

## **Upper Mississippi River Pool 19 Overview: Resource Description and General Response Considerations**

### **Background**

Due to long-standing concerns about spills of oil and hazardous substances affecting National Wildlife Refuge properties and associated sensitive resources on the Upper Mississippi River (UMR), the US Environmental Protection Agency, US Fish and Wildlife Service, Illinois EPA, Illinois DNR, Iowa DNR, US Coast Guard, US Army Corps of Engineers, other agencies, and private sector interests, with the assistance of the Upper Mississippi River Basin Association, have developed a set of planning and response tools for UMR Pool 19. The goal of this effort has been to foster communications, enhance spill contingency planning and preparedness, and to develop site-specific protection strategies that assist responders in prioritizing tactics and recommending strategies and locations to protect the Refuge and the public from releases of oil or other substances.

This overview document provides a description of Pool 19 and its sensitive resources. It also provides general considerations for response. For more information, see the [Site Specific Response Strategies Maps](#) (link) and the Pool 19 [Incident Action Plan](#) (link) included on the Pool 19 Geographic Response Plan CD.

### **Location of Pool 19**

Pool 19 of the Upper Mississippi River (UMR) is the area traversing 46.2 miles between Lock and Dam 18 at river mile 410.5, near Gladstone, Illinois, and Lock and Dam 19 at river mile 364.3, at Keokuk, Iowa. The elevation of the pool at Lock and Dam 18 is 528 ft. dropping ten feet to 518 ft. at Lock and Dam 19. Pool 19 includes a portion of the Oquawka State Wildlife Refuge, state parks and recreation areas, as well as the Iowa State Penitentiary. However, most of the land along the river is private and its primary use is agricultural. The Cities of Burlington, Fort Madison, and Keokuk, IA, and Dallas City, Nauvoo, and Hamilton, IL, lie along the river. Each has developed shorelines, including homes and businesses on the waterfront. There are four public water intakes and one power plant intake in Pool 19. There are over 30,400 acres of aquatic habitat in the pool.

## Resource Description

The upper reach of Pool 19 contains islands, side channels, and backwaters. While the Illinois side of the pool opens into an extensive floodplain, the Iowa side exhibits more dramatic relief. The navigation channel weaves around large islands: to the east of Rush, O'Connell, and Otter Islands above Burlington, and to the west of Burlington and Clifford islands downstream of the city. A number of significant tributaries to the Mississippi River enter within Pool 19. Henderson Creek enters just south of Lock and Dam 18. Flint Creek enters at the southern portion of O'Connell Island at Burlington, IA. The Skunk River enters at Skunk Slough, west of Clifford Island. Notable backwaters include Crystal Lake just north of Gulfport, IL, Shokokon Slough and Millman Lake on the east side of Clifford Island, Patterson Lake, Round Lake, and Hartman Pond, all north of the Skunk River. Numerous backwaters and channels punctuate Burlington Island.

Much of the upper reach of Pool 19 is levied, and this training of the river has caused loss and degradation of much of the river's side channel and backwater habitats. Despite extensive human modification of the river valley and floodplain, several areas of ecological significance exist. The main channel just below Lock and Dam 18 harbors valuable fish and invertebrate communities. Henderson Creek has an "A" rating for biological integrity from the Illinois DNR. Burlington Island contains a rookery and mammal communities. The confluence of the Skunk River and the Mississippi hosts the Iowa DNR Blackhawk Bottoms Wildlife Management Area, a critical habitat area. A long stretch of sensitive aquatic invertebrate habitat extends from there across the river to Shokokon Slough before following the left descending bank south to The Ridges, a small island north of Niota, IL, also a valuable waterfowl site. This habitat historically contained high densities of fingerling clams *Musculium transversum*, whose populations declined significantly, possibly due to low-flow conditions during drought periods. These declines affect the lesser scaup *Aythya affinis* population, which congregates along this stretch of the river to feed on the mollusk.

The lower reach of the Pool begins to widen as it turns south near Nauvoo, IL. The number of islands and backwaters drops significantly from here to Keokuk, IA. Notable tributaries include Sugar and Devils Creek, both fed by numerous smaller creeks on the Iowa side, and Larry Creek, just S of Nauvoo on the Illinois side.

The impounding of the Mississippi River at Lock and Dam 19 at Keokuk, IA and Hamilton, IL and resulting sedimentation has created ideal conditions for the development of macrophyte beds. Much of the lower reach contains these beds, estimated in 1984 to contain more than a quarter of the total for the entire Upper Mississippi River. These beds provide important forage for hundreds of thousands of canvasbacks *Aythya valisineria* during the migratory season, particularly between the Devil's Creek and Montrose.

Rail lines run adjacent to the floodplain or river banks along the majority of the southern banks on the Iowa side between Keokuk and Fort Madison, as well as the northern portion adjacent to Burlington, IA. North of Fort Madison, the rail lines run a mile or three more inland to the Skunk River, and then along the shore starting just south of Burlington. Along the Illinois side, rail lines run along the floodplain or river banks between part of Pontoosuc, Dallas City, and a majority of the shoreline between Dallas City and Lomax. South of Henderson Creek, they run through Gladstone to Gulf Port. Rail lines are along the shoreline of Hamilton, IL, and then run inland through Hancock County through Elvaston, Ferris, and La Harpe.

The middle reach of Pool 19 contains five pipeline crossings. From river miles 381.6 to 380.6, three pipelines merge into one on the right descending bank and cross the river south of Fort Madison, IA to Niota, IL. Another pipeline crosses north of Fort Madison, IL at river mile 379.5 and runs parallel to the aforementioned rail lines upstream along the Illinois bank for nearly 15 miles. This pipeline passes through sensitive invertebrate habitat before bearing northeast away from the river just north of Lomax, IL. There is also a propane pipeline crossing a mile downstream, near critical waterfowl habitat on the left descending bank.

## **Response Considerations**

### *Primary Response Goals*

The following are primary considerations for response in Pool 19:

- In general, any spilled oil product should be excluded from backwaters and kept in the main channel of the Mississippi River. Then, if possible, the oil should be diverted with boom and collected. Most collection sites are near boat landings.
- Keeping product out of key backwater areas is the top priority in any spill event. Of primary concern are Blackhawk Bottoms, Burlington Island, and Crystal Lake backwaters, as well as the aquatic vegetation beds above Montrose.
- A spill or release should be collected as near to the source as possible, as there are few good collection locations. Also, the lower Pool is predominantly good quality mussel beds with shallow, sandy substrate.

### *Likely Spill Sources*

The primary potential spill sources in this pool are transportation corridors; railroad, highway, oil pipelines, and vessels, tugs and barges on the river. The TPW Railroad track runs on the Illinois side, just above the bottomlands at Hamilton. Rail tracks cross the Mississippi River between Keokuk and Hamilton, Fort Madison and Hancock County, west of Pontoosuc, and between Burlington and Gulf Port. BNSF Rail track runs along the river on the Iowa side within Keokuk, Fort Madison, and Burlington, as well as on the Illinois side between Pontoosuc and

Lomax. US Highway 34 crosses the river between Gulfport, IL and Burlington, IA. Illinois Highway 9 crosses the river into Fort Madison. US Highway 136 crosses the river between Hamilton, IL and Keokuk, IA. Highway 99 in Iowa follows the river bank in the central portion of Burlington. Pipeline crossings at river miles 381.8, 381.6 to 380.6, and 379.5 are also potential spill sources.