

3.12 Water Resources

This section describes the potential impacts on water resources that would result from the Proposed Acquisition. Consistent with previous mergers, the scope of the analysis focuses on activities with the potential to affect water resources. The subsections that follow describe the study areas as they apply to the planned capital improvements, data sources, and approach used to analyze potential impacts. Water resources considered in this section include groundwater, surface waters (streams and rivers), wetlands, and water quality.

3.12.1 Approach

During scoping, commenters expressed concern that the Proposed Acquisition could increase the risk of train derailment occurring that would result in the spill or release of hazardous materials, such as crude oil, into waterways such as the Mississippi River. *Section 3.1, Freight and Passenger Rail Safety* describes the potential impacts associated with the transportation of hazardous materials, including the risk of hazardous materials releases, in detail. OEA concludes the risk of a rail accident occurring that could result in a release of hazardous materials of any size into waterways or onto the ground, where it could affect groundwater, is and would remain very low. Because the rail lines that would make up the combined CPKC system are and would continue to be maintained and operated in compliance with applicable federal regulations for rail transportation of hazardous materials, OEA does not consider a large release that could significantly affect water resources to be a reasonably foreseeable outcome of the Proposed Acquisition. Therefore, this section focuses on the potential impacts on water resources that could result from planned capital improvements.

If the Board authorizes the Proposed Acquisition, the Applicants plan to make 25 capital improvements within the existing rail ROW to support the projected increase in rail traffic. Those capital improvements would include adding 10 new passing sidings, extending 13 existing sidings, adding a section of facility working track, and adding a section of double track. Because the Applicants have stated that the 25 planned capital improvements would be necessary to accommodate the increased rail traffic that the Applicants project would occur as a result of the Proposed Acquisition, OEA has assessed the potential impacts of the 25 planned capital improvements as part of the environmental review of the Proposed Acquisition. However, the Applicants have also stated that the planned capital improvements would be added only as needed to support increased traffic. Therefore, the Applicants have not completed detailed design and engineering for the 25 planned capital improvements. Accordingly, OEA's analysis of the potential impacts of the capital improvements is based on the largely conceptual design information, as well as conservative assumptions about how construction would proceed.

The study area for water resources includes the 25 planned capital improvements within the existing rail ROW. The existing ROW at each planned capital improvement location varies in width, extending between 35 and 100 feet from the centerline of the existing mainline, with most ROW extending 50 feet wide from the centerline. As detailed in **Table 3.12-1**,

most of the study area is developed, consisting of existing railroad line and ballast. See **Figure O.1-1** in **Appendix O** for the study area boundary at each capital improvement. OEA conducted field work within the study area from January 13-18, 2022, and from January 24-28, 2022. During field work, OEA investigated baseline conditions and identified and geo-located water resources, including wetlands and stream centerlines, using global positioning system (GPS) devices. OEA conducted field work at 24 of the 25 planned capital improvements. OEA did not conduct fieldwork for water resources at the location of the planned new siding at MP 75 near Monroe Township in Ogle County, Illinois. This planned new siding would be located within the footprint of a previously removed second track; thus, any impacts on water resources at this location have already occurred, and there would not be any new impacts.

OEA evaluated the potential effects of the planned capital improvements on groundwater, surface waters, wetlands, and water quality in the study area. In its analysis, OEA used data from published reports, feasibility studies, regulatory agency documents, guidance manuals, discussions with resource personnel, aerial photographs, U.S. Geological Survey (USGS) topographic maps, OEA field visits (January 2022 field inspections using public access areas and hi-rail vehicles), and federal and state Geographic Information Systems (GIS) databases.

3.12.1.1 Groundwater

OEA used the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey to estimate near-surface groundwater depths. The USDA NRCS Web Soil Survey lists depth to water table based on existing soils within the footprint of each planned capital improvement area. Deeper principal aquifers occur in the project area and are referenced in the USGS Ground Water Atlas of the United States, which describes the location, extent, and geologic and hydrologic features of the important aquifers of the nation.

3.12.1.2 Surface Waters and Wetlands

The Corps and state environmental departments administer Sections 404 and 401 of the Clean Water Act (CWA), 33 U.S.C. §§ 1251-1389, which regulates discharges of fill into waters of the U.S., including wetlands. Wetlands are defined at 33 C.F.R. § 328.3(c) as “those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils.” Executive Order (EO) 11990, “Protection of Wetlands,” discourages direct or indirect support of new construction impacting wetlands wherever there is a practicable alternative (White House 1977a).

OEA used available topographic surveys, GIS elevation data, and field surveys to identify and characterize waterways and hydrology at the planned capital improvement areas. The dimensions of the permanent and temporary construction footprints for the planned capital improvements would not be delineated until final engineering and design, which would occur after the completion of the environmental review process and after the Board issues a final decision on the Proposed Acquisition. Therefore, OEA quantified potential impacts on surface waters and wetlands using conservative assumptions. In this context, a conservative assumption is one that may tend to overstate potential environmental impacts. In assessing

impacts on surface waters and wetlands, OEA conservatively assumed that the capital improvements could temporarily or permanently impact any surface waters or wetlands located between the existing track and the edge of the rail ROW.

3.12.1.3 Floodplains

A floodplain is an area of land that is susceptible to being inundated by floodwaters from riverine flooding or other sources of flooding. EO 11988, “Floodplain Management” (White House 1977b) requires federal agencies to “avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.” The Federal Emergency Management Agency (FEMA) has primary federal jurisdiction for administration of EO 11988 and their guidance (44 C.F.R. Part 9; EO 13690).

To evaluate potential impacts on floodplains, OEA compared the locations of the planned capital improvements to FEMA floodplain mapping. FEMA typically maps the 100-year (1 percent annual chance base flood) floodplain at points along a stream where the contributing drainage area is generally 1 square mile or larger. For the planned capital improvement areas, the FEMA-mapped floodplain represents riverine flooding and is shown as either Zone A, which is an approximate boundary based on preliminary estimates of hydrology (quantity of flow) and hydraulics (flow velocity and elevation), or Zone AE, where a detailed hydrologic and hydraulic study was performed, and specific flood elevations are determined and mapped.

3.12.1.4 Water Quality

Water quality is enforced at the state level, based on standards set by both the state and EPA. For controlling pollutants generated during construction, when land disturbance exceeds one acre, states also issue National Pollutant Discharge Elimination System permits with EPA approval. OEA assessed impacts from the planned capital improvements on water quality based on OEA’s understanding of how construction could proceed if the Board authorizes the Proposed Acquisition.

3.12.2 Affected Environment

Land use types within the study area include agricultural, maintained ROW, industrial, floodplain/rivers/streams, wetlands, residential, fallow field/early successional, and mixed hardwood forest (see **Table 3.12-1**, below, and **Figure O.1-1** in **Appendix O**). The existing riparian and forested areas are primarily located along the edge of the railroad ROW and extend outside the study areas. The total acreage within the study area is just under 305 total acres.

Table 3.12-1. Total Acreage by Land Use Type within the Study Area for All Planned Capital Improvement Locations

Land Use	Acreage
Agricultural	49.4
Maintained Roadway ROW	29.7
Industrial	24.7
Wetlands	19.97
Floodplain/Rivers/Streams	12.6
Residential	9.6
Fallow Field/Early Successional Forest	3.3
Mixed Hardwood Forest	37.4
Existing Railroad and Ballast	118.0

3.12.2.1 Groundwater

Table 3.12-2 shows the principal aquifers that underlie the planned capital improvements. These aquifers are important for public drinking water, wildlife, agriculture, livestock, and non-agricultural uses (including industrial, thermoelectric power generation, mining, and commercial), but account for only a small amount of the total water use in these regions. Individual principal aquifers extend under several states within the study area and rely on a broad footprint for recharge. **Table 3.12-2** summarizes the depths to near surface groundwater and identifies the principal aquifers at planned capital improvement locations. In general, aquifers that are closer to the surface may be more susceptible to impacts from certain construction activities on the surface, such as regrading and excavation.

Table 3.12-2. Principal Aquifers by Planned Capital Improvement Area

Name	State	Surficial Water Table Depth (inches)	Principal Aquifer
MP 71 (Turkey River)	Iowa	greater than 80	Cambrian-Ordovician
MP 24 (Bellevue)	Iowa	greater than 80	Cambrian-Ordovician
Deer Creek	Iowa	greater than 80	Cambrian-Ordovician
Camanche	Iowa	48 to 72	Cambrian-Ordovician
Letts	Iowa	12 to greater than 80	Cambrian-Ordovician
MP 255 (Washington)	Iowa	0 to 72	Mississippian and Cambrian-Ordovician
Ottumwa	Iowa	12 to 42	Mississippian and Cambrian-Ordovician
Moravia	Iowa	12 to greater than 80	Mississippian and Cambrian-Ordovician
MP 75 (Monroe)	Illinois	greater than 80	Cambrian-Ordovician
Newtown	Missouri	0 to 72	Mississippian

Table 3.12-2. Principal Aquifers by Planned Capital Improvement Area

Name	State	Surficial Water Table Depth (inches)	Principal Aquifer
Laredo	Missouri	0 to 42	Mississippian
MP 431 (Dawn)	Missouri	0 to 30	Mississippian
Blue Valley	Missouri	0 to 80	Western Interior Plains
Grandview/IFG	Missouri	12 to greater than 80	Western Interior Plains
Asbury	Missouri	6 to 41	Ozark Plateaus
MP 186 (Goodman)	Missouri	greater than 80	Ozark Plateaus
Gentry	Arkansas	18 to greater than 80	Ozark Plateaus
MP 247 (Baron)	Oklahoma	greater than 80	Ozark Plateaus
Cave Springs	Oklahoma	6 to greater than 80	Ozark Plateaus
Spiro	Oklahoma	24 to 36	None
Heavener	Oklahoma	8 to 42	None
MP 377 (Mena)	Arkansas	24 to greater than 80	None
Mansfield	Louisiana	15 to greater than 80	Coastal Lowlands
Loring	Louisiana	24 to 48	Coastal Lowlands
Singer	Louisiana	0 to 36	Coastal Lowlands

3.12.2.2 Surface Waters and Wetlands

OEA identified surface waters and wetlands in the study area for 24 of the 25 planned capital improvements during fieldwork conducted January 13–18, 2022, and January 24–28, 2022. As noted above, OEA did not conduct fieldwork for water resources at the location of the planned new siding at MP 75 near Monroe Township in Illinois because this new siding would not result in any impacts. **Table 3.12-3** provides the length of streams and the area of wetlands that OEA identified within the study area for each planned capital improvement.

Table 3.12-3. Stream Length and Wetland Acreages within Study Area

Name	Stream Length	Wetland Area
	(linear feet)	(acres)
MP 71 (Turkey River)	1,336	7.88
MP 24 (Bellevue)	90	None
Deer Creek	499	1.70
Camanche	432	None
Letts	1,820	None
MP 255 (Washington)	555	None

Table 3.12-3. Stream Length and Wetland Acreages within Study Area

Name	Stream Length	Wetland Area
	(linear feet)	(acres)
Ottumwa	1,041	0.03
Moravia	1,645	0.07
MP 75 (Monroe)	Not Surveyed ¹	Not Surveyed ¹
Newtown	1,168	None
Laredo	418	0.08
MP 431 (Dawn)	189	2.67
Blue Valley	1,035	0.95
Grandview/IFG	None	0.01
Asbury	40	0.36
MP 186 (Goodman)	34	0.23
Gentry	64	0.21
MP 247 (Baron)	239	0.16
Cave Springs	767	0.47
Spiro	704	0.25
Heavener	2,480	1.26
MP 377 (Mena)	73	0.32
Mansfield	None	0.49
Loring	100	0.11
Singer	55	1.45

¹ The planned siding at MP 75 (Monroe) would be built on the site of a former section of double track. Therefore, this area was previously disturbed.

The planned double tracking at Blue Valley near Kansas City, Missouri would cross the Blue River, which the Corps has recognized as a Section 10 Navigable Water of the U.S. (USACE, n.d.). The Blue River is a 40-mile-long tributary of the Missouri River that flows through the eastern portion of Kansas City in Jackson County, Missouri (USGS 1981). Two-thirds of southern Kansas City’s rainwater drains into the river, which has experienced increased flooding in recent years (The Nature Conservancy 2022). The river supports a mix of recreational areas, public parks, and trails, as well as wildlife habitat (The Nature Conservancy 2019). Portions of the river lie in heavily urbanized areas, where water quality is poor and few recreational opportunities are available, although several restoration efforts are underway (The Nature Conservancy 2019).

3.12.2.3 Floodplains

In general, all the planned capital improvement areas may be susceptible to flooding, either in the case of localized flooding or riverine flooding. Localized flooding occurs during heavy rainfall where poor drainage may exist and water ponds for a period of time. Riverine flooding, which is also associated with rainfall, follows the landscape and is associated with higher flowing velocities that can result in debris movement and erosion at bridges, culverts, or changes in slope. Four of the sites are located within the floodplain of the Mississippi River. While they are on the fringes of the floodplain boundary, the Mississippi is a large capacity river, with high flow rates that could result in significant debris transportation and erosion. The Blue Valley site that is within the urban Blue River valley is also susceptible to higher flow rates, debris, and erosion. Of the remaining sites that have floodplain mapped within the study area, all are in rural areas, and most are located within the fringe of the floodplain where velocities and flood depths are typically low. **Table 3.12-4** summarizes the FEMA-mapped floodplain information for each planned capital improvement area.

Table 3.12-4. FEMA-Mapped 100-Year Floodplain Information within the Planned Capital Improvements

Name	FEMA Community Number	Flood Source	Floodplain Designation
MP 71 (Turkey River)	190858	Turkey River / Mississippi River	Zone A/AE
MP 24 (Bellevue)	190879	Spruce Creek / Mississippi River	Zone A/AE
Deer Creek	190859/190088	Deer Creek / Mississippi River	Zone AE
Camanche	190859/190086	Beaver Slough / Mill Creek / Mississippi River	Zone AE
Letts	190193	None	None
MP 255 (Washington)	190913	South Fork Long Creek	Zone A
Ottumwa	190911	Bear Creek	Zone A
Moravia	190894	Soap Creek Tributaries	None
MP 75 (Monroe)	170525 / 170808	None	None
Newtown	290839	Medicine Creek	Zone A
Laredo	290150	Grand River / Medicine Creek	Zone A
MP 431 (Dawn)	290814	Grand River / Shoal Creek / Wolf Creek	Zone A
Blue Valley	290173	Blue River / Round Grove Creek	Zone AE
Grandview/IFG	290173/290783	None	None
Asbury	290820	None	None
MP 186 (Goodman)	290817	Beaver Branch	Zone A
Gentry	050419	Wolf Creek	Zone A
MP 247 (Baron)	400501	Shell Branch	Zone A
Cave Springs	400501	Upper Sallisaw Creek	Zone A

Table 3.12-4. FEMA-Mapped 100-Year Floodplain Information within the Planned Capital Improvements

Name	FEMA Community Number	Flood Source	Floodplain Designation
Spiro	400484	Holt - Tushka Creek	Zone A
Heavener		Hontubby Creek / Poteau River	Zone A
MP 377 (Mena)	050473	Brier Creek / Ouachita River	Not Mapped
Mansfield	220337/22031C	Siphorien Bayou	Zone A
Loring	22085C	Hurricane Creek	Not Mapped
Singer	220026	Bear Head Creek	None

3.12.2.4 Water Quality

Table 3.12-5 provides information about local watersheds and any impaired waterbodies within the study area for each planned capital improvement. Pollutant sources for the listed impairments are primarily from manufacturing, agriculture, and livestock practices within the contributing watersheds.

Table 3.12-5. Watershed and Impaired Waterbody Information at the Planned Capital Improvement Locations

Name	Watershed and Hydrologic Unit Code	303(d) Listed	Impaired Water Body	Impairment
MP 71 (Turkey River)	Deer Creek-Mississippi River (070600051203)	Yes	Mississippi River	Aluminum
MP 24 (Bellevue)	Spruce Creek-Mississippi River (070600050404)	Yes	Mississippi River	Aluminum
Deer Creek	Deer Creek-Mississippi River (070600051203)	Yes	Mississippi River	Aluminum
Camanche	Mill Creek (070801010202)	Yes	Mississippi River	Aluminum
Letts	Indian Creek (070802091101), Lower Muscatine Slough (070801010702)	No	-	-
MP 255 (Washington)	South Fork Long Creek (070802090902)	No	-	-
Ottumwa	Bear Creek School-Bear Creek (071000090706)	Yes	Bear Creek	Dissolved Oxygen
Moravia	Upper Soap Creek (071000090602)	Yes	Soap Creek	Fish Bioassessments

Table 3.12-5. Watershed and Impaired Waterbody Information at the Planned Capital Improvement Locations

Name	Watershed and Hydrologic Unit Code	303(d) Listed	Impaired Water Body	Impairment
MP 75 (Monroe)	South Branch Kishwaukee River (070900060609)	Yes	S. Branch Kishwaukee River	Mercury / polychlorinated biphenyls
Newtown	Hooton Creek-Medicine Creek (102801030207)	Yes	Medicine Creek	<i>E. coli</i>
Laredo	Black Oak Branch-Medicine Creek (102801030301)	No	-	-
MP 431 (Dawn)	Shoal Creek (102801011603)	No	-	-
Blue Valley	Blue River Outlet (103001010106)	Yes	Blue River	<i>E. coli</i>
Grandview/IFG	Headwaters Little Blue River (103001010201), Camp Branch-Blue River (103001010104)	No	-	-
Asbury	Town of Waco-Spring River (110702070508)	Yes	Spring River	<i>E. coli</i>
MP 186 (Goodman)	Lower Indian Creek (110702080307)	No	-	-
Gentry	Middle Flint Creek (111101030503)	Yes	Flint Creek	Phosphorus
MP 247 (Baron)	Shell Branch Creek-Baron Fork (111101030705)	No	-	-
Cave Springs	Upper Sallisaw Creek (111101040102)	No	-	-
Spiro	Holt-Tushka Creek (111101050901)	Yes	New Spiro Lake	Dissolved Oxygen / pH
Heavener	Coal Creek (111101050501), Hontubby Creek-Poteau River (111101050305)	Yes	Poteau River	<i>E. coli</i> / <i>Enterococcus</i>
MP 377 (Mena)	Brier Creek-Prairie Creek (080401010103), Ouachita River Headwaters (080401010101)	Yes	Prairie Creek	Dissolved Oxygen / Turbidity

Table 3.12-5. Watershed and Impaired Waterbody Information at the Planned Capital Improvement Locations

Name	Watershed and Hydrologic Unit Code	303(d) Listed	Impaired Water Body	Impairment
Mansfield	Na Bonchasse Bayou (111402060304)	Yes	Clear Lake/Smithport Lake	Dissolved Oxygen / Mercury / Nitrate / Non-Native Aquatic Plants / Phosphorus
Loring	Hurricane Creek (120100040602)	No	-	-
Singer	Middle Beckwith Creek (080802050104), Bear Head Creek Headwaters (080802050301)	Yes	Bear Head Creek / Beckwith Creek	Dissolved Oxygen / Lead / pH / Mercury

3.12.3 Environmental Consequences

3.12.3.1 Proposed Acquisition

If the Board authorizes the Proposed Acquisition, the Applicants project that rail traffic would increase on certain rail lines in the combined CPKC network. An increase in rail traffic would increase the probability of rail accidents, including accidents that could result in spills or releases of hazardous materials, on those rail lines. If a release of hazardous materials were to occur, then impacts on groundwater or surface water quality could result. For example, if hazardous materials were to spill directly into or adjacent to a waterway, then the spill materials could enter the waterway. If released onto the ground, spilled materials could potentially move downward through the subsurface materials to the water table. However, the probability of a release of any size would remain very small and OEA does not consider a large release that could significantly affect water resources to be a reasonably foreseeable outcome of the Proposed Acquisition.

For each planned capital improvement, the Applicants have identified the intended start and end point of the planned new siding, siding extension, double track, or facility working track. The Applicants have also identified the side of the existing track on which they plan to add each capital improvement. OEA understands that the Applicants would build the capital improvements primarily within previously disturbed areas of the existing rail ROW and would utilize existing railbed and ballast where feasible. However, the Applicants could also clear trees, regrade, and place fill in previously undisturbed areas in order to widen the existing railbed to accommodate a second track. As noted above, OEA has conservatively assumed that the capital improvements could impact any water resources between the existing track and the edge of the rail ROW. This approach may tend to overstate impacts on water resources because some impacts could be avoided during the final engineering, design, and construction planning processes. The following subsections describe the

potential impacts related to the planned capital improvements on groundwater, surface waters, floodplains, and water quality.

Groundwater

Impacts to groundwater typically occur from water withdrawals, changes in aquifer recharge areas, or excavation of the landscape, which may draw down the surficial water table. OEA expects that construction activities related to the planned capital improvements would include removing ground surface vegetation and adding ballast to support a second track adjacent to the existing rail line. These activities would not involve significant water withdrawals, changes in aquifer recharge areas, or excavation. OEA expects that the Proposed Acquisition would have a negligible impact on groundwater.

Surface Waters and Wetlands

The Proposed Acquisition has the potential to affect waterways, wetlands, and their associated floodplains. To construct the 25 planned capital improvements, the Applicants would place ballast and other fill material within wetlands to support a second track adjacent to the existing rail line. The Applicants would also add new bridges and culverts in waterways or widen existing bridges and culverts to support a second track. The preliminary design information indicated that the Applicants would replace existing culverts by means of jack and boring under the existing rail bed with a culvert equivalent to or larger than the existing culvert. The Applicants would then fill the existing culverts once the new culvert is completed. OEA assumed that the connection of replacement culverts to existing wetlands and waterways would have a small fill impact due to transitional grading from the culvert opening to the receiving waters.

Table 3.12-6 summarizes the potential impacts on waterways and wetlands in terms of acreage. For streams, the table includes impacts from new and modified crossing structures, as well as impacts from fill. OEA estimated the area of new and modified crossings based on preliminary design information provided by the Applicants and OEA's conservative assumptions about the size of the new or modified crossing structures. OEA estimated the area of fill based on preliminary site-specific design information, the topography at each capital improvement location, and the estimated width of the second track. OEA assumed that streams that run parallel to the existing tracks within the estimated footprint of each capital improvement would be filled.

As shown in the table, the greatest impacts would occur where wetlands and/or streams run parallel to the existing rail lines. Among the capital improvements, the planned new siding at MP 71 near Turkey River in Iowa has the potential to impact the largest acreage of wetlands due to the large wetland system immediately east of the existing track that runs for almost the entire length of the planned siding (**Figure O.1-1** in **Appendix O** [pages 3-12]). At this location, the existing track exists at the foot of a steep embankment on its west side, which may make avoiding the wetlands during final engineering and design impractical.

CWA Section 404(b)(1) Guidelines state that "secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material." (40 C.F.R. § 230.11(h)). OEA does not expect that the planned capital improvements would result in any secondary

impacts. The planned capital improvements would be added within an existing rail ROW adjacent to existing railroad tracks that already cross most of the potentially affected waterways. To the extent that the Applicants may install new culverts of equal or greater capacity than those currently in place, this could improve the movement of surface water and the connectivity of surface waters.

Table 3.12-6. Estimated Impacts to Non-Tidal Waters within the Planned Capital Improvement Locations

Name	Potential Surface Water Impacts	Estimated Surface Water Impacts (acres)	Potential Wetland Impacts	Estimated Wetland Impact (acres)
MP 71 (Turkey River)	Crossings	0.02	Fill	6.43
MP 24 (Bellevue)	Crossings	0.01	None	0.00
Deer Creek	Crossings	0.03	Fill	0.52
Camanche	Crossings	0.03	None	0.00
Letts	Fill	0.15	None	0.00
MP 255 (Washington)	Crossings	0.03	None	0.00
Ottumwa	Fill/Crossings	0.15	Fill	0.01
Moravia	Fill/Crossings	0.04	None	0.07
MP 75 (Monroe)	Not Field Surveyed	0.00	None	0.00
Newtown	Fill	0.08	None	0.00
Laredo	Fill/Crossings	0.05	Fill	0.08
MP 431 (Dawn)	None	0.00	Fill	2.63
Blue Valley	Fill/Crossings	0.09	Fill	0.95
Grandview/IFG	None	0.01	None	0.00
Asbury	Fill	0.04	Fill	0.36
MP 186 (Goodman)	Crossings	0.04	Fill	0.23
Gentry	Crossings	0.02	Fill	0.21
MP 247 (Baron) ¹	Crossings	0.01	Fill	0.16
Cave Springs	Fill/Crossings	0.06	Fill	0.47
Spiro	Fill/Crossings	0.04	Fill	0.25
Heavener	Fill/Crossings	0.53	Fill	1.26
MP 377 (Mena)	Crossings	0.00	Fill	0.27
Mansfield	None	0.00	Fill	0.48
Loring	Crossings	0.07	Fill	0.11
Singer	None	0.00	Fill	1.45
Total		1.5 acres		15.94 acres

Based on the information provided by the Applicants regarding the location of the planned double tracking at Blue Valley, the Applicants would add a new bridge over the Blue River adjacent to the existing railroad bridge. OEA assumes that the Applicants would design the navigation clearance of the new bridge to be the same as the clearance of the existing bridge. Therefore, the Proposed Acquisition would not result in any permanent impacts to waterborne traffic on the Blue River or other navigable waterways.

Floodplains

In most cases, the planned capital improvements would be located in the floodplain fringe, where an increase in fill resulting from additional ballast placed in the floodplain would be minor in comparison to the overall floodplain capacity. OEA expects that the planned capital improvements would result in negligible impacts to floodplains.

Water Quality

Construction of the 25 planned capital improvements could result in short-term localized and downstream water quality impacts. During construction, ground disturbance could lead to erosion of sediments, which could flow downslope into low lying areas and eventually into water bodies. Following construction, erosion at bridge and culvert crossings, and changes in flow patterns have the potential to deliver sediment and pollutants to downstream waters. OEA expects that the Proposed Acquisition would result in negligible water quality impacts.

3.12.3.2 No-Action Alternative

Under the No-Action Alternative, the Proposed Acquisition would not occur, CP would not acquire KCS and the Applicants would not build the 25 planned capital improvements. Therefore, the potential impacts on groundwater, surface waters, floodplains, and water quality as described above would not occur under the No-Action Alternative. In the absence of the Proposed Acquisition, however, CP or KCS could make capital improvements along their rail lines in the future without seeking Board authority.

3.12.4 Conclusion

OEA concludes that the Proposed Acquisition would result in negligible impacts on ground water and water quality. OEA concludes that the risk of a rail accident occurring that could result in a release of hazardous materials of any size into waterways or onto the ground, where it could affect groundwater, is and would remain very low. The 25 planned capital improvements could result in impacts on surface waters, wetlands, and floodplains, including the placement of fill material or conveyance structures. The Applicants are volunteering mitigation measures to minimize impacts to groundwater, including a commitment to limit ground disturbance to the areas necessary for the construction of the planned capital improvements (see *Chapter 4, Mitigation*, Voluntary Mitigation [VM]-Biological-10). To minimize impacts to surface waters and wetlands, the Applicants are volunteering mitigation measures, including commitments to obtain necessary authorizations from the Corps (VM-Water-03 and VM-Water-04), minimize impacts to wetlands where practicable, and compensate as appropriate for the loss of wetlands (VM-Water-07). The

Applicants are also volunteering mitigation measures to minimize impacts to water quality, including a commitment to developing a site-specific Stormwater Pollution Prevention Plan (SWPPP) for each capital improvement that would incorporate best management practices and site-specific measures to control erosion and reduce the amount of sediment and pollutants that could enter surface waters, groundwater, and wetlands (VM-Water-05). In addition, to minimize impacts to floodplains, the Applicants have committed to designing all drainage crossing structures to pass a 100-year storm event (VM-Water-08).

To further ensure that impacts on floodplains would be minimized, OEA is recommending mitigation requiring the Applicants to design culverts and bridges so as to maintain existing surface water drainage patterns to the extent practicable and not cause or exacerbate flooding (MM-Water-01). OEA is also recommending mitigation requiring the Applicants to coordinate with FEMA if construction of bridges, culverts, or embankments related to the 25 planned capital improvements would result in an unavoidable increase greater than one foot to the 100-year water surface elevations (MM-Water-02).