Upper Mississippi River Pool 7 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, Minnesota PCA, Minnesota DNR, Wisconsin 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 7. 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 7 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 7 Template Incident Action Plan (link) included on the Pool 7 Geographic Response Plan CD.

Location of Pool 7

Pool 7 of the Upper Mississippi River (UMR) is the area between Lock and Dam 7 at river mile 702, near Onalaska, Wisconsin, and Lock and Dam 6 at river mile 714, near Trempealeau, Wisconsin. Pool 7 includes portions of the Upper Mississippi River National Wildlife and Fish Refuge (Refuge), the north end of French Island, and the City of LaCrosse, Wisconsin which is highly populated and including homes and boat houses (which are located on the shoreline of Pool 8). There are no public drinking water intakes in Pool 7. There is however an industrial water intake at the Xcel Energy Plant on French Island at River mile 700.0 in Pool 8 immediately down stream.

Most of the land east of the main channel is owned by the US Fish and Wildlife Service (FWS). Dakota and Dresbach, Minnesota, are other communities with population centers in this pool. Many permanent and seasonal boat houses and house boats with overnight campers are located on the shorelines and islands in this pool.

Resource Description

On the Minnesota side of the pool, the Mississippi River valley is confined to a narrow bedrock gorge. The interface between the river floodplain and bluffs is generally abrupt. On the Wisconsin side, there is an extensive backwater floodplain. The relatively flat sand terraces and the Black River bottoms are a portion of this floodplain to the Wisconsin bluffs area. Major tributaries to the Mississippi River within Pool 7 are the Black River and its tributaries Tank Creek and Shingle Creek, and Halfway Creek.

Many storm drains can be found along the Minnesota side of the pool that drain from interstate and state highways that run along the western shoreline. Many storm drains are also found on the eastern shoreline on the Wisconsin side. The Onalaska spillway is found on the Black River. Of note for spill

response, spilled product should be diverted and collected prior to the material passing over the spillway into Pool 8.

Rail lines run adjacent to the river banks along the entire western and eastern shorelines. The rail embankments may be the only access point in some parts of the river.

The upper reach of the Pool 7 has islands, backwater lakes, and wetlands. Long Lake is valuable fish habitat. Mud Lake and Big Marsh support dense beds of wild rice. Endangered mussel species live near islands in the main channel.

The middle reach of the pool is shaped in large part by the Black River delta. This area has many islands, channels, backwater wetlands, and streams. It contains extensive bottomland forest. During high water conditions in the Mississippi River, Black River flow typically does not reach the main channel of the Mississippi River, instead flowing to Lake Onalaska. During low water conditions, flow reaches both the main channel and the lake. Precipitation events can cause the Black River to rise more quickly than the Mississippi River, leading to water flowing out of chutes where the water normally flows in. Because the change can be short lived, responders should revisit out-flowing backwaters daily to see if flow has reversed. Additionally, the Black River rises about one week earlier than the Mississippi River due to spring runoff, causing flow changes within the backwaters.

The lower reach of the pool is mostly open water. The area away from the main channel is known as Lake Onalaska. This is the main habitat area of concern when considering spill response actions. It is a diverse habitat area for many species of fish, waterfowl, wild celery, which provides food and habitat for fish and fowl, and many macroinvertebrates. The Lake supports excellent fisheries, and provides overwintering habitat for fish. The largest flow of water from the main channel to Lake Onalaska passes through Sommers Chute, No-Name Chute, Gibbs Chute, Bullet Chute, and Hammond Chute. Responders should evaluate Sommers Chute and other chutes and set tactics to prevent spilled material from reaching Lake Onalaska and its delta which supports millions of waterfowl during the fall migrations, as well as habitat for many fish and wildlife species. The barrier islands between the Mississippi River and Lake Onalaska typically have an abrupt shore on the river channel and shallower shores and wetlands on the lake side. Access to these areas may be difficult and the use of bike paths, rail lines and the highway may be necessary for shore equipment and personnel.

Response Considerations

Primary Response Goals
The following are primary goals for response in Pool 7:

- In general, any spilled oil product should be diverted and kept in the main channel of the Mississippi River. Then, if possible, the oil should be diverted with boom and collection should take place on the Minnesota shore.

- A spill on the Black River should be contained and collected before reaching the river delta. Below this point, the river branches out into numerous channels.

- Keeping product out of Lake Onalaska is the top priority in any spill event. Because there are many channels and chutes connecting the Mississippi and Black Rivers to the Lake, deflection and

exclusion booming of multiple chutes and channels should be prioritized as a response tactic. Subsurface structures are found at the entrance to Gibbs Chute and No Name Chute and these may be utilized to ground barges to exclude flow or to anchor exclusion and diversion boom.

Likely Spill Sources

The main potential for spills in this pool is the transportation corridors; railroad, highway, and vessels, tugs and barges on the river. The BNSF Railroad track runs on the Wisconsin side, just above the bottomlands. CP Rail track runs along the river on the Minnesota side. Erosion along the lowest three miles of this bank is of concern. Interstate Highway 90 and US Highway 14/61 run along the CP Rail tracks. On both banks, access to the Pool from roads is limited, or potentially restricted by the railroad tracks. The Black River bottomlands are made more accessible by the Great River State Bicycle Trail, running from Brice Prairie near Highway Z to Trempealeau. A pickup truck fits on the trail, and could be used to carry in equipment.

Limited Availability of Local Response Resources

Timely response to spills in Pool 7 will require pre-planning and cooperative agreements with local industry and responders, as local response resources and equipment are limited. The closest response organizations are 2-3 hours from the LaCrosse area and the amount of boom and other response equipment is currently adequate for a small or medium spill, but is not adequate for a large spill. The development of and renewed interest in agreements with the local Spill Cooperative, and procurement of additional response equipment that may be pre-staged are essential in protecting the natural resources and the public in this area. In addition, consideration of the placement of permanent anchor points for the recommended protection strategies should be evaluated as well as the proximity, access and location, and type of storage container should be determined for pre-staged equipment.

Use of Locks & Dams/Coordination with USACE

While limited in its potential impact and duration, modification of hydraulic control at Lock and Dam 6 or 7 to help slow, stop or divert flow of a spilled product to a collection area could be part of a response operation. The Lock and Dams may also be natural collection points for spilled product or these structures may be used to alter the flow of the spilled product and facilitate collection. Additionally, the river access and room to stage equipment and command posts at the Lock and Dams should be considered.

Responders must contact the lockmaster for the appropriate lock for site-specific assistance and information. The St. Paul District Hydraulics Branch must be contacted to request changes to dam gate settings or for river level/flow projections. See the Emergency Contact (link) list for these numbers.

In-Situ Burning

The uses of these tactics are discussed in the Upper Mississippi River Spill Response Plan and Resource Manual (link). If in-situ burning is being considered as a response tactic, the in-situ burn checklist found in the UMR Response Plan should be used to evaluate this tactic. In situ burning will require close coordination with the Federal and State Resource Trustees. Some of the response tactics that have been developed in this document do recommend collection and burning of the product if appropriate. This does not constitute a pre-approval for in-situ burning; consulting the checklist and close coordination with Federal and State Responders and Resource Trustees remains necessary.

Chemical Oil Spill Treating Agents (COSTAs)
The use of COSTA's requires approval of the Regional Response Team. If the use of a COSTA was considered it must be registered on the National Product Schedule and the Incident Commander, FOSC, SOSC and State and Federal Trustees would have to be in agreement to utilize the registered product. The use of dispersants is not allowed within the boundaries of USEPA Regions 5 and 7 or by the Regional Response Teams. This is primarily because the dispersants solubilize or drive the product into the water column and the river is utilized as a drinking water resource. Driving the spilled product into the water column can have adverse affects on the aquatic life and vegetation. First Responders should also take into account that fire fighting foams or dispersants such as "biosolve" or other products can also solubilize the spilled product and release with the fire fighting water or storm water and then discharge to the river.

Air Boats
Due to the vast backwater areas, response efforts should consider the use of air boats for reconnaissance and boom deployment. The river contains many wing dams, underwater structures, sunken logs and the like which can impede standard boat response. In addition, cold-weather seasonal response may be limited by ice.

Use of Barges or Vessels to Divert or Exclude Spilled Product
The effectiveness of using barges in response has been demonstrated in nearby areas of the UMR. Barges can be utilized to divert, exclude and collect spilled product. Barges and other vessels could be employed by grounding or anchoring at the designated chute, harbor, or inlet to facilitate the required response tactic.

Communication and Command
Immediate response by local responders, industry and contractors to collect and contain product prior to its release to the main channel or back waters will be essential in protecting Pool 7. If spilled material does reach the channel, quick notifications and communications and the deployment of a Unified Command and implementation of an Incident Action Plan will be essential to success. A Template Incident Action Plan (link) for use in the first 12 hours of response has been prepared to outline the roles of the agencies, local responders and industry and includes some recommended organizational structures and response tactics. Quick response with deployment of local resources will be essential in the first hours and days of the response until additional resources can be mobilized.

Cold Weather Conditions and Ice Spill Response
Cold weather response and working on ice can create a number of safety concerns. Safety plans will need to take into account such items as ice thicknesses variability, under-ice currents, and water depth. Winter weather can also cause equipment failures. Vortex and drum skimmers can be problematic and inefficient in extreme cold weather conditions as properties such as viscosity changes and equipment doesn't work properly. Recovery hoses can freeze and render vacuum-truck recovery difficult.

For on-Ice recovery some of the following practices have been found to be very useful:
Partial–depth ice slotting in the surface of the ice to create recovery trenches and catchment sumps for oil; Contaminated snow and ice harvesting for later melting and recovery; the creation of snow-berms and ice-berms (water-spraying of snow berms) also helps limit the spread of spills.

For in-water recovery during ice and partial ice conditions, cutting recovery holes in the ice is the simplest method. Surface basins can be created in the ice and then opened with ice-auger boreholes for

oil collection areas. Ice augers can also be useful for assessment of under-ice oil. Full-cut ice slots can be cut through the ice to allow for oil collection and recovery. This can be especially useful in flowing river conditions to capture oil traveling under the ice. Plywood diversion barriers can also be placed through a slot so that the barrier freezes in place and diverts under-ice oil to a recovery point. Recovery of contaminated ice for later melting and oil separation is also a good method of oil recovery in extreme cold conditions where new-ice is entraining a lot of oil.

Stagnant water may require alternative methods to capture oil under ice such as mop-rope recovery between slots. For small frozen ditches and/or melting runoff, underflow dams and straw-bale dams are often preferred for oil collection and recovery.