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Mouse River Plan PROGRESS was developed by the Souris River Joint Board and its' partners to keep project stakeholders, constituents, and the region updated on the progress of the Mouse River Enhanced Flood Protection Project (MREFPP). The MREFPP is a basin-wide endeavor focusing on flood risk reduction along the Mouse River. The estimated \$1 billion project was initiated following the devastating 2011 flood and is anticipated to be completed in 20 years.

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# PROGRESS



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## PHASE MI-1 CONSTRUCTION UPDATE 4TH AVE/PUMP STATION

Progress on underground work related to the Phase MI-1 Fourth Avenue floodwall project was made more difficult over the past month due to record rain in the area. In September and early October, Park Construction and their subcontractors were able to install new/upsized water mains, sanitary sewer lines, and storm water pipes in the area just north of the Third Street Bridge, per the contract. Despite the wet soils, the engineering team came up with a solution to move along the work at the intersection of Third Street NE/Fifth Avenue NE. As of October 10, thanks to soil corrections and geogrid (a synthetic material used to reinforce soils) the contractor is nearing the point of getting in concrete curb/gutter and asphalt for the roadway surface. It is hoped that this intersection can be open at or near the end of October. Additional weather impacts could change this target date.

Other portions of the project continue to move along, as the contractor was able to get in enough curb/gutter and asphalt at the south end of Walder's Street to open up the remaining  $\frac{1}{4}$  section of the Broadway/Fourth Avenue NW intersection. Work is progressing above ground on building the structures that are needed to form the Broadway Pump Station. Concrete pours for vertical portions of the floodwalls along Fourth Avenue NW/NE are expected to continue for another few months.

And, a milestone moment for flood protection in the Basin occurred on September 6/7, at the Broadway Pump Station in Minot. Contractors set four, 500 horsepower, 40,000 gallons per minute vertical turbine pumps on the Phase MI-1 portion of flood control. This pump station will become one of the largest flood control stations in the state, when fully operational in late 2020. Each of these turbines is 7 tons of steel, at 25 feet tall. To put this level of power into perspective, the average sump pump in a home is  $\frac{1}{4}$  or  $\frac{1}{3}$  hp - so one single pump is 1,500 times more powerful!





## PHASE MI-2 & MI-3 CONSTRUCTION UPDATE NAPA VALLEY/FORREST ROAD

Phases MI-2 and MI-3 continues to make progress through the 2019 construction season despite the significantly wetter than normal conditions. The majority of construction activity has been occurring near 16th Street SW and the closure structure. At the closure structures, the reinforced concrete walls have been completed and the excavation has been backfilled. The remainder of the items for the closure structure are cosmetic and include architectural beams, concrete staining, and masonry finishes. The concrete roadway surface for 16th Street has been constructed along with curb and gutter. Driveways adjacent to roadways have been replaced as well.

Startup for the Perkett Ditch Pump Station, Bark Park Gatewell and Wee Links Irrigation Building have been completed. All three facilities are substantially complete and operational and are progressing towards final completion. Final punch list items are being completed prior to turning the facilities over to the City.

Final restoration and finishes throughout the project are being installed and include asphalt pavement, concrete sidewalks, final landscaping and seeding, exterior lighting, painting, and benches. The Wee Links Golf Course has been seeded with a majority of the course germinated and is now in the grow-in phase. The course is anticipated to be open for play by mid-summer 2020. At Souris Valley Golf Course, the new tee for Hole #4 has been completed and seeded as well.

Earthwork activities and installation of utilities have been most affected by the wet conditions. Levee fill in Phase 3 has been completed including at the tie-in to the closure structure. Several utilities that require deep excavation have been delayed until a favorable stretch of dry weather is forecasted in order

to avoid additional work-related dewatering and soil moisture conditioning. Remaining utility work includes installation of the 36-inch NAWWS water and the 30-inch raw water line as well as the removal of the existing 10-inch sanitary sewer and the existing 30-inch raw water line that are located beneath the proposed levee.

The remainder of the 2019 construction will focus on completing finishes at the pump station facilities and other restoration work throughout the project such as landscaping, seeding, concrete flatwork, and pavement. If conditions improve, the remaining utilities and levee work between the Wee Links Clubhouse and the 16th Street closure structure. Slope stabilization including placement of rip rap, and turf reinforced mats (TRM) will also continue to be completed this season.





### PHASE BU-1A BURLINGTON COLTON AVENUE BRIDGE REPLACEMENT PROJECT

Work continues on the replacement of the bridge at Colton Avenue. Earlier this summer crews drove the 100 ft long piles 75 ft into the ground to create the foundation for the bridge. The piers were poured and the concrete beams were set in place. Within the last few weeks the contractor poured the bridge deck and is currently working on constructing the approach panels, concrete barrier rails and the associated roadway realignment. The bridge is anticipated to open mid November.

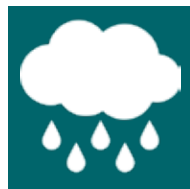


## System Operations

The Souris River Joint Board is continuously assessing flood risk within the Souris River basin in North Dakota. While Minot experienced record rainfall of approximately 8 inches in September, communities upstream of Minot experienced less. Estevan, Saskatchewan, recorded approximately 6 inches of rainfall in September and Weyburn, Saskatchewan, recorded slightly less than 4 inches of rainfall in September.

Soil moisture conditions heading into winter are one of several flood risk drivers. Others include snowpack, reservoir levels, precipitation forecasts, etc. Recent snow is expected to thaw and run off in the coming weeks. Reservoirs in Saskatchewan are currently below their prescribed water surface levels. The National Weather Service has indicated in its three month outlook that precipitation levels are supposed to remain at or around normal in southern Saskatchewan.

At this point, the SRJB does not feel that it is time to be overly concerned with our spring flood risk. As conditions change throughout the winter, the various risk drivers will be evaluated and corresponding flood risk management activities will be undertaken, if warranted.



## How does weather impact construction?

The recent extended bout of wet weather has been causing delays throughout the region including the construction industry. Precipitation routinely causes issues during the construction season in North Dakota, but fall precipitation, whether it's in the form of rain or snow, particularly causes delays during the cool autumn months where conditions are not conducive to drying.

There are several factors that compound delays for construction activities. Most obvious is that construction activities are postponed during rain events for health, safety, and productivity reasons, but the effects last much longer. Wet surface conditions create issues with access to sites; equipment can become stuck, mobility is decreased, overall efficiency is hindered and profitability suffers. Working under such conditions often results in spending as much time freeing stuck equipment and cleaning adjacent roadways as on construction progress.

Construction sites are particularly vulnerable to precipitation as the work required does not allow for adequate drainage from the site resulting in water becoming trapped and ponding. Deep excavation and trenches are particularly problematic. Contractors can spend several days pumping open excavation to dewater sites that have become inundated with rainwater. Earthwork specifications require soils used for backfill of utility trench, structure backfill, and levee fill to be within a determined tolerance in order to prevent settlement or failure in the future. Soils often need to be dried or "farmed" if they contain higher than specified moistures which can often take several days during the cooler fall months. Contractors will often avoid starting new segments of work until favorable weather is forecasted for several days in order to avoid delays that occur from wet conditions.