



4.10 Water Resources

4.10.1 Surface Water

Surface water features in the project area include flowing ditches and streams as well as ponded water in both naturally occurring and man-made lakes. In addition, wetland complexes are extensive within the depressional landscape of the project area (see Section 4.12, Wetlands).

The project area is in the Kankakee and St. Joseph River watersheds in Marshall and St. Joseph counties. This project area is drained by two major river systems. The St. Joseph River and its tributaries drain the extreme northern portion of the project area and drain into Lake Michigan. The Yellow River and its tributaries drain the majority of the project area to the south. The Yellow River flows into the Kankakee River which discharges into the upper Mississippi River Basin. Tributaries within the project area include Elmer Seltenright Ditch, Lehman Ditch, Heston Ditch, Shidler-Hoffman Ditch and Bunch Ditch within the Kankakee River watershed all of which drain to the Yellow River. Within the St. Joseph River watershed, the primary tributaries in the project area are Auten Ditch and Phillips Ditch.

Some of the larger natural lakes within the project area include Pleasant Lake, Riddles Lake, Wharton Lake, Moon Lake and Catfish Lake. Heston Ditch flows through Moon Lake, Pleasant Lake and Riddles Lake. The largest lakes in the project area in the vicinity of Lakeville.

The geologic history of the Kankakee River Basin played a role in the formation of the current characteristics of the area. Glaciers flattened the region while moraines formed by the melting ice caused the basin to be lower than surrounding areas. Much of the lowland became a gigantic marsh as sand was deposited by the melting glacier. A system of ditches was dug throughout the basin beginning in the middle 1800s to improve the drainage for farming. Most of the streams in the basin have been dredged and or straightened. The basin is still flood-prone, but is extensively farmed (Indiana Department of Environmental Management, 1989). The majority of the primary tributaries listed above are considered legal drains by the Marshall and St. Joseph County Surveyor's Offices and are regulated and maintained for drainage by the respective County Drainage Boards.

A review of the IDEM 2002 303(d) list of impaired water bodies and the 2001 305(b) Report on Water Quality for the Lower Wabash and Upper Illinois watersheds identified three streams within the project area that do not meet water quality standards for one or more designated uses. These water bodies require the development of Total Maximum Daily Loads (TMDLs) for specified pollutants to alleviate the impairment of the waterbody. The TMDL is the maximum amount of a pollutant that can be discharged over the entire watershed for the specific stream and allow the stream to maintain water quality standards. The streams identified include the Yellow River-Milner Seltenright Ditch, Elmer Seltenright Ditch Headwaters and the Aldrich Ditch-Schang Ditch (also identified as East Branch of Bunch Ditch). All three of these water bodies are within the Kankakee River watershed.

The Yellow River-Milner Seltenright Ditch includes the main stem of the Yellow River where it is crossed by the existing US 31 and is listed as impaired for *E. coli*. This section is non-supporting for primary contact recreation for 16.91 miles. The Elmer Seltenright Ditch Headwaters is located in northern Marshall County just south of LaPaz. This section is listed as partially supporting aquatic life for 3.85 miles with a moderate rating for the biotic community status. The Aldrich Ditch-Schang Ditch is located in southern St. Joseph and northern Marshall counties flowing generally north to south 1.5 to 2 miles east of existing US 31. This stream is listed as impaired for 12.06 miles for partially supporting aquatic life with a moderate rating for the biotic community status.



4.10.2 Groundwater

Bedrock geology in St. Joseph County is primarily Mississippian rocks, while Marshall County is primarily Devonian and Mississippian shale (Gutschick, 1966). Below the Wisconsin and Illinoian glacial materials are bedrock formations of Mississippian, Devonian and Silurian ages. Bedrock aquifers are not considered an important source of water in this area due to their depth, low-yielding character and the occurrence of good aquifers in the glacial drift. The major sources of ground water are contained in the glacially derived unconsolidated deposits, which are of particular importance in the region (Clark, 1980). Unconsolidated glacial deposits in the project area range from 150 to 300 feet thick. Wells are typically in sand or gravel formations in the drift and can be less than 50 feet deep to greater than 400 feet deep. Well yields are as high as 1,400 gallons per minute (gpm), but maximum expected yields are up to 600 gpm.

The southern portion of the project generally follows the boundary between the Maxinkuckee Moraine Aquifer System and the Nappanee Aquifer System, while the northern portion of the project area is within the boundary of the Hilltop Aquifer System in the St. Joseph watershed. The Maxinkuckee Moraine Aquifer System is composed of a complex structure of thin sand and gravel lenses within a thick till deposit including locally thick surficial deposits of coarser grained material. Most of the aquifers range from 3 to 35 feet thick. Depending on local conditions, the aquifer system ranges from moderately to highly susceptible to surface contamination. The Nappanee Aquifer System is also composed of thin (3 to 10 feet) lenses of sand and gravel within a thick till deposit. The Nappanee Aquifer System is only slightly susceptible to surface contamination except where surface sand and gravel deposits exist. The Hilltop Aquifer System is a sand and gravel rich system. The majority of the aquifers range from 10 to 80 feet thick with considerable variability from north to south across the aquifer system. The Hilltop Aquifer System is susceptible to groundwater contamination due to its sand and gravel rich nature. However, the area has only moderate groundwater availability (25 to 150 gpm).

Groundwater resources throughout the project area are extensively developed for drinking water supplies. Groundwater is the drinking water source for 96% - 100% of the population in Marshall and St. Joseph counties (Bechert and Heckard, 1966). A sole source aquifer has been identified by the Environmental Protection Agency in the St. Joseph Aquifer System. The boundary of the Sole Source Aquifer Designated Area includes South Bend and Elkhart along the St. Joseph River and has several fingers that extend to the southeast from Elkhart along the Elkhart River, Turkey Creek and the Little Elkhart River. This aquifer boundary is just north of the US 31 project area. Several public water system wells are located within the project area including utilities for the city of Lakeville and several mobile home parks. In addition, numerous private wells also exist.

4.10.3 Special Status Streams

No national Wild and Scenic Rivers exist within the project area. Additionally, no outstanding state resource waters, exceptional use streams, or streams on the Listing of Outstanding Rivers and Streams maintained by IDNR were identified within the project area.