

Other stormwater control practices may be needed to mitigate water quality impacts. In addition to detention facilities, other practices such as vegetated basins/buffers, infiltration basins, and bioswales will be evaluated to minimize transport of sediment, heavy metals, and other pollutants. Deicing management practices, such as anti-icing chemicals and additives, can minimize salt application quantities. These practices will be evaluated further in the Tier Two NEPA studies.

Accidental spills of hazardous materials and wastes during construction or operation of the transportation system require special response measures. Occurrences will be handled in accordance with local government response procedures. Refueling, storage of fuels, or maintenance of construction equipment will not be allowed within 100 feet of wetlands or water bodies to minimize the potential impact accidental spills may have on these resources.

3.11 Floodplains

This section describes existing floodplains, floodways, and potential impacts from the project. Existing floodplains and floodways near the corridors described in Section 3.11.1 are based on the Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) regulatory floodplain and floodway mapping. The methodology used to assess floodplain and floodway impacts is described in Section 3.11.2. Impacts to the floodplain and floodway and potential mitigation are provided in Section 3.11.3 and 3.11.4.

3.11.1 Existing Conditions

Floodplains are extensions of waterways where water rises and expands into additional overbank storage areas. Within vegetated areas, floodplains provide an opportunity for infiltration and water quality treatment through filtering of nutrients, sediment, and impurities. Beneficial values of floodplains include, but are not limited to, the moderation of floods, water quality enhancement, groundwater recharge, fish and wildlife habitat, open space, and recreational value.

Based on Illinois Administrative Code, Title 17 (Conservation) and the Indiana Drainage Handbook (Indiana DNR - DOW, 1999), floodplain and floodway are defined as follows:

- *Floodplain* means the channel and the areas adjoining any wetland, lake, or watercourse that have been or hereafter may be covered by the regulatory flood. The floodplain includes both the floodway and the flood fringe.
- *Regulatory Floodplain* is defined as that land adjacent to a body of water with ground surface elevation at and below the 100-year frequency flood elevation.
- *Floodway* is the portion of the floodplain that is reasonably required to efficiently carry and discharge the peak flood flow of any river or stream.

- *Regulatory Floodway* is defined as the channel and that portion of the floodplain adjacent to a stream or watercourse that is needed to store and convey the anticipated future 100-year frequency flood discharge with no more than:
 - A 0.1 foot increase in flood stage, no greater than a 10 percent increase in velocities, and no greater than 10 percent decrease in storage (per the Illinois DNR - Office of Water Resources (OWR) permit requirements for Will County).
 - A 0.1 foot increase in flood stage (per Illinois DNR-OWR permit requirements for Kankakee County and per Indiana DNR-DOW permit requirements for Lake County).

Floodplains within the corridors typically consist of open areas, but may also contain roadways or developments. According to the NFIP Flood Insurance Rate Maps (FIRMs) produced by FEMA, Corridor A3S2, Corridor B3, and Corridor B4 include several floodplains and floodways. Corridor A3S2 includes 16 base floodplains and six regulatory floodways (Figure 3-34). Corridor B3 includes 15 base floodplains and six regulatory floodways (Figure 3-34). Corridor B4 includes 17 base floodplains and seven regulatory floodways (Figure 3-34). Regulatory floodplain area by USGS HUC 12 sub-watersheds in Illinois and HUC 14 sub-watersheds in Indiana is summarized in Table 3-67. Three design concepts for each working alignment within the corridors include an interchange at IL-53 an interchange east of IL-53, and a no interchange concept. The floodplain area within the corridors is similar for the three IL-53 concepts. Design Concept 1 is presented in Table 3-67.

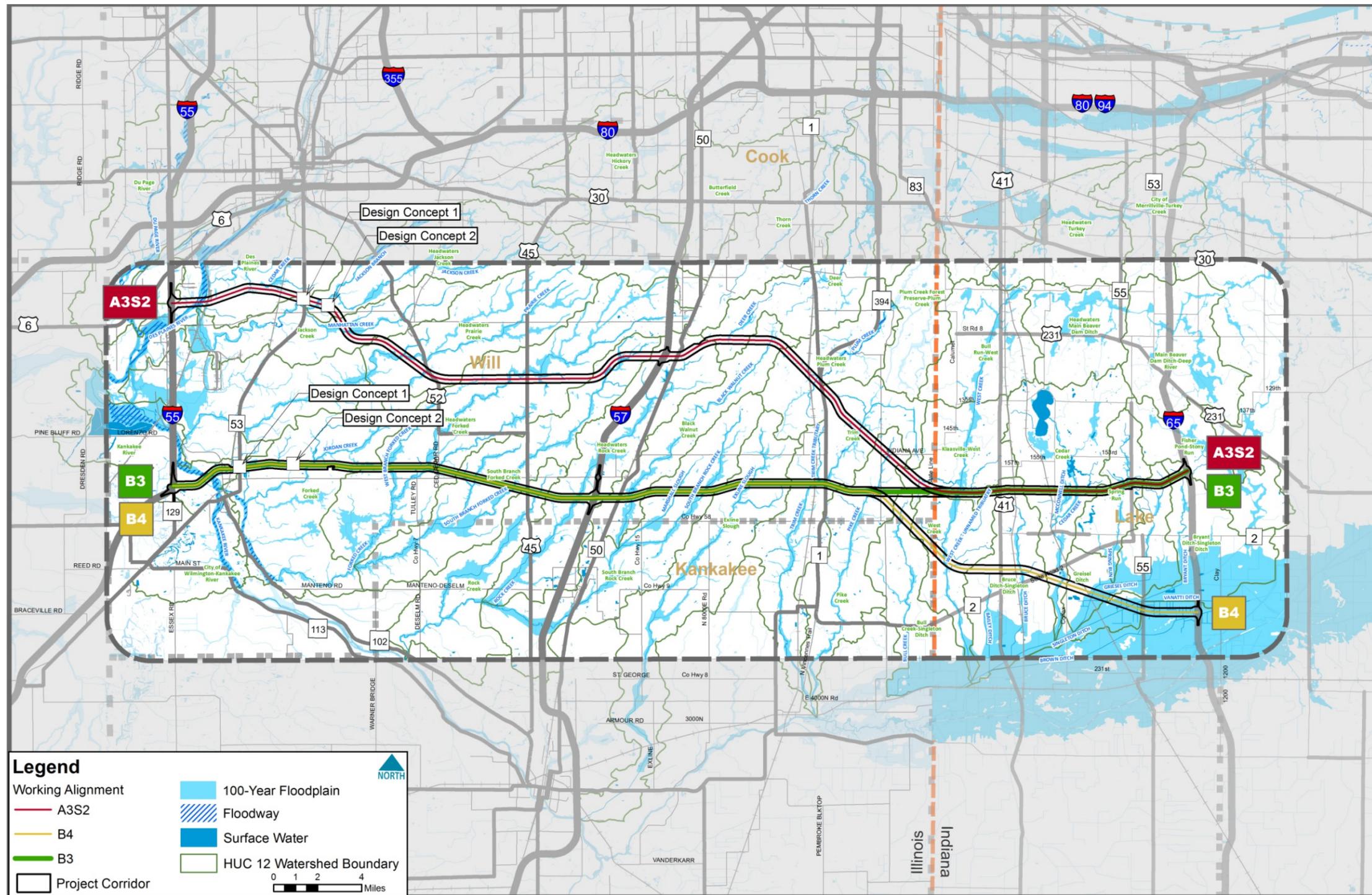
A majority of the corridors are within the larger Kankakee River sub-basin. In general, waterways flow from northeast to southwest to the Kankakee River, which flows in a westward direction to its confluence with the Des Plaines River. The east portion of Corridor A3S2 is within the Des Plaines River sub-basin. Tributary waterways flow in a westward direction to the Des Plaines River, which flows in a southwest direction to its confluence with the Illinois River. A central portion of Corridor A3S2 is within the Chicago/Calumet Watershed (Illinois State Water Survey nomenclature). Tributary waterways generally flow in a northeast direction toward the Calumet Sag Channel, which flows in a westward direction to the Chicago Sanitary and Ship Canal. Waterways within Will and Kankakee counties have mostly unstudied Zone A floodplains. Base flood elevations have not been determined for Zone A floodplains. Waterways within Lake County have mostly studied Zone AE floodplains with a defined floodway. Base flood elevations have been determined for Zone AE floodplains.

3.11.2 Methodology for Assessing Floodplain Impacts

The floodplain encroachment evaluation was completed in accordance with the following:

- Executive Order 11988 “Floodplain Management”
- “Assessment and Documentation of Flood Plain Encroachment” as contained in the *BDE Manual* (IDOT, 2011)
- “Floodplain Encroachments” in the *IDOT Drainage Manual* (IDOT, 2011)

Figure 3-34. Illiana Corridor Floodplain and Floodways



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Table 3-67. Preliminary Designated 100-Year Floodplains within the Corridors

Sub-watershed	County	Corridor A3S2		Corridor B3		Corridor B4	
		Floodplain Area in Corridor ¹ (acres)	Floodway Identified?	Floodplain Area in Corridor ¹ (acres)	Floodway Identified?	Floodplain Area in Corridor ¹ (acres)	Floodway Identified?
Des Plaines River	Will	192.43	Yes	0.00	---	0.00	---
Kankakee River	Will	0.00	---	0.55	Yes	0.55	Yes
City of Wilmington-Kankakee River	Will	0.00	---	58.61	Yes	58.61	Yes
Jackson Creek	Will	56.67	No	0.00	---	0.00	---
Forked Creek ²	Will	0.00	---	260.28	No	260.28	No
Headwaters Jackson Creek	Will	47.27	No	0.00	---	0.00	---
Headwaters Prairie Creek	Will	130.21	No	0.00	---	0.00	---
Headwaters Forked Creek	Will	211.76	No	221.20	No	221.20	No
South Branch Forked Creek	Will	165.18	No	63.21	No	63.21	No
Rock Creek	Will	0.00	---	16.11	No	16.11	No
Headwaters Rock Creek	Will	6.69	No	68.55	No	68.55	No
Black Walnut Creek	Will	28.58	No	58.18	No	58.18	No
South Branch Rock Creek	Will	0.00	---	75.83	No	75.83	No
Headwaters Plum Creek	Will	62.30	No	0.00	---	0.00	---
Exline Slough	Will	0.00	---	19.51	No	19.51	No
Trim Creek	Will	51.77	No	76.83	No	76.83	No
Pike Creek	Will	27.53	No	26.63	No	24.40	No
Bull Creek-Singleton Ditch	Kankakee	0.00	---	0.00	---	12.39	No
Klaasville-West Creek	Lake	84.23	Yes	80.27	Yes	0.00	---

Table 3-67. Preliminary Designated 100-Year Floodplains within the Corridors (continued)

Sub-watershed	County	Corridor A3S2		Corridor B3		Corridor B4	
		Floodplain Area in Corridor ¹ (acres)	Floodway Identified?	Floodplain Area in Corridor ¹ (acres)	Floodway Identified?	Floodplain Area in Corridor ¹ (acres)	Floodway Identified?
West Creek	Lake	0.00	---	0.00	---	58.03	Yes
Bruce Ditch-Singleton Ditch	Lake	0.00	---	0.00	---	31.27	Yes
Cedar Creek ³	Lake	111.64	Yes	111.64	Yes	38.90	Yes
Spring Run	Lake	47.39	Yes	47.39	Yes	0.00	---
Griesel Ditch	Lake	4.31	Yes	4.31	Yes	232.02	Yes
Bryant Ditch-Singleton Ditch	Lake	0.00	---	0.00	---	325.78	Yes
Brown Ditch	Lake	0.00	---	0.00	---	714.60	
Corridor Total		1,228.0	---	1,189.10	---	2,356.25	---

¹ Includes the major waterway and its tributaries.

² Forked Creek sub-watershed floodplain associated with Jordan Creek. Headwaters Forked Creek sub-watershed floodplain associated with Forked Creek.

³ A3S2 and B3 Cedar Creek sub-watershed floodplain associated with McConnell Ditch and Cedar Creek. Both waterways have floodways.

Source: FEMA (2003, 2010, and 2012).

- Illinois Administrative Code 3708 “Floodway Construction in Northeastern Illinois”
- Illinois Administrative Code 3700 “Construction in Floodways of Rivers, Lakes, and Streams”
- Indiana Design Manual (INDOT, 2011).
- Indiana Drainage Handbook (Indiana DNR-DOW, 1999)

Guidance from the Will County Land Use Department, the Kankakee County Planning Department, the Office of the Lake County Surveyor (Surveyor), and Lake County Drainage Board (LCDB) was considered in determining compensatory storage requirements because the county ordinances are more restrictive than IDOT and INDOT requirements. The jurisdiction of most waterways (creeks, ditches and rivers) in Indiana falls under the jurisdiction of the Surveyor and LCDB if the waterways are part of the 600 miles of regulated drains in Lake County. Several of the Indiana communities have either adopted the LCDB requirements or have less restrictive stormwater ordinances. As state transportation agencies, IDOT and INDOT compliance with county and local regulations is voluntary. Final methodology for assessing floodplain impacts will be determined by IDOT and INDOT and documented in the Tier Two NEPA studies with consideration of costs, benefits, public input, and current drainage policies and procedures.

Potential floodplain encroachments were first identified by overlaying the proposed corridor onto FIRMs published by FEMA. The 100-year floodplain elevation for Zone AE regulatory floodplains was taken from the effective Flood Insurance Study (FIS). The 100-year floodplain elevation for Zone A floodplain crossings was determined by comparing the 1 foot topography to the effective Zone A floodplain shape and assigning a constant water surface elevation.

Floodplain fill was calculated using built-in GIS functions. It was assumed that proposed floodplain crossings would impact 20 percent of the floodplain volume within the 400 foot working alignment. The floodplain fill volumes were then separated by county to quantify compensatory storage volumes preferred by each respective local stormwater ordinance. Where a sub-watershed crossed a county boundary, the county with the greater floodplain area was used. Kankakee and Lake Counties would require a compensatory storage volume ratio of 1.5:1. Unincorporated Will County would require a compensatory storage volume ratio of 1.25:1.

An Illinois DNR-OWR permit for construction in the regulatory floodplain (tributary area no less than 1 square mile) would be required prior to any floodplain work in Illinois. As part of the Illinois DNR-OWR floodway construction permit, a hydrologic and hydraulic analysis will be required to define the 100-year floodplain for the unstudied Zone A floodplains within Will and Kankakee counties.

An Indiana DNR-DOW permit for construction in the regulatory floodplain (tributary area no less than 1 square mile) would be required prior to any floodplain work in Indiana. As part of the Indiana DNR-DOW construction permit, a hydrologic and

hydraulic analysis will be required to define the 100-year floodplain for unstudied Zone A floodplains within Lake County.

3.11.3 Floodplain Impacts

Table 3-68 briefly describes and quantifies the proposed fill within the FEMA mapped floodplains along working alignments within Corridors A3S2, B3, and B4, and defines the required storage volume necessary to compensate for fill placed in the floodplain. The compensatory storage volume is calculated by multiplying the floodplain fill volume by 1.25 in Will County and 1.5 in Kankakee and Lake counties.

3.11.4 Floodplain Mitigation

Waterway crossings will be designed to minimize the amount of fill material within floodplains. Where fill within the floodplain is unavoidable, mitigation measures such as compensatory storage will be made to offset the negative impact of development within the floodplain. Compensatory storage volume mitigation will be an excavated, hydrologically and hydraulically equivalent volume of storage created to offset the loss of existing flood storage. The provided compensatory storage volume will be excavated adjacent to the floodplain fill or shown by a hydraulic analysis to be an equivalent compensatory storage location. The storage volume displaced below the existing 10-year frequency flood elevation will be replaced below the proposed 10-year frequency flood elevation. The storage volume displaced above the 10-year frequency flood elevation will be replaced above the 10-year frequency flood elevation.

Potential mitigation in the form of bank excavation, adjacent compensatory storage basins, or adjacent underground storage could be used to provide compensatory storage areas that drain freely and openly to the watercourse. According to the Indiana Drainage Handbook (Indiana DNR, 1999), drainage improvement projects such as compensatory storage mitigation may include potentially negative impacts on the environment. These impacts include disturbing trees and other types of habitat established on the banks and overbank areas along the waterway. Compensatory storage planning will be based on minimizing the need for mitigation measures. Where impacts are unavoidable, Indiana DNR tree replacement guidelines for construction in a floodway will be followed.

Table 3-68. Preliminary Proposed 100-Year Floodplain Impact Summary for the Working Alignments within the Corridors

Watershed	County	Floodplain Fill Volume (acre-feet)			Required Compensatory Storage (acre-feet) ¹		
		Working Alignment A3S2	Working Alignment B3	Working Alignment B4	Working Alignment A3S2	Working Alignment B3	Working Alignment B4
Des Plaines River	Will	4.4	---	---	5.5	---	---
City of Wilmington-Kankakee River	Will	---	3.1	3.1	---	3.9	3.9
Jackson Creek	Will	0.6	---	---	0.7	---	---
Forked Creek	Will	---	10.4	10.4	---	13.1	13.4
Headwaters Jackson Creek	Will	1.3	---	---	1.6	---	---
Headwaters Prairie Creek	Will	8.7	---	---	10.9	---	---
Headwaters Forked Creek	Will	5.7	0.04	9.0	7.1	0.1	11.2
South Branch Forked Creek	Will	6.7	2.5	2.8	8.4	3.5	3.5
Rock Creek	Will	---	0.2	0.2	---	0.2	0.2
Headwaters Rock Creek	Will	0.1	1.2	1.3	0.2	1.5	1.7
Black Walnut Creek	Will	0.5	1.0	1.0	0.7	1.3	1.3
South Branch Rock Creek	Will	---	2.5	2.5	---	3.1	3.1
Headwaters Plum Creek	Will	3.9	---	---	4.9	---	---
Exline Slough	Will	---	0.6	0.6	---	0.7	0.7
Trim Creek	Will	0.7	5.7	5.7	0.9	7.1	7.1
Pike Creek	Will	2.3	1.3	1.3	2.9	1.6	1.6
Bull Creek-Singleton Ditch	Will	---	---	0.2	---	---	0.2
Klaasville-West Creek	Lake	3.3	2.7	---	5.0	4.1	
West Creek	Lake	---	---	4.2	---	---	6.4

Table 3-68. Preliminary Proposed 100-Year Floodplain Impact Summary for the Working Alignments within the Corridors (continued)

Watershed	County	Floodplain Fill Volume (acre-feet)			Required Compensatory Storage (acre-feet) ¹		
		Working Alignment A3S2	Working Alignment B3	Working Alignment B4	Working Alignment A3S2	Working Alignment B3	Working Alignment B4
Cedar Creek	Lake	5.4	5.3	0.3	8.2	7.9	0.4
Spring Run	Lake	9.1	9.1	---	13.6	13.7	---
Griesel Ditch	Lake	---	---	9.0	---	---	13.4
Brown Ditch	Lake	---	---	56.4	---	---	84.6
Corridor Total ²		52.7	45.7	108.0	70.6	61.8	152.7

¹ IDOT and INDOT requirements are 1:1 compensatory storage volume to fill volume ratio.

² Compensatory storage volume calculations were based on Will County 1.25:1 compensatory storage to fill ratio, and Kankakee County and Lake County 1.5:1 ratio.

Source: FEMA (2003, 2010, and 2012).