

Streams and Floodplain Impact Evaluation

1. Stream Characteristics

Streams in the project interchanges lie in two watersheds, the Root River Watershed and Des Plaines River Watershed. The Root River Watershed is located east of the subcontinental divide and drains to Lake Michigan. The Des Plaines River Watershed lies west of the subcontinental divide and is part of the Mississippi River drainage system. Streams within the interchanges include the Root River (27th St./USH 41 interchange) and the Kilbourn Road Ditch (STH 158 and STH 50 interchanges). The Kilbourn Road Ditch flows into the Des Plaines between the STH 50 and CTH C interchanges in Kenosha County. In addition, there are a number of unnamed drainage ways in the interchange areas. Streams outside the interchanges, but proximate to them, include the East Branch Root River and the Des Plaines River. The Des Plaines River crosses I-94 between the STH 50 and CTH C interchanges.

Water quality conditions in the Root and Des Plaines Rivers and their tributaries have historically been poor as a result of intensive development and unsound urban and rural land management practices. In the past, both rivers exceeded water quality standards for dissolved oxygen, ammonia-nitrogen, fecal coliform, and total phosphorus concentrations. Although these rivers still experience water quality problems, the Wisconsin DNR reports that conditions are improving.

Drainage ways, streams and fish habitat in the interchange areas are severely limited by hydraulic and physical constraints (flow, water depth, substrate, water temperature, channelization impacts, and water quality conditions). Project-area streams such as the Kilbourn Road Ditch provide habitat to warm-water fish species such as carp, white sucker, catfish, green sunfish, bullhead, bluegill, pumpkinseed, and largemouth bass. Many drainage ways in the interchange areas are isolated from larger streams and do not support a fish population.

Streams that would be affected by the recommended interchange improvements are summarized in the following table.

Streams Affected by Interchange Improvements

INTERCHANGE	STREAM	LOCATION ¹
CTH C (Kenosha Co.)	Tributary Des Plaines River	Northeast Quadrant Southeast Quadrant Northwest Quadrant
STH 158 (Kenosha Co.)	Tributary Kilbourn Road Ditch	Southwest Quadrant
STH 142 (Kenosha Co.)	Tributary Kilbourn Road Ditch	Northwest Quadrant Northeast Quadrant Southeast Quadrant
CTH KR (Kenosha / Racine Co. Line)	Tributary Kilbourn Road Ditch	Northwest Quadrant
CTH G (Racine Co.)	Tributary Root River Intermittent Stream	Northwest Quadrant Southeast Quadrant

1. The stream locations are shown on the aerial photo maps illustrating the recommended improvement alternative at each interchange (Figure 7 through Figure 18).

2. Stream Impacts

The following table summarizes the stream and drainage way impacts associated with the recommended interchange improvement alternatives (see also Figures 7 through 18). No proposed stream crossings would involve bridge replacements. The I-94 bridge over the Des Plaines River between CTH C and STH 50 would be widened to accommodate auxiliary lanes. The widening would match the existing structure which spans the river. There are no stream impacts at the STH 50, CTH E, STH 11, STH 20, CTH K, 7 Mile Road, and 27th Street/USH 41 interchanges.

Stream Impacts

INTERCHANGE	STREAM AND LOCATION	PROJECT ACTIVITIES
<p>CTH C (Kenosha Co.)</p>	<p>Northeast Quadrant - Tributary Des Plaines River</p> <p>Southeast Quadrant - Tributary Des Plaines River</p> <p>Northwest Quadrant - Tributary Des Plaines River</p>	<p>The stream would be carried under the northbound on-ramp through a culvert.</p> <p>The stream would be carried under northbound off-ramp through a culvert</p> <p>The stream would be carried under the west frontage through a culvert.</p> <p>The east and west frontage roads, CTH C, and I-94 currently cross the stream.</p>
<p>STH 158 (Kenosha Co.)</p>	<p>Southwest Quadrant - Tributary Kilbourn Road Ditch</p>	<p>The stream would be carried under the west frontage road and southbound on-ramp through a culvert.</p> <p>The stream is currently crossed by the west frontage road.</p>
<p>STH 142 (Kenosha Co.)</p>	<p>Northwest Quadrant - Tributary Kilbourn Road Ditch</p> <p>Northeast Quadrant - Tributary Kilbourn Road Ditch</p> <p>Southeast Quadrant - Tributary Kilbourn Road Ditch</p>	<p>The stream would be carried under the west frontage road by extending existing box culvert.</p> <p>The stream would be carried under the east frontage road by extending existing box culvert.</p> <p>The stream would be carried under the east frontage road through a culvert.</p> <p>The east and west frontage roads and I-94 currently cross these streams.</p>
<p>CTH KR (Kenosha/Racine Co. Line)</p>	<p>Northwest Quadrant - Tributary Kilbourn Road Ditch</p>	<p>The stream would be carried under the west frontage road through a culvert.</p> <p>The west frontage road currently crosses this stream.</p>
<p>CTH G (Racine Co.)</p>	<p>Northwest Quadrant - Tributary Root River</p> <p>Southeast Quadrant - Intermittent Stream</p>	<p>The stream would be carried under the west frontage road through a culvert.</p> <p>The stream would be carried under the east frontage road through a culvert.</p> <p>The Root River Tributary is currently crossed by the west frontage road.</p>

3. Floodplain Impacts

The proposed improvements would encroach on floodplain at the CTH C, STH 50, STH 158, CTH E, and 7 Mile Road interchanges (Figures 7 through 18). At CTH C, the 100-year floodplain of the Des Plaines River would be crossed by the relocated east and west frontage roads and the off- and on-ramps in all quadrants. The proposed improvements at CTH C would be parallel floodplain encroachments. The relocated east frontage road at STH 50 (southeast quadrant) would cross the 100-year floodplain of the Kilbourn Road Ditch. Like CTH C, improvements at STH 50 would be parallel floodplain encroachments. The relocated east frontage road at STH 158 would cross the 100-year floodplain of the Kilbourn Road Ditch in the southeast and northeast quadrants. The proposed improvements would be parallel floodplain encroachments. The 100-year floodplain of the Kilbourn Road Ditch would be crossed in the northeast quadrant of CTH E by the relocated east frontage road. Unlike the previous interchanges, the CTH E improvements would be perpendicular floodplain crossings. At 7 Mile Road, the 100-year floodplain of a tributary to the Root River would be crossed perpendicularly in the southwest quadrant by the relocated west frontage road.

Chapter 116 of the Wisconsin Administrative Code requires notification of upstream landowners for construction in a floodplain that would increase the 100-year flood elevation by more than 3 millimeters (0.01 foot). Presidential Executive Order 11988, Floodplain Management, requires agencies to reduce the risk of flood loss; minimize impacts of floods on public health, safety, and welfare; and restore and preserve the floodplains' natural and beneficial values. Structures associated with each crossing would be designed to limit the increase in the upstream flood level and adequately pass the 100-year flood without interrupting the traveling public or emergency vehicles because of damage to the roadway or structures. Each alternative would be consistent with local floodplain management goals and objectives, and would minimize impacts on natural and beneficial floodplain values to the extent possible. The need to notify upstream landowners would be determined during the project's design phase. If floodplain investigations during the design phase determine that backwater effects would result from filling floodplain, WisDOT will take appropriate measures to mitigate the impacts according to the requirements of Chapter 116 of the Wisconsin Administrative Code.

4. Section 404 Permit Requirements

See page 58, Wetland Impact Evaluation, for discussion of Section 404 Permit requirements.

5. Measures To Minimize Adverse Effects

Construction in or near waterways, wetlands, and floodplains will be performed in accordance with the *Standard Specifications* or special provisions to minimize erosion and sedimentation. State-of-the-art erosion control devices will be installed before erosion-prone construction activities begin. Construction at stream crossings would be conducted during periods of low or normal flow. Structure sizing would be performed in accordance with state and federal guidelines regarding floodplain encroachment and hydraulic capacity. Temporary or permanent erosion control methods may include silt fences, retention/detention basins, interceptor ditches, seeding and/or sodding, erosion mats, riprap of exposed embankments, and mulching. Following construction, the area would be

re-seeded with a mix of fast growing grasses. In addition, construction debris will be kept out of the floodplain and streams. Drainage systems, including ditches on private lands, will be maintained, restored, or re-established in a manner that will not impound water.

Stormwater retention/detention areas would be constructed at all interchanges except 27th Street/USH 41 and STH 20 to store stormwater runoff and reduce the amount of sediment and pollutants in road runoff from reaching study-area streams and wetlands. Stormwater would also be managed through the use of wide, flat-bottomed ditches and in-line storm sewer, in sewer areas. The practicability of in-line storm sewer filtration, which traps sediment in runoff, would be further evaluated during the engineering design phase. In general, the retention/detention facilities and wide-bottomed ditches would be constructed in existing WisDOT right-of-way. The WisDOT will size and design the retention/detention facilities and the wide-bottomed ditches during the project design phase. The general location of the proposed retention/detention areas are shown in Figures 7 through 18. The functional plans for each interchange contain more information on retention/detention facilities.

Retaining walls are proposed at the STH 50 and STH 158 interchanges to minimize impacts to the Des Plaines River floodplain and Kilbourn Road Ditch.