



5.12 Wetlands

Wetlands as defined by the US Army Corps of Engineers (USACE) (33 CFR 328.3) and the Environmental Protection Agency (EPA) are “those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”

In order to equally compare alternatives, wetland calculations for the FEIS were completed using digital NWI maps and verifying wetland locations during field reviews of each alternative. The digital NWI maps included wetland points (very small wetlands), lines (linear wetland areas), and polygons (any type of wetland shape). Wetland acres were calculated and summarized for various wetland types as discussed below. Calculations of wetland points were assumed to have an area of 0.1 acres, and wetland lines were assumed to have a width of 50 feet.

It is important to note that the NWI uses infrared aerials for classifying wetlands and such a methodology may not meet all of the criteria used by the USACE for permitting decisions under Section 404 of the Clean Water Act. Therefore, the wetlands listed on the NWI maps may not necessarily be jurisdictional wetlands. NWI data was used in this FEIS analysis because it is the best available; however, the wetland acres given should be used for a general comparison of the alternatives, rather than as an exact calculation of jurisdictional wetlands. Jurisdictional wetlands require wetland delineations. Jurisdictional wetlands that are impacted will require the appropriate permit(s). Because NWI maps were used to identify wetlands in the FEIS, some small wetlands and lakes/ponds may not be included in this analysis.

A wetland delineation was completed for Preferred Alternative G-Es. Detailed results of this delineation can be found in the report titled, “Waters of the U.S.” Verification Report US 31 Improvement Project, Plymouth to South Bend, Revised on May 2, 2005. Representatives from the USACE Detroit District and Indiana Department of Environmental Management (IDEM) reviewed proposed wetland impacts during a field review on November 4 – 6, 2004. At this time agency representatives were able to assess impacts based on their professional opinion. Wetland impacts for Preferred Alternative G-Es will be discussed separately in this chapter because the level of detail is far greater for this alternative.

For equal comparison purposes, NWI maps were studied in order to determine the type and acreage of wetlands affected by each alternative. A field review of each alternative showed no bogs or fens present within the 300-foot working alignments.

The comparison of wetlands among the alternatives included: (1) palustrine emergent wetlands; (2) palustrine scrub/shrub wetlands; (3) palustrine forested wetlands; and (4) palustrine aquatic bed wetlands. In addition to these four wetland types, the alternatives were compared for estimated farmed wetlands and unconsolidated bottom open water habitats. Farmed wetlands were estimated for each alternative by calculating 2% of the hydric soils on agricultural land. This percentage was an estimate given by a Natural Resources Conservation Service (NRCS) representative. Unconsolidated bottom wetlands were mapped as part of the National Wetland Inventory, but rarely do they meet the Corps’ technical definition of a wetland due to the absence of the vegetation parameter. The total amount of acres of each type of wetland that fell within the alternatives was calculated to compare each of the alternatives for potential wetland impacts. Table 5.12.40 shows the results of the analysis.



Table 5.12.40: US 31 NWI Wetland Acres Impacted by Alternatives

Wetland Type	Alternative Cs	Alternative Es	Alternative G-Cs	Alternative G-Es* (Preferred)
Aquatic Bed	0.8 acres	0.7 acres	0 acres	0 acres
Emergent	24.0 acres	13.6 acres	8.7 acres	6.3 acres
Scrub/Shrub	3.0 acres	1.6 acres	1.4 acres	0 acres
Forested	21.8 acres	17.8 acres	17.7 acres	14.8 acres
Totals	49.6 acres	33.7 acres	27.8 acres	21.1 acres
Farmed (Estimate)	2.0 acres	1.9 acres	2.9 acres	2.8 acres
Total Wetlands	51.6 acres	35.6 acres	30.7 acres	23.9 acres
Unconsolidated Bottom (Lakes and Ponds)	0.4 acres	0.3 acres	0.7 acres	0.5 acres

* Wetland delineations and farmed wetland investigations were performed for the Preferred Alternative G-Es. The results of these more detailed studies for the Preferred Alternative G-Es differ from the NWI results. Wetland delineation results are discussed in the proceeding section.

There are wetland impacts within all the alternatives, but the impacts have been minimized by efforts to avoid them. Each alternative was walked and modifications in the alignments were made to avoid wetlands. Additional modifications occurred to all the alternatives after publication of the DEIS in order to further reduce wetland impacts. Many wetlands were avoided by such field efforts. Whenever possible, the alternatives were designed to affect only the edge of the larger wetland areas and not impact the core of these wetland areas. An estimate of the total wetland acres impacted for all the alternatives ranged from 2% to 5% of the total acres of land impacted by each alternative. Coordination with the Detroit USACE indicates that none of the wetland impacts are existing compensatory mitigation sites.

The results of this analysis indicate that Preferred Alternative G-Es had the lowest total estimated wetland impacts with 23.9 acres. Alternative Cs had the greatest amount of wetland impacts with 51.6 acres. Alternatives Es and G-Cs fell somewhere in between with 35.6 acres and 30.7 acres, respectively. The No-Build Alternative will have no impacts on wetlands. For a discussion of cumulative wetland impacts refer to Section 5.20, Cumulative Impacts.

Wetland Delineations for Preferred Alternative G-Es

Efforts have been made to avoid and minimize wetland impacts during the development of Preferred Alternative G-Es. A detailed wetland delineation was conducted for Preferred Alternative G-Es footprint during July – October 2004. Wetland determinations and delineations were performed in accordance with the *Corps of Engineers Wetland Delineation Manual (1987)* and all subsequent Corps of Engineers guidance releases. Non-wetland “waters of the United States,” were determined and described in accordance with the definitions in 33 CFR 328.3 and the wetland delineation manual. Detailed results of this delineation can be found in the report titled, “Waters of the U.S.” Verification Report US 31 Improvement Project, Plymouth to South Bend, Revised on May 2, 2005. This report also includes figures and pictures of each potential wetland and stream/ditch impact. Representatives from the USACE Detroit District and IDEM reviewed the proposed wetland impacts during a field review on November 4 – 6, 2004.



The wetland delineation found that a total of 29.93 acres of wetlands at 39 separate impact locations are within Preferred Alternative G-Es' footprint and are expected to be impacted at this time. Of this, 15.27 acres are emergent, 13.21 acres are forested, and 1.45 acres are scrub/shrub. Preferred Alternative G-Es crosses two 8-digit watersheds, the Kankakee (07120001) and the St. Joseph (04050001). Of the total wetland impacts, 24.75 acres are within the Kankakee watershed and 5.18 acres are within the St. Joseph.

In a jurisdictional determination letter dated February 24, 2005 (See Appendix C) the USACE identifies which impact sites are considered "waters of the United States," thus falling under federal jurisdiction. Twenty wetland impact sites, totaling 25.51 acres, fall under federal jurisdiction. Approximately 77.10 acres of mitigation are estimated to be necessary to compensate for federal jurisdictional wetland impacts. Nineteen of the wetland impact sites, totaling 4.42 acres, do not fall under federal jurisdiction. These sites will likely fall under state jurisdiction under the IDEM Isolated Wetlands Regulatory Program.

As part of this program, isolated wetlands are grouped into one of three Classes based upon wetland quality. Class III isolated wetlands are generally of higher quality and Class I wetlands of lower quality, while Class II wetlands fall somewhere in the middle. Different wetland classes require different mitigation requirements. Prior to permitting each isolated wetland will be appropriately classified, and based upon this classification, wetland mitigation ratios will be assigned.

A total of 0.69 acres of open water at 6 separate impact locations are within the proposed US 31 footprint and are expected to be impacted at this time. The open water areas were generally small, excavated ponds with a wetland fringe. Most impacts were within the Kankakee watershed, with only one impact (0.12 acres) in the St. Joseph. The USACE identified three open water impact sites, totaling 0.38 acres, as falling under federal jurisdiction. Three sites, totaling 0.31 acres, were considered isolated and not under federal jurisdiction.

The discussion on mitigation of wetland impacts can be found in Chapter 6.6.

Farmed Wetland Investigation for Preferred Alternative G-Es

Farmed wetlands are defined by the United States Department of Agriculture (USDA) National Food Security Act Manual, 3rd Edition, September 2000 (NFSAM) as "Wetlands that were drained, dredged, filled, leveled, or otherwise manipulated before December 23, 1985, for the purpose of, or to have the effect of, making the production of an agricultural commodity possible, and continue to meet specific wetland hydrology criteria." Farmed wetlands may be farmed as they were before the 1985 date, and the drainage that was in place before that date can be maintained, but no additional drainage is allowed.

Farmed wetlands must meet all of the following four criteria:

1. The area must have been manipulated prior to December 23, 1985.
2. An agricultural commodity was produced once before December 23, 1985.
3. The area meets the required hydrology criteria for farmed wetlands.
4. The site has not been abandoned.

The proposed US 31 footprint was investigated for farmed wetlands using USDA Natural Resources Conservation Service (NRCS) methodology. Preferred Alternative G-Es footprint is approximately 300 feet wide and 20.5 miles



long. It includes approximate interchange and overpass locations as well as local road improvements near South Bend.

The investigation began with Criteria #3 (the area must meet the required hydrology criteria for farmed wetlands). Because farmed wetlands must meet ALL four criteria, if an area did not meet this criterion, it would not be considered a farmed wetland. Areas must show specific signatures (wetland indicators) to meet the hydrology criterion for farmed wetlands. The signatures include evidence of either 1) surface water or 2) flooded or drowned out crops. Color aerial slides are used to determine if these signatures are present. Surface water, or inundation, typically appears as dark blue or gray color on the color slides. Flooded or drowned out crops can appear as white or beige color, or as a distinctly different color from the surrounding vegetation. To meet the flooded or drowned out crop signature, the area must show concentric rings of color differentiation. These concentric rings can be likened to rings in a bathtub and show where water has pooled then receded. These signatures must be present for at least three out of five years that had normal precipitation. Normal precipitation years near 1985 are preferred if available. If a wetter year is used, and drier year should also be used to balance out the sample and vice versa. Areas that appear to meet the farmed wetland hydrology criterion based off of the slide review should be field checked in order to confirm potential wetland hydrology and soils.

USDA NRCS offices in St. Joseph and Marshall Counties were visited on September 2 and September 9, 2004 respectively in order to review color aerial slides for the length of the proposed US 31 footprint.

The following slides were reviewed for St. Joseph County:

- 1981 – 12-21, 13-15, 13-16, 13-17, 13-18, 13-22, 13-23, 13-24, 13-25, 13-26, 13-27, 14-16, 14-17, 14-18
- 1984 – N-15, N-16, N-17, N-23, N-24, N-25, O-15, O-16, O-17, O-18, O-19, O-20
- 1986 – N-14, N-20, N-21, N-22, N-23, N-24, O-14, O-15, O-16, O-17
- 1987 – O-11, O-12, O-16, O-17, O-19, O-20, P-14, P-15, P-16, P-17, P-20
- 1990 – P-10, P-11, P-16, Q-10, Q-11, Q-12, Q-13, Q-14, Q-15, Q-19

The following slides were reviewed for Marshall County:

- 1983 – ML-15 047-23, ML-15 047-24, ML-15 047-25, ML-15 047-26, ML-15 047-27, ML-15 047-28, ML-15 047-29, ML-15 047-30, ML-15 047-31, ML-15 047-32
- 1984 – 10-6, 10-7, 10-8, 10-9, 10-10, 10-11, 11-2, 11-7, 11-8, 11-9, 11-10, 11-11, 11-12, 11-13
- 1987 – 10-2, 10-3, 10-4, 10-5, 10-6, 10-7, 10-8, 10-9, 10-10, 10-11
- 1989 – 11-9, 11-10, 11-11, 11-12, 11-13, 11-14, 12-2, 12-6, 12-7, 12-8
- 1990 – 1F, 2F, 3F, 4F, 5F, 6F, 7F, 8F

Two areas appeared to show wetland hydrology signatures for farmed wetlands for at least three of the five years during the slide review. One area was in St. Joseph County (Figure 5.12.53) and one was in Marshall County (Figure 5.12.54). Both areas were visited in the field.

The area field checked in St. Joseph County showed no indications of wetland hydrology or soils. The area was a small, forested hill, and likely not farmed because of the slope. Soils for the area are mapped by the USDA NRCS as

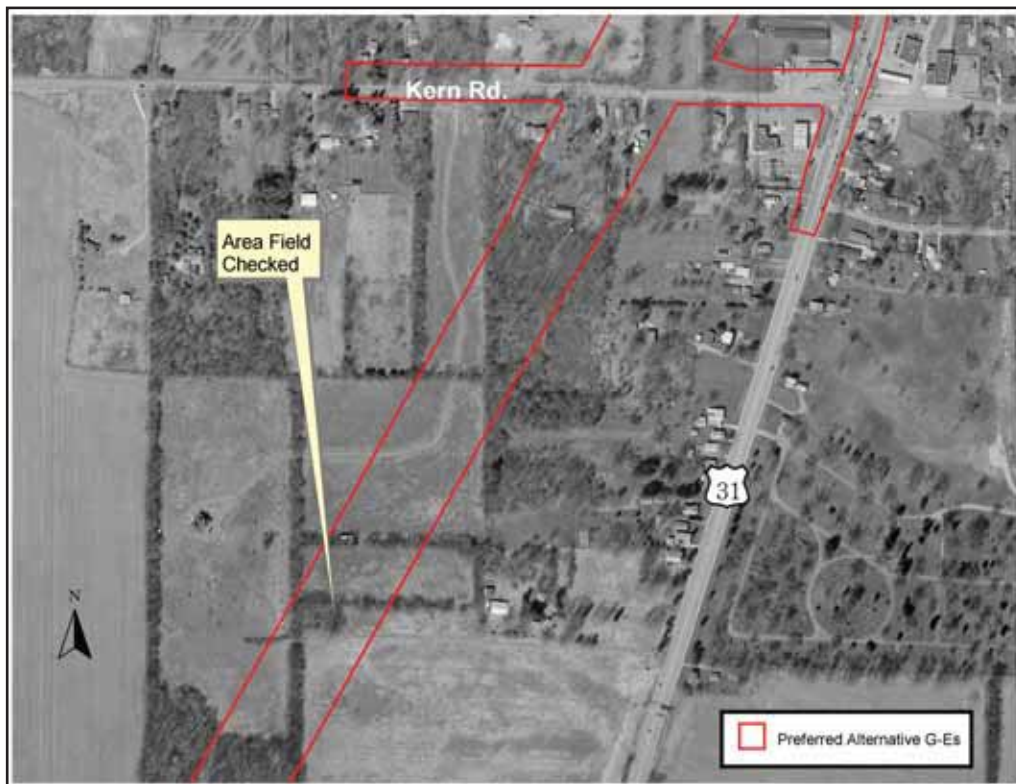


Figure 5.12.53: Potential Farmed Wetland Area Field Checked in St. Joseph County

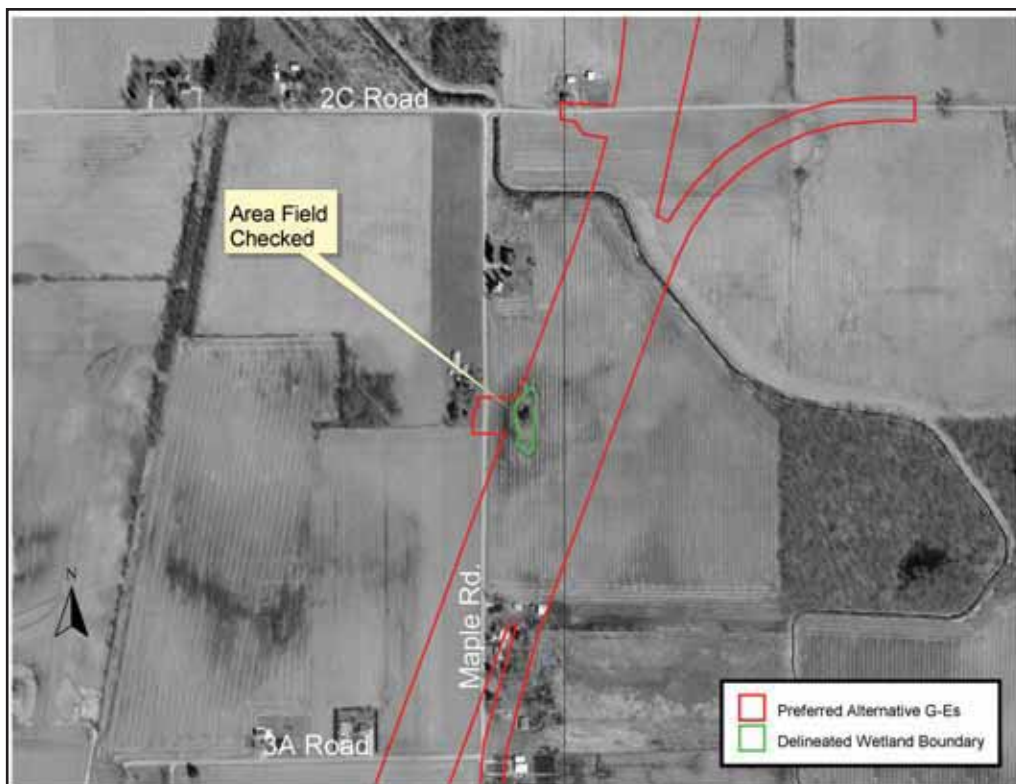


Figure 5.12.54: Potential Farmed Wetland Area Field Checked in Marshall County



Hillsdale-Tracy sandy loam, 5 to 10 % slopes and Abscota loamy sand, 0 to 2 % slopes. Neither are listed on the St. Joseph County Hydric Soils List.

The area field checked in Marshall County showed positive indications of wetland hydrology, soils, and vegetation. Soils are mapped as Houghton muck, drained and Brady sandy loam. Houghton muck, drained is listed as hydric in the Marshall County Hydric Soils List. The site was approximately 0.44 acres in area. Because this area met the three criteria listed in the 1987 Corps of Engineers Wetlands Delineation Manual it was considered an emergent wetland. In their jurisdictional verification letter, the USACE determined this area to be isolated, and not falling under federal jurisdiction. This area will fall under the jurisdiction of the IDEM Isolated Wetlands Regulatory Program and mitigated appropriately. In all tables and calculations this area is listed as an emergent wetland rather than a farmed wetland in order to avoid double counting. This area is listed as Site 12 in the “Waters of the U.S.” Verification Report.

Close coordination with review agencies and other local agencies will continue to avoid and minimize wetland impacts during further design of Preferred Alternative G-Es.

Summary of Preferred Alternative G-Es

In order to equally compare alternatives, wetland calculations for the FEIS were completed using digital NWI maps and verifying wetland locations during field reviews of each alternative. Farmed wetlands were also estimated for each alternative. NWI impacts and estimated farmed wetland impacts for Preferred Alternative G-Es totaled 23.9 acres. This total included 6.3 acres of emergent wetlands, 14.8 acres of forested wetlands, and 2.8 acres of farmed wetlands. This was the lowest wetland total for all four alternatives.

In Section 404 permitting, the selection of the “least environmentally damaging alternative” or “LEDPA” is required. In particular, the Section 404(b)(1) Guidelines require the selection of the practicable alternative that causes the least harm to the “aquatic environment,” which consists of wetlands and other jurisdictional waters of the United States, so long as the alternative does not have other significant adverse environmental consequences. A detailed Section 404(b)(1) (LEDPA) Consistency Analysis is found in Appendix T of this document. The analysis in Appendix T shows that the detailed evaluation completed for the four (practicable) alternatives (Cs, Es, G-Cs and G-Es). Of the four remaining (practicable) alternatives, Alternative G-Es is the least environmentally damaging. Additionally, the development of Alternative G-Es will cause no violation of other laws and will not cause or contribute to significant degradation of waters of the United States. Finally, preliminary plans have been developed to minimize and mitigate unavoidable impacts caused by Alternative G-Es (Appendix N). These factors show that the selected Alternative G-Es is the LEDPA and meets all Section 404(b)(1) guidelines for the selection of an alternative.

Preferred Alternative G-Es had the lowest NWI wetland impacts (23.9 acres) of the four alternatives carried forward for detailed analysis. Preferred Alternative G-Es is a hybrid alternative developed, in part, to avoid wetland impacts. Alignment shifts were made throughout this study in order to avoid and minimize wetland impacts. A detailed wetland delineation was conducted for Preferred Alternative G-Es footprint during July – October 2004. Wetland determinations and delineations were performed in accordance with the Corps of Engineers Wetland Delineation Manual (1987) and all subsequent Corps of Engineers guidance releases. The wetland delineation found that a total of 29.93 acres of wetlands at 39 separate impact locations are within the proposed US 31 footprint and are expected to be impacted at this time. Of this, 15.27 acres are emergent, 13.21 acres are forested, and 1.45 acres are scrub/shrub. The proposed alternative crosses two 8-digit watersheds, the Kankakee (07120001) and the St. Joseph (04050001). Of the total wetland impacts, 24.75 acres are within the Kankakee watershed and 5.18 acres are within the St. Joseph.



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Based on the detailed wetland delineations, a total of 0.69 acres of open water at 6 separate impact locations are within the proposed Preferred Alternative G-Es footprint and are expected to be impacted at this time. The open water areas were generally small, excavated ponds with a wetland fringe.

The proposed Preferred Alternative G-Es footprint was investigated for farmed wetlands using USDA Natural Resources Conservation Service (NRCS) methodology. Only one area met the necessary criteria to be considered a farmed wetland. The site was approximately 0.44 acres in area. Because this area met the three criteria listed in the 1987 Corps of Engineers Wetlands Delineation Manual, it was considered an emergent wetland and counted as such in all calculations.