	High	High	420
MM1.3-0.3 ROUTE 60 / 62 BRIDGE TO CAIRO POINT	High	Medium	Low	High	Medium	231
MM0.3-109 CAIRO TO MM 109	Medium	Medium	High	High	High	420

6.B.2. Risk Factors
6.B.2.e. Tennessee River

Location	Factors to Increase Likelihood of Casualty					
	Obs to Nav	Channel Width	Bend Radius	Congestion	Casualty History	Risk Score
MM17.0-21.1 (I-24 BRIDGE & VICINITY)	Low	High	Low	High	Low	**204**
MM22.4-25.2 (KENTUCKY LOCK TO BARKLEY CANAL)	Low	Low	Low	High	Medium	**123**
MM25.2-32 (BARKLEY CANAL TO SMITH BAY)	Low	Low	Low	Medium	Low	**15**
MM32-66.2 (SMITH BAY TO RT 79 BRIDGE)	Low	Medium	Low	Medium	Medium	**42**
MM66.2-100.5 (RT 79 BRIDGE TO JOHNSONVILLE)	Low	Medium	Low	Medium	Low	**24**
MM100.5-135 (JOHNSONVILLE TO PICKWICK L & D)	Low	Medium	Medium	Medium	Low	**33**
MM135-180 (PERRYVILLE TO CERRO GORDE)	Low	High	High	Medium	Low	**213**
MM180-204.5 (CERRO GORDE TO BIG BEND)	Low	High	High	Medium	Medium	**231**
MM204.5-206.7 (BIG BEND TO PICKWICK L & D)	Low	High	High	Medium	High	**411**
MM206.7-239 PICKWICK TO KROGERS ISLAND	Low	Low	Low	Medium	Low	**15**
MM239-259 KROGERS ISLAND TO WILSON	Low	High	Low	Medium	Low	**114**
MM259-275 WILSON TO WHEELER	Low	Low	Low	Medium	Medium	**33**
MM275-305 WHEELER TO DECATUR	Low	Medium	Low	Medium	Medium	42
MM305-349 DECATUR TO GUNTERSVILLE	Low	Medium	Medium	Low	Low	24
MM349-386 GUNTERSVILLE TO B.B COOMER HWY	Low	Medium	Low	Low	Low	15
MM386-424.5 B.B COOMER HWY TO NICKAJACK	Low	High	Medium	Low	Low	114
MM424.5-471 NICKAJACK TO CHICKAMAUGA	Low	High	High	High	Low	303

6.B.2. Risk Factors
6.B.2.f. Cumberland River

Location	Factors to Increase Likelihood of Casualty					
	Obs to Nav	Channel Width	Bend Radius	Congestion	Casualty History	Risk Score
MM0.0-30.6	Medium	High	Medium	Medium	Medium	**150**
MM30.6-55 BARKLEY LOCK TO ROCK CASTLE POINT	Low	High	Medium	Medium	High	**321**
MM55-81.5 ROCKCASTLE TO BEAR CREEK LT	Low	High	Medium	Medium	High	**321**
MM81.5-115 BEAR CREEK LT TO PALMYRA	Low	High	High	Medium	Low	**213**
MM115-148.7 PALMYRA TO CHEATHAM	Low	High	High	Medium	Medium	**231**
CHEATHAM TO OLD HICKORY	Medium	High	High	Medium	High	**420**