CHAPTER 3.0

AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

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This Supplemental EA addresses potential impacts resulting from proposed changes in operations (that is, increased train traffic) under the Proposed Transaction on CSXT's Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, as well as potential impacts resulting from proposed construction activities on the L&I Line. Although potential construction impacts along the L&I Line were analyzed in the Draft EA, public comments on that document guided OEA to quantify potential Transaction-related impacts on wetlands, floodplains, and forested areas in the Supplemental EA. In addition, updated information is available regarding proposed construction. Specifically, new sidings at Crothersville and Underwood, Indiana, that were discussed in the Draft EA have been withdrawn by the Applicants as components of the Proposed Transaction; the siding extensions at Elvin and Brook in Indiana are considered potential actions rather than proposed;[1] and the Flatrock River Bridge would be replaced with a new bridge with longer spans and fewer piers (rather than using existing piers). Therefore, the analysis of Transaction-related construction activities focuses on the areas of the L&I Line that would be affected by the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement. The No-Action Alternative is also discussed relative to potential impacts of proposed operational changes and proposed construction activities on the L&I Line. The potential impacts resulting from Transaction-related operational changes on the L&I Line are addressed in the Draft EA and remain accurate.

All resource areas addressed in the Draft EA are also addressed in this Supplemental EA; however, the extent to which the affected environment is characterized and the detail of impact analysis varies. Specifically, the Supplemental EA focuses on the following resources potentially impacted by Transaction-related operational changes on the three CSXT rail lines:

- Transportation (see Section 3.1)
  - Grade crossing delay
  - Grade crossing safety
  - Hazardous materials transportation safety
  - Emergency response
- Threatened and endangered species (see Section 3.6)
- Air quality (see Section 3.7)
- Noise and vibration (see Section 3.8)
- Cultural resources (see Section 3.10)
- Environmental justice (see Section 3.11)

[1] The sidings could be constructed at a later date if Applicants determine they are needed to achieve operating efficiencies.

In addition, specific resources were quantitatively assessed to determine the impacts associated with the potential Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge on the L&I Line. Specifically, the impacts on the following resources were quantified:

- Wetlands (see Section 3.5)
- Floodplains (see Section 3.5)
- Forested areas (see Section 3.6)

Impacts of construction on other resources were evaluated qualitatively because the Proposed Transaction is expected to have minimal or no adverse impact on these resources.

Finally, this Supplemental EA includes analysis of the potential for wildlife to be hit by operating trains (that is, wildlife strikes) under the Proposed Transaction. This analysis includes the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, Louisville Connection, and L&I Line, where train traffic would increase under the Proposed Transaction, as well as CSXT's Toledo Subdivision, Cincinnati Terminal Subdivision, and LCL Subdivision, where train traffic would decrease under the Proposed Transaction. Potential wildlife strikes were not analyzed along the Indianapolis Terminal Subdivision – Louisville Secondary Branch and the Louisville Connection because these rail lines are located in urban areas and do not have adequate habitat for vulnerable wildlife, including threatened and endangered species.

The study area for evaluating potential impacts of the Proposed Transaction varies by resource and is defined in applicable resource sections. The study area for some resources consists of a defined corridor, but the study area for other resources consists of a broader area, such as the affected counties.

3.1 TRANSPORTATION

This section discusses the affected environment and potential environmental impacts of the Proposed Transaction and the No-Action Alternative on transportation in the project area, including the local road network, railroad operations and safety, hazardous materials transportation, and emergency response. For consistency with the Draft EA, this analysis evaluates existing conditions for year 2011 and conditions under the Proposed Transaction and No-Action Alternative in year 2014.

3.1.1 Grade Crossing Delay

The effects of the Proposed Transaction on the local road network would occur at public at-grade crossings (that is, intersections where a public roadway crosses a rail line at grade), where vehicles would be delayed while waiting for passing trains. The affected environment consists of existing public at-grade crossings along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, and the environmental impact analysis focuses on those crossings that would experience an increase in the number of trains per day under the Proposed Transaction.

3.1.1.1 Affected Environment

Public at-grade crossings along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection were analyzed for

vehicular traffic delay caused by train movements under existing conditions. There are 176 public at-grade crossings along these three rail lines (see Appendix B, Attachments B-1 and B-2 for a list and the location of these crossings, respectively).

Vehicular traffic delay was estimated using the existing number of trains, average train speed, average train length, and the number of vehicular traffic lanes for each at-grade crossing. The calculation is based on the 2011 average daily traffic (ADT) volumes—number of vehicles per day (vpd).

The existing level of service (LOS) for each at-grade crossing was also determined. LOS refers to the efficiency at which an at-grade crossing operates after a train passes. For this analysis, the LOS determination is based on the average delay for all vehicles (Dv). LOS ranges from A to F, with LOS A indicating relatively free-flowing traffic and LOS F indicating extreme congestion.

To characterize the existing train-induced traffic delays at the public at-grade crossings, two data sources were used:

- FRA location and inventory databases for information about at-grade crossings, including ADT data (FRA 2011a)
- CSXT company databases for train lengths and speeds

The ADT volumes are from 1979 to 2012. For crossings with 1979 through 2010 ADT volumes, a 1 percent annual growth rate was applied to determine the 2011 existing ADT volumes. For crossings with 2012 ADT volumes, the 2011 ADT volumes were determined by decreasing the 2012 ADT volumes by 1 percent.

The ADT at the 176 at-grade crossings ranges from less than 100 vpd at several crossings to 20,300 vpd at Scatterfield Road in Anderson, Indiana (see Appendix B, Attachment B-1, which presents the public at-grade crossings in geographic order from west to east along the Indianapolis Terminal Subdivision – Louisville Secondary Branch and Indianapolis Line Subdivision, and from north to south along the Louisville Connection).

All of the crossings analyzed exhibit some level of delay under existing conditions. The average delay per delayed vehicle at the 176 at-grade crossings ranges from approximately 1 to 6 minutes. The average delay per delayed vehicle is equal to the total vehicle delay (that is, the total delay time for all vehicles) per day at a crossing divided by the number of vehicles per day that are delayed. For the 176 at-grade crossings, the total vehicle traffic delay ranges from 4 minutes per day to approximately 7,434 minutes per day (that is, 124 hours per day), with 86 at-grade crossings having total vehicle delays that exceed 100 minutes per day (see Appendix B, Attachment B-1).

The analysis of vehicular queues under existing conditions showed the longest vehicular queues at the at-grade crossings of Michigan Street in Marion County, Indiana; Walnut Street in Delaware County, Indiana; and Scatterfield Road in Madison County, Indiana. These three crossings currently experience total vehicle delay that exceeds 40 vehicle hours per day. Each of these crossings was also analyzed to determine the effects of the queue lengths. When a queue is so long that it blocks a major roadway, the mobility of the community is considered to be affected. On the other hand, when queues block no roadways or a local roadway only, the mobility of the community is not considered to be affected.

Additional details about the three longest vehicular queues are as follows:

- *Michigan Street crossing* – The queue on Michigan Street in Marion County, Indiana, was estimated to be approximately 1,040 feet in year 2011. This queue would not impact mobility on major roadways adjacent to the crossing. The nearest major roadway is over 1 mile from the at-grade crossing. Current train traffic at this crossing would not impact the mobility of major roadways adjacent to the Michigan Street crossing in Indianapolis, Indiana.
- *Walnut Street crossing* – The queue on Walnut Street in Delaware County, Indiana, was estimated to be approximately 1,030 feet in year 2011. This queue would not impact mobility on major roadways adjacent to the crossing. However, the Seymour Street/Walnut Street roundabout is located only 300 feet north of the crossing. The nearest major road crossing north of Walnut Street is State Highway 32, located 1,600 feet north. Although the queue may decrease the efficiency of the roundabout, current train traffic at this crossing would not impact the mobility of major roadways adjacent to the Walnut Street crossing in Muncie, Indiana.
- *Scatterfield Road crossing* – The queue on Scatterfield Road in Madison County, Indiana, was estimated to be approximately 960 feet in year 2011. This queue would not impact any major roadways to the south but would potentially impact State Highway 32 to the north. The distance to the State Highway 32/Scatterfield Road intersection is approximately 425 feet. Separate storage lanes are provided for eastbound right-turn and westbound left-turn traffic at State Highway 32/Scatterfield Road destined toward the crossing. These storage lanes provide approximately 500 feet of storage and would provide additional queue storage for the eastbound and westbound approaches on State Highway 32. Current train traffic at this crossing likely would impact the mobility at State Highway 32/Scatterfield Road in Anderson, Indiana.

The majority (172 of 176) of the at-grade crossings analyzed currently operate at LOS A, B, or C. Four crossings in Muncie, Indiana, which is in Delaware County, currently operate at LOS F, where the train speed is reduced to 10 mph.

3.1.1.2 Environmental Impacts of Proposed Operational Changes

Under the Proposed Transaction, potential impacts of operational changes on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection were evaluated relative to transportation and delay at at-grade crossings. The analysis included determining the effects on local and regional roadway systems resulting from projected increases in train traffic. There would be no change in the speed or length of trains on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection under the Proposed Transaction.

The effects of the Proposed Transaction and the No-Action Alternative on public at-grade crossings were evaluated by determining the vehicle delay at the at-grade crossings and then assessing how increased delays from the Proposed Transaction would affect delay and overall operations.

The analysis thresholds listed in Table 3.1-1 were used to determine which of the 176 at-grade crossings to evaluate for potential effects of the Proposed Transaction and the No-Action

Alternative on grade crossing delay. That is, the thresholds were used to screen out those at-grade crossings expected to experience minimal impacts from rail traffic under the Proposed Transaction and the No-Action Alternative. The threshold of 2,500 ADT is based on general traffic engineering standards, field observations, and thresholds used in previous rail mergers and acquisitions, including the CN/EJ&E merger (*Canadian National Railway Company and Grand Trunk Corporation—Control—EJ&E West Company*, STB Finance Docket No. 35087 [STB served December 24, 2008]). OEA believes that the use of these thresholds is reasonable and conservative. Impacts on roadways with ADT volumes below 2,500 and the additional vehicular delay that would result from Proposed Transaction-related increased train traffic would be minimal. Using the thresholds in Table 3.1-1, 99 public at-grade crossings were analyzed (see Appendix B, Attachment B-3).

Table 3.1-1. Transportation Analysis Thresholds

Transportation Impact Area	Analysis Thresholds
At-Grade Crossings	Expected 2014 traffic volumes greater than 2,500 average daily traffic (ADT) on intersecting roadways; or
	Change of three or more trains per day on roadways with greater than 2,500 ADT; or
	Crossings closer than 800 feet apart

Source: STB, 2008, Draft Environmental Impact Statement for the Proposed Canadian National Railway Company Acquisition of the Elgin, Joliet & Eastern Railway Company, STB Finance Docket No. 35087, July 25, available online at http://www.stb.dot.gov/decisions/readingroom.nsf/WebDecisionID/39185?OpenDocument.

Proposed Transaction

As part of the Proposed Transaction, the number of trains operating per day is anticipated to increase from 23 to 34 trains per day along Indianapolis Line Subdivision, from 4 to 17 trains per day along the Indianapolis Terminal Subdivision – Louisville Secondary Branch, and from 6 to 18 trains per day along the Louisville Connection. The analysis calculated LOS, queue lengths (feet), average delay for all vehicles (minutes per vehicle), and total vehicle traffic delay in a 24-hour period (minutes) for the approaching roadways and crossings at each of the 99 public at-grade crossings that met the Board's thresholds for analysis. In addition, the roadway crossing locations in each community were analyzed to determine the potential effects of the Proposed Transaction. The table in Appendix B, Attachment B-3, presents results of the at-grade crossing analysis for the three rail lines. The increase in the average number of trains expected per day is anticipated to directly affect the extent of increase in motorist delay and vehicle queues.

The analysis indicates that there would be some effects on each crossing due to the Proposed Transaction. In 2014, ADT at crossings on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection would range from 200 vpd at Goul Road in Madison County, Indiana, to 20,900 vpd at Scatterfield Road in Madison County, Indiana (see Appendix B, Attachment B-3). Under the Proposed Transaction, the average delay for all vehicles would be slightly more than under the No-Action Alternative. The increase in average delay for all vehicles would range from 0.04 to 0.82 minute per vehicle.

These future delays per vehicle are greater than under the No-Action Alternative because future trains would be more frequent (while train speed and length would remain unchanged).

The number of at-grade crossings on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection that would experience total vehicle traffic delays that exceed 100 minutes per day would increase from 75 crossings under the No-Action Alternative to 81 crossings under the Proposed Transaction. The 10 crossings with the largest total vehicle traffic delays under the Proposed Transaction are listed in Table 3.1-2.

Table 3.1-2. Crossings with the Largest Total Vehicle Traffic Delay Under the Proposed Transaction

Crossing ID	Street Crossing	County, State	City	Rail Line	Total Vehicle Traffic Delay (min/day)	
					Existing Conditions	Proposed Transaction
538898G	Walnut Street	Delaware, IN	Muncie	Indianapolis Line Subdivision	7,434	11,336
539233P	Michigan Street	Marion, IN	Indianapolis	Indianapolis Line Subdivision	3,982	6,049
535616D	Troy Avenue	Marion, IN	Indianapolis	Indianapolis Terminal Subdivision – Louisville Secondary Branch	1,184	5,197
538939J	Scatterfield Road	Madison, IN	Anderson	Indianapolis Line Subdivision	3,000	4,565
535620T	Raymond Street	Marion, IN	Indianapolis	Indianapolis Terminal Subdivision – Louisville Secondary Branch	1,005	4,380
538955T	Madison Avenue	Madison, IN	Anderson	Indianapolis Line Subdivision	2,157	3,299
539230U	New York Street	Marion, IN	Indianapolis	Indianapolis Line Subdivision	1,991	3,041
538902U	Batavia Avenue	Delaware, IN	Muncie	Indianapolis Line Subdivision	1,950	2,971
535248R	Kentucky Street	Jefferson, KY	Louisville	Louisville Connection	817	2,511
538942S	Columbus Avenue	Madison, IN	Anderson	Indianapolis Line Subdivision	1,507	2,294

The LOS at 36 of the 99 crossings would degrade under the Proposed Transaction. The decrease in LOS can be attributed to the increase in train frequency. The largest decrease in LOS among the 99 crossings is a decrease in two LOS grades (see Appendix B, Attachment B-3). Along the Indianapolis Terminal Subdivision – Louisville Secondary Branch, four crossings would experience a decrease in LOS from A to C. For these four crossings, the number of trains would increase from 4 to 17 trains per day. Along the Louisville Connection, two crossings would experience a decrease in LOS from C to E; the number of trains along this segment would increase from 6 to 18 trains per day.

According to Guidance on Traffic Control Devices at Highway-Rail Grade Crossings (Federal Highway Administration [FHWA] 2002), at-grade crossings should be considered for grade separation or otherwise eliminated across the railroad ROW when one or more of the following conditions exist:

- The highway is a part of the designated Interstate Highway System.
- The highway is otherwise designed to have full controlled access.
- The posted highway speed equals or exceeds 70 mph.
- Annual ADT exceeds 100,000 in urban areas or 50,000 in rural areas.
- Maximum authorized train speed exceeds 110 mph.
- An average of 150 or more trains per day or 300 million gross tons per year.
- An average of 75 or more passenger trains per day in urban areas or 30 or more passenger trains per day in rural areas.
- Crossing exposure (the product of the number of trains per day and annual ADT) exceeds 1,000,000 in urban areas or 250,000 in rural areas.
- Passenger train crossing exposure (the product of the number of passenger trains per day and annual ADT) exceeds 800,000 in urban areas or 200,000 in rural areas.
- The expected accident frequency for active devices with gates, as calculated by the U.S. Department of Transportation (USDOT) Accident Prediction Formula including 5-year accident history, exceeds 0.5.
- Vehicle delay exceeds 40 vehicle hours per day (that is, 2,400 minutes).

Under the Proposed Transaction, nine at-grade crossings would have a vehicle delay of over 40 vehicle hours per day, as shown in Table 3.1-3. OEA notes, however, that three of these nine crossings (Michigan Street, Walnut Street, and Scatterfield Road) would experience vehicle delay of over 40 vehicle hours per day under the No-Action Alternative.

Table 3.1-3. Crossings with Vehicle Delays of Over 40 Vehicle Hours per Day Under the Proposed Transaction

Crossing ID	Street Crossing	County, State	City	Rail Line	Vehicle Delay per Day (vehicle hours)		
					Existing Conditions	No-Action	Proposed Transaction
538898G	Walnut Street	Delaware, IN	Muncie	Indianapolis Line Subdivision	124	128	189
539233P	Michigan Street	Marion, IN	Indianapolis	Indianapolis Line Subdivision	66	68	101
535616D	Troy Avenue	Marion, IN	Indianapolis	Indianapolis Terminal Subdivision – Louisville Secondary Branch	20	20	87
538939J	Scatterfield Road	Madison, IN	Anderson	Indianapolis Line Subdivision	50	51	76
535620T	Raymond Street	Marion, IN	Indianapolis	Indianapolis Line Subdivision	17	17	73
538955T	Madison Avenue	Madison, IN	Anderson	Indianapolis Line Subdivision	36	37	55
539230U	New York Street	Marion, IN	Indianapolis	Indianapolis Line Subdivision	33	34	51
538902U	Batavia Avenue	Delaware, IN	Muncie	Indianapolis Line Subdivision	33	33	50
535248R	Kentucky Street	Jefferson, KY	Louisville	Louisville Connection	14	14	42

These nine crossings did not exceed any other threshold criteria for grade separation. However, OEA conducted additional analyses that focused on the queue length for these nine crossings to determine whether they would block any major roads and impact the mobility of communities. The queue lengths for these nine crossings would be the same for the Proposed Transaction and the No-Action Alternative because the roadway ADT, train length, and train speed would be consistent between both conditions. However, queues would form more frequently under the Proposed Transaction because of the proposed increase in train numbers. The queue lengths and potential impacts for the nine crossings identified in Table 3.1-3 are as follows:

- *Walnut Street crossing* – The queue on Walnut Street in Delaware County, Indiana, would be approximately 1,060 feet in year 2014. This queue would not impact mobility on major roadways adjacent to the crossing. However, the Seymour Street/Walnut Street roundabout is located only 300 feet north of the crossing. The nearest major road crossing north of Walnut Street is State Highway 32, located 1,600 feet north. Although the queue could decrease the efficiency of the roundabout, the Proposed Transaction would not impact the mobility of major roadways adjacent to the Walnut Street crossing in Muncie, Indiana.
- *Michigan Street crossing* – The queue on Michigan Street in Marion County, Indiana, would be approximately 1,070 feet in year 2014. This queue would not impact mobility on major roadways adjacent to the crossing. The nearest major roadway is over 1 mile from the at-grade crossing. The Proposed Transaction would not impact the mobility of major roadways adjacent to the Michigan Street crossing in Indianapolis, Indiana.
- *Troy Avenue crossing* – The queue on Troy Avenue in Marion County, Indiana, would be approximately 1,420 feet in year 2014. This queue would not impact any major roadways to the east but would potentially impact U.S. Highway 31 to the west. The distance to the U.S. Highway 31/Troy Avenue intersection from the at-grade crossing is approximately 1,300 feet. A separate storage lane is provided for southbound left-turn traffic at U.S. Highway 31/Troy Avenue destined toward the crossing. This storage lane provides approximately 200 feet of storage and would provide additional queue storage for the southbound approach of the intersection. Traffic approaching U.S. Highway 31/Troy Avenue from the west and south that are destined toward the crossing would potentially impact traffic operations for those approaches. The Proposed Transaction would likely impact the mobility at U.S. Highway 31/Troy Avenue in Indianapolis, Indiana.
- *Scatterfield Road crossing* – The queue on Scatterfield Road in Madison County, Indiana, would be approximately 990 feet in year 2014. This queue would not impact any major roadways to the south but would potentially impact State Highway 32 to the north. The distance to the State Highway 32/Scatterfield Road intersection is approximately 425 feet. Separate storage lanes are provided for eastbound right-turn and westbound left-turn traffic at State Highway 32/Scatterfield Road destined toward the crossing. These storage lanes provide approximately 500 feet of storage and would provide additional queue storage for the eastbound and westbound approaches on State Highway 32. The Proposed Transaction would likely impact the mobility at State Highway 32/Scatterfield Road in Anderson, Indiana.

- *Raymond Street crossing* – The queue on Raymond Street in Marion County, Indiana, would be approximately 1,200 feet in year 2014. This queue would not impact mobility on major roadways adjacent to the crossing. The nearest major roadway is Shelby Avenue, which is approximately 3,200 feet east of the at-grade crossing. The Proposed Transaction would not impact the mobility of major roadways adjacent to the Raymond Street crossing in Indianapolis, Indiana.
- *Madison Avenue crossing* – The queue on Madison Avenue in Madison County, Indiana, would be approximately 950 feet. This queue would not impact mobility on major roadways adjacent to the crossing. The nearest major roadways are State Highway 32, located approximately 1,000 feet north, and State Highway 9 BR, located approximately 1,900 feet south. The Proposed Transaction would not impact the mobility of major roadways adjacent to the Madison Avenue crossing in Anderson, Indiana.
- *New York Street crossing* – The queue on New York Street in Marion County, Indiana, would be approximately 540 feet in year 2014. This queue may impact mobility at the adjacent intersection of New York Street/Pine Street, which is located approximately 225 feet west of the crossing. Pine Street is a one-way road that provides access north to Interstate 70. The northbound approach to New York Street/Pine Street includes an exclusive right-turn lane that is approximately 225 feet long. This storage lane would provide additional queue storage for the northbound approach to the intersection. The Proposed Transaction would likely impact the mobility at New York Street/Pine Street in Indianapolis, Indiana.
- *Batavia Avenue crossing* – The queue on Batavia Avenue in Delaware County, Indiana, would be approximately 510 feet in year 2014. The crossing is located on the south leg of the Batavia Avenue/State Highway 32 intersection. The queue would not impact the mobility of major roadways south of the crossing. The intersection with State Highway 32 is a signalized intersection. Separate storage lanes are provided for eastbound right-turn and westbound left-turn traffic at Batavia Avenue/State Highway 32 destined toward the crossing. These storage lanes provide approximately 450 feet of storage and would provide additional queue storage for the eastbound and westbound approaches on State Highway 32. The Proposed Transaction would likely impact the mobility at Batavia Avenue/State Highway 32 in Muncie, Indiana.
- *Kentucky Street crossing* – The queue on Kentucky Street in Jefferson County, Kentucky, would be approximately 890 feet in year 2014. This queue would not impact mobility on major roadways adjacent to the crossing. The nearest major roadways are U.S. Highway 65, located approximately 4,500 feet east, and U.S. Highway 60, located approximately 4,000 feet west. The Proposed Transaction would not impact the mobility of major roadways adjacent to the Kentucky Street crossing in Louisville, Kentucky.

Applicants have offered voluntary mitigation (VM) measures in response to these potential grade crossing delays (see Chapter 4.0, VM 23, VM 24, VM 25, VM 30, and VM 41). Specifically, Applicants propose to examine planned train operations for ways of reducing at-grade crossing

blockages (VM 24). Applicants would also cooperate with the appropriate state and local agencies and municipalities to do the following (VM 25):

- Evaluate the possibility that one or more roadways listed in Appendix B, Attachment B-3 could be closed at the point where they cross the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, or Louisville Connection to eliminate the at-grade crossings.
- Identify improvements or modifications to roadways where vehicle delays would be reduced by improving roadway capacity over the crossing through the construction of additional lanes.
- Assist in a survey of at-grade crossings to determine the adequacy of existing grade crossing signal systems, signage, roadway striping, traffic signaling inter-ties, and curbs and medians.
- Identify conditions and roadway, signal, and warning device configurations that could trap vehicles between warning device gates on or near the at-grade crossing.

Additionally, Applicants would install power switches along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection where they determine that manual switches could cause stopped trains to block grade crossings for excessive periods of time and that power switches would increase the speed of trains and reduce the likelihood of such blockages (VM 23).

In addition, OEA preliminarily recommends that Applicants be required to develop a Grade Crossing Mitigation Plan (mitigation measure [MM] 1) and to establish a Community Liaison to (1) consult with affected communities, businesses, agencies, concerned citizens, and others, and (2) cooperatively develop potential solutions to local concerns including grade crossing delays (MM 14).

No-Action Alternative

To analyze the No-Action Alternative, the number of trains per day operating on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection would remain constant through 2014. The only difference between the No-Action Alternative and the 2011 existing conditions is that the ADTs for 2011 existing conditions were increased using a 1 percent annual compounded increase for 3 years. Appendix B, Attachment B-3 presents the train data and ADT used in calculating delay under the No-Action Alternative.

To analyze the No-Action Alternative, LOS, queue lengths (feet), average delay for all vehicles (minutes per vehicle), and total vehicle traffic delay in a 24-hour period (minutes) were calculated. Appendix B, Attachment B-3 provides a summary of the traffic delay analysis for the No-Action Alternative.

Under the No-Action Alternative, the time required for a train to enter an intersection and clear the at-grade crossing is the same range as for existing conditions because the train speed and train length would remain constant. The analyzed at-grade crossings exhibit a minimal increase in the number of vehicles delayed from existing conditions due to the minimal increase in the traffic along the roadway.

3.1.1.3 Environmental Impacts of Proposed Construction on L&I Line

Proposed Transaction

Under the Proposed Transaction, construction activities on the L&I Line would include replacement of the Flatrock River Bridge and could include construction of the Elvin and Brook siding extensions. Grade crossing delay along the L&I Line was evaluated in the Draft EA. This included public at-grade crossings associated with the potential Elvin and Brook siding extensions. In the Draft EA, the analysis accounted for slower speeds through the road crossings that were located about 0.5 mile from the end of the potential siding extensions. The potential Elvin siding extension would cross one public at-grade crossing (County Road 150 South) and the potential Brook siding extension would cross three private at-grade crossings. The public at-grade crossing associated with the Elvin siding did not meet the analysis thresholds presented in Table 3.1-1 in the Draft EA and above in this Supplemental EA. As detailed in the Draft EA, there would be no impacts on grade crossing delay due to the construction activities on the L&I Line.

No-Action Alternative

Because Transaction-related construction activities would not occur under the No-Action Alternative, there would be no impacts on grade crossing delay.

3.1.2 Grade Crossing Safety

The forecasted number of accidents at at-grade crossings is expected to be affected because the number of trains operating over the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection would increase under the Proposed Transaction.

There are 176 public at-grade crossings on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection (see Appendix B, Attachment B-4). Each crossing has a unique FRA identification number that defines the location and the name of the railroad and roadway. FRA established and maintains a centralized database that provides specific information regarding each of these crossings. The unique identification numbers and centralized database allow communities, railroads, states, and the federal government to evaluate, plan, and implement safety improvements. Information in the FRA database for each crossing includes the number of tracks, number of vehicle travel lanes, type of safety warning devices, number of trains, ADT count, and posted speed of the roadway and tracks.

Grade crossing safety at the 176 public at-grade crossings on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection was analyzed using FRA guidelines along with the following additional data sources:

- FRA's grade-crossing database (FRA 2014a) and public crossing accident prediction system (FRA 2014b)
- CSXT information on train traffic
- Forecasted ADT information

For the discussion of the affected environment, OEA compiled historical (that is, the 5-year period evaluated in the Draft EA, which was years 2006 through 2010) accident data and characteristics for the public at-grade crossings along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, and the calculated risk of accidents at at-grade crossings. The calculations relied on a methodology developed by FRA. The report titled *Summary of the DOT Rail-Highway Crossing Resource Allocation Procedure – Revised* (Farr 1987) describes this method. The method calculates the risk of an accident occurring at an at-grade crossing based on the characteristics of the grade crossing and statistical information on historical accident experience. The historical data are based on FRA records of accidents, along with the inventory of relevant characteristics of the crossings.

The train count information used in the analysis requires that the analyst specify the number of day trains, the number of night trains, and the number of switching trains. Based on guidance from Applicants, OEA assumed that the trains are 50 percent day trains, 50 percent night trains, and 0 percent switching trains. It is OEA's understanding that this is consistent with how the railroads, which are the source of the train count information, normally report their information to FRA (that is, assume an equal distribution between day and night).

To accurately compare predicted accidents under the Proposed Transaction to the predicted accidents under existing conditions, the same ADT counts (based on 2011 volumes) were used for the Proposed Transaction and existing conditions. The accident prediction formula includes all types of motorized vehicles, including cars, trucks, buses, motorcycles, and any other motorized roadway users. However, the prediction formula does not include a breakdown of accident by type of vehicle.

The crossings were further analyzed to identify those that would have a predicted accident frequency of greater than 0.15 accidents per year. This is the equivalent of one accident every 7 years (that is, one divided by 0.15) and is used as a threshold indicator that the crossing should be considered for an upgrade of its warning devices. If warning devices are already considered sufficient, additional measures such as median barriers, active advance signing, removal of sight obstructions, nighttime lighting, geometric modifications to the roadway approaches, special signing, or other measures that could lower the frequency of accidents should be considered. Use of this threshold indicator is consistent with past STB analysis, such as the *Canadian National Railway Company and Grand Trunk Corporation—Control—EJ&E West Company*, STB Finance Docket No. 35087 (STB served December 24, 2008) (the *CN December 24 Decision*). The indicator identifies crossings that are predicted to have higher accident frequencies and where the use of upgraded warning or safety devices could be warranted.

The analysis of the predicted accidents at each crossing for this Supplemental EA also looked for specific crossings that had a change in predicted accident frequency of 0.05 accidents per year, which is the equivalent of one accident every 20 years, from the existing conditions to the conditions under the Proposed Transaction. This change in frequency is not considered an acceptable or unacceptable change but an indicator of crossings that are predicted to show a potentially significant change. Use of this change in predicted accident rate is consistent with past STB analysis, such as the *CN December 24 Decision*. This threshold change in predicted accidents is intended to highlight those crossings that would experience a potentially significant increase in predicted accidents because of the Proposed Transaction. Where there is a potentially

significant change in predicted accident frequency, there could be a corresponding change in grade crossing safety.

3.1.2.1 Affected Environment

Of the 176 existing public at-grade crossings, 26 crossings experienced accidents during the 5-year baseline period from 2006 through 2010 (see Appendix B, Attachment B-4). Of these 26 crossings, 19 crossings had one accident, five crossings had two accidents, and two crossings had three accidents. Two of the 26 crossings that experienced an accident between 2006 and 2010 exceeded a predicted accident frequency of greater than 0.15 accidents per year: 34th Street and Franklin Road, both in Marion County, Indiana.

3.1.2.2 Environmental Impacts of Proposed Operational Changes

Proposed Transaction

Two public at-grade crossings on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, would exceed a predicted accident frequency of 0.15 accidents per year (that is, one accident every 7 years) under the Proposed Transaction. These are the same two crossings at34th Street and Franklin Road in Marion County, Indiana, that exceed the predicted accident frequency of 0.15 accidents per year under existing conditions. Under the Proposed Transaction, the accident frequency at the 34th Street crossing would increase by only 0.0093 accidents per year (that is, one accident in 108 years) and at the Franklin Road crossing by only 0.0073 accidents per year (that is, one accident in 137 years). None of the 176 at-grade crossings would experience a change in predicted accident frequency that meets or exceeds the threshold criterion of 0.05 accidents per year (that is, one accident every 20 years) under the Proposed Transaction.

The potential increase in predicted accidents on an individual crossing basis is not significant enough to require or suggest site-specific mitigation. Nevertheless, CSXT has offered voluntary mitigation (see Chapter 4.0, VM 26 through VM 32), which offers a preemptive and focused approach to inform the public of the grade crossing safety issues and reach out to the schools and communities along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection. Under the voluntary mitigation measures, Applicants would coordinate with the appropriate state departments of transportation, counties, and affected communities along the three rail lines to install temporary notification signs or message boards, where warranted, in railroad ROW at at-grade crossings, clearly advising motorists of the increase in train traffic on affected rail lines (VM 26). The format and lettering of these signs would comply with the Federal Highway Administration (FHWA)'s *Manual on Uniform Traffic Control Devices* (FHWA 2012) and would be in place no less than 30 days before and 6 months after the Applicants initiate operational changes associated with the Proposed Transaction (VM 26).

Additionally, within 6 months of acquisition of a freight easement over the L&I Line, Applicants would cooperate with the Indiana Department of Transportation (INDOT), Ohio Department of Transportation (ODOT), Kentucky Transportation Cabinet (KYTC), and other appropriate local agencies to coordinate a review of corridors surrounding public at-grade crossings to examine safety and adequacy of the existing warning devices, and identify remedies to improve safety for highway vehicles (VM 27). Also within 6 months of Applicants initiating operational changes

associated with the Proposed Transaction, Applicants would cooperate with school and park districts to identify public at-grade crossings where additional pedestrian warning devices could be warranted (VM 28).

For up to 3 years from the date that Applicants' initiate operational changes associated with the Proposed Transaction, CSXT will make Operation Lifesaver programs available to communities, schools, and other appropriate organizations located along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection VM 29). In addition, for each of the public at-grade crossings along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, CSXT would provide and maintain permanent signs prominently displaying both a toll-free telephone number and a unique grade-crossing identification number in compliance with FHWA regulations (23 C.F.R. Part 655). The toll-free number would enable drivers to report accidents, malfunctioning warning devices, stalled vehicles, or other dangerous conditions, and would be answered 24 hours per day by the Applicants' personnel (VM 30).

Applicants would continue ongoing efforts with community officials to identify elementary, middle, and high schools within 0.5 mile of the ROW along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, and would provide, upon request, informational materials concerning railroad safety to such identified schools (VM 31). Applicants would also consult with state departments of transportation and other appropriate agencies, and would abide by the reasonable requirements of INDOT, ODOT, and KYTC prior to constructing, relocating, upgrading, or modifying public at-grade crossing warning devices on the three rail lines (VM 32).

No-Action Alternative

Under the No-Action Alternative, there would be no changes in the rail traffic over the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, and the accident frequency would be expected to remain unchanged from existing conditions. The 34th Street and Franklin Road crossings in Marion County, Indiana, which had accident frequencies greater than 0.15 accidents per year, would continue to exhibit higher accident frequencies under the No-Action Alternative.

3.1.2.3 Environmental Impacts of Proposed Construction on L&I Line

Proposed Transaction

Under the Proposed Transaction, construction activities on the L&I Line would include replacement of the Flatrock River Bridge and could include construction of the Elvin and Brook siding extensions. Grade crossing safety for public at-grade crossings along the L&I Line was evaluated in the Draft EA. As calculated for existing conditions, including actual accidents on the L&I Line, no public crossing would meet or exceed a predicted accident frequency of 0.15 accidents per year under the Proposed Transaction. Additionally, no individual crossing under the Proposed Transaction, taking into account the change in trains, would experience a change in predicted accident frequency that meets or exceeds 0.05 accidents per year.

No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, grade crossing safety conditions would not be impacted.

3.1.3 Hazardous Materials Transportation Safety

Several federal agencies have established requirements for the transportation of hazardous materials on rail lines, including procedures for planning for transportation incidents (releases) and responding to them. These agencies include USDOT, the U.S. Environmental Protection Agency (USEPA), and the Occupational Safety and Health Administration (OSHA). FRA also has authority to ensure the safe movement of rail traffic.

USDOT regulates the source of the hazardous materials risk, the types of containers that hold hazardous materials, such as railcars, and the way these containers are managed. It also oversees signaling, train control, and track safety. The objective is to maximize safety and minimize risks to human health and the environment generally. Federal regulations do not include requirements for buffer corridors or safe distances along rail lines with respect to particular types of structures, such as residences, schools, or hospitals. In practice, hazardous materials are routinely transported along rail lines and highways across the U.S., through areas with many types of land uses, including industrial, commercial, and residential, as well as through environmentally sensitive regions.

Freight railroads have established recommended operating practices for the transportation of hazardous materials pursuant to Association of American Railroads (AAR) *Recommended Railroad Operating Practices for Transportation of Hazardous Materials,* Circular No. OT-55-N (CPC-1258) (AAR 2013). Among the operating practices is the designation of "key trains" and "key routes." A key train is defined as any train with one or more of the following (AAR 2013):

- "One tank car load of Poison or Toxic Inhalation Hazard[2] (PIH or TIH) (Hazard Zone A, B, C, or D), anhydrous ammonia (UN1005), or ammonia solutions (UN3318)
- 20 car loads or intermodal portable tank loads of any combination of hazardous material
- One or more car loads of Spent Nuclear Fuel (SNF), High.Level Radioactive Waste (HLRW)"

A key route is defined as a route "with a combination of 10,000 car loads or intermodal portable tank loads of hazardous materials, or a combination of 4,000 car loadings of PIH or TIH (Hazard zone A, B, C, or D), anhydrous ammonia, flammable gas, Class 1.1 or 1.2 explosives, environmentally sensitive chemicals, Spent Nuclear Fuel (SNF), and High Level Radioactive Waste (HLRW) over a period of one year" (AAR 2013).

Key trains and key routes must meet safety requirements defined in *Recommended Railroad Operating Practices for Transportation of Hazardous Materials,* Circular No. OT-55-N (CPC-1258) (AAR 2013).

[2] Poison Inhalation Hazard (PIH) and Toxic Inhalation Hazard (TIH) are used interchangeably and refer to the same list of chemicals.

USEPA regulations address spill prevention and cleanup and mostly pertain to fixed facilities rather than transport activities. However, USEPA regulations in 40 C.F.R. Part 263 are applicable to transporters of hazardous waste, and specify immediate response actions, discharge cleanup, and other requirements for transporters of hazardous waste. Finally, OSHA regulations in 29 C.F.R. § 1910.120 address hazardous waste operations and emergency response, and specify emergency response and cleanup operations for releases of hazardous substances and substantial threats of such releases.

3.1.3.1 Affected Environment

Based on information from the Applicants, the Indianapolis Line Subdivision is considered a key route, and it handles approximately 32,700 carloads of hazardous materials per year. The Indianapolis Terminal Subdivision – Louisville Secondary Branch and Louisville Connection are not considered key routes.

None of CSXT's trains moving over the L&I Line currently carry hazardous material or TIH/PIH because CSXT is prohibited from handling such commodities under its agreements with L&I. L&I transported 14 carloads of TIH material on the L&I Line in 2010. Other hazardous materials totaled 187 carloads in 2010. Based on the AAR recommendations noted above, the L&I Line is not considered to be a key route.

3.1.3.2 Environmental Impacts of Proposed Operational Changes

Proposed Transaction

Pursuant to its agreements with L&I, CSXT states that it would not move railcars containing hazardous materials over the L&I Line under the Proposed Transaction. The additional trains that would be rerouted on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection under the Proposed Transaction would not be carrying hazardous materials because the L&I agreement restrictions. Therefore, the number of hazardous material carloads transported over the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection would not increase under the Proposed Transaction. The Proposed Transaction would not result in an increase in the transport of hazardous materials and would not have any impacts on the transportation of hazardous materials. It is anticipated that L&I would continue to move a small volume of hazardous materials on the L&I Line. The potential for a release of hazardous materials has historically been, and should continue to be, extremely minimal because of existing regulatory requirements and best management practices (BMPs) employed. Nevertheless, Applicants have volunteered eight mitigation measures (see Chapter 4.0, VM 33 through VM 40) related to hazardous materials shipments.

No-Action Alternative

Under the No-Action Alternative, there would be no additional shipments of hazardous materials over the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, or Louisville Connection. L&I would continue to carry minimal amounts of hazardous materials over the L&I Line. The potential for a release of hazardous materials would continue to be extremely minimal.

3.1.3.3 Environmental Impacts of Proposed Construction on L&I Line

Proposed Transaction

Under the Proposed Transaction, construction activities on the L&I Line would include replacement of the Flatrock River Bridge and could include construction of the Elvin and Brook siding extensions. The transport of hazardous materials along the L&I Line was evaluated in the Draft EA. Based on AAR recommendations, the L&I Line is not considered to be a key route. According to CSXT, it would not move railcars containing hazardous materials over the L&I Line under the Proposed Transaction. Therefore, the Proposed Transaction would not impact the transportation of hazardous materials.

No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, hazardous materials transportation safety would not be impacted.

3.1.4 Emergency Response

Historically, the communities in the project area developed along existing rail lines. Emergency service providers within these communities had to grow around and adapt to rail traffic. Emergency service providers are defined as police stations, fire stations (including emergency medical services), and hospitals or medical centers with 24-hour medical/trauma care or emergency rooms, and the employees who provide emergency services at these facilities. Typically, emergency service providers have factored rail traffic into their existing procedures and operations. Moreover, as these facilities developed and expanded their coverage areas over time, they had to adapt to fluctuating conditions. Varying dispatch procedures, altering service routes, building new facilities, and establishing mutual aid agreements with neighboring communities are some ways that emergency service providers adapt to fluctuating conditions, including the existence of any trains. While the presence of rail traffic is not a new factor to which emergency responders within the project area would need to adapt, the potential increase in train traffic from the Proposed Transaction could require additional planning. Therefore, this analysis considered delay in emergency response due to train traffic increases under the Proposed Transaction.

3.1.4.1 Affected Environment

There are 176 public at-grade crossings on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection. Under current operating conditions, these crossings are blocked for 2.0 to 8.7 minutes by each passing train. Although trains have the potential to affect access for emergency responders, the communities along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection maintain mutual aid agreements and other forms of intergovernmental agreements to contact each other in the event of a blocked at-grade crossing.

3.1.4.2 Environmental Impacts of Proposed Operational Changes

Proposed Transaction

Under the Proposed Transaction, the speed and length of trains on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection would be unchanged from existing conditions; consequently, passing trains would continue to block public at-grade crossings located on these three rail lines for 2.0 to 8.7 minutes. However, the number of trains passing each crossing would increase. Given the increase in passing trains, OEA evaluated the crossings with the projected maximum delays and the potential impacts on emergency service providers.

Eight crossings would be exposed to the maximum estimated delay of 8.7 minutes, as shown in Table 3.1-4.

Table 3.1-4. Crossings with Maximum Estimated Delay of 8.7 Minutes

Crossing ID	Street Crossing	County, State	City	Rail Line
538898G	Walnut Street	Delaware, IN	Muncie	Indianapolis Line Subdivision
477174R	Jefferson Street	Delaware, IN	Muncie	Indianapolis Line Subdivision
477173J	Elm Street	Delaware, IN	Muncie	Indianapolis Line Subdivision
477171V	Monroe Street	Delaware, IN	Muncie	Indianapolis Line Subdivision
535621A	Caven Street	Marion, IN	Indianapolis	Indianapolis Terminal Subdivision – Louisville Secondary Branch
535624V	Terrace Avenue	Marion, IN	Indianapolis	Indianapolis Terminal Subdivision – Louisville Secondary Branch
535248R	Kentucky Street	Jefferson, KY	Louisville	Louisville Connection
344345W	Shipp Street	Jefferson, KY	Louisville	Louisville Connection

When the at-grade crossings at Walnut Street, Jefferson Street, Elm Street, and Monroe Street in Muncie, Indiana, are blocked, emergency responders could use the grade-separated crossing at Madison Street. The grade-separated crossing is located 1,600 feet east of Walnut Street, 1,000 feet east of Jefferson Street, 450 feet east of Elm Street, and 300 feet west of Monroe Street. The at-grade crossing at Caven Street in Indianapolis, Indiana, appears to provide access to an abandoned industrial/commercial site located east of U.S. Highway 31. The delay at Caven Street would have no impact on emergency responders because the crossing is located near the end of a street with no outlet. As an alternative route to the at-grade crossing at Terrace Avenue in Indianapolis, emergency responders could use the grade-separated crossing at Orange Street, located approximately 800 feet north of Terrace Avenue. When the at-grade crossing at Kentucky Street in Louisville, Kentucky, is blocked, emergency responders could take the grade-separated crossing at Oak Street, located approximately 1,700 feet to the south. When the at-grade crossing at Shipp Street in Louisville is blocked, emergency responders could take the grade-separated crossing at Hill Street, located approximately 700 feet to the north.

OEA also used a screening process to evaluate the potential effects of blocked at-grade crossings on emergency service providers. In the first step of the screening process, OEA identified at-grade crossings at which vehicle delay would increase by an average of 30 seconds or more per vehicle and 30 minutes or more per day for all vehicles (total vehicle delay in a 24-hour period, expressed in minutes) under the Proposed Transaction. OEA believes that increasing the number of trains could lead to longer delays, which can potentially cause an adverse effect on emergency response times. The same eight crossings detailed in Table 3.1-4, above, meet these criteria.

Of the eight crossings that would experience an increase in delay by 30 seconds or more per vehicle and by 30 minutes or more per day for all vehicles, seven crossings are located within 1 mile of a grade-separated crossing (the exception is Caven Street, which is located near the end of a street with no outlet). The access provided by the grade-separated crossings would provide alternative access for emergency responders when a passing train is blocking these seven at-grade crossings. Therefore, the Proposed Transaction would not have a significant impact on emergency response.

No-Action Alternative

Under the No-Action Alternative, there would be no projected change in train traffic. Consequently, there would be no change in delay to emergency responders due to train traffic at the at-grade crossings along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection. The No-Action Alternative would not affect existing emergency response.

3.1.4.3 Environmental Impacts of Proposed Construction on L&I Line

Proposed Transaction

Under the Proposed Transaction, construction activities on the L&I Line would include replacement of the Flatrock River Bridge and could include construction of the Elvin and Brook siding extensions. Impacts on emergency service providers was evaluated along the L&I Line in the Draft EA. Five crossings along the L&I Line met the screening process detailed in the Draft EA in Section 3.1.4.2. However, none of these crossings are associated with the potential Elvin and Brook siding extensions, and no impacts on emergency response would be anticipated.

No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, emergency response would not be impacted.

3.1.5 Comments in Response to OEA's Consultation Letter

Prior to preparing the Supplemental EA, OEA sent a preliminary consultation letter to federal, state, and local agencies; tribal organizations; and other potentially interested parties. The letter solicited input on the scope of study for the Supplemental EA, potential mitigation, and other issues. As discussed below, two communities expressed transportation-related concerns.

The Village of Versailles, Ohio, expressed concerns about the proposed increase in train traffic and the potential impact on grade crossing delay, grade crossing safety, and emergency response. There are nine public at-grade crossings in the Village of Versailles. Five of the nine crossings

met the transportation analysis thresholds presented in Section 3.1.1.2. All five crossings would experience LOS A under the Proposed Transaction, with queue lengths ranging from 30 to 230 feet. Under the Proposed Transaction, the only crossing that could impact the mobility of major roadways would be the crossing at Northwest Street. The queue length at Northwest Street is 230 feet, and the Northwest Street crossing is located approximately 190 feet north of the Northwest Street/ W. Main Street intersection. The queue length at Northwest Street could impact the mobility of W. Main Street. Applicant has offered voluntary mitigation measures (see Chapter 4.0, VM 23, VM 24, VM 25, VM 30, and VM 41) in response to the potential grade crossing delays. In addition, OEA preliminarily recommends that Applicants be required to fulfill MM 1, 2, and 14.

With regard to the grade crossing safety analysis, two crossings in Versailles (Steffin Street and E. Main Street) each experienced one accident between 2006 and 2010. However, the two crossings did not meet or exceed a predicted accident frequency of 0.15 accidents per year under the Proposed Transaction, and the crossings would not experience a change in accident frequency that meets or exceeds 0.05 accidents per year.

With regard to impacts on emergency response in the Village of Versailles, it would take approximately 2 minutes for a train to pass the at-grade crossings under the Proposed Transaction. This is at the low end of the range for all at-grade crossings along the Indianapolis Line Subdivision. In addition, none of the crossings met the thresholds used in the screening process for impacts on emergency responders (that is, an increase by 30 seconds or more per vehicle and 30 minutes or more per day for all vehicles). Consequently, emergency response in the Village of Versailles would not be significantly impacted under the Proposed Transaction.

Concerns about impacts from the Proposed Transaction were also received from Union City, Ohio. The city is concerned with the impacts on emergency response. It would take approximately 2 minutes for trains to pass the four at-grade crossings in Union City. Of the four crossings, none were determined to see an increase by 30 seconds or more per vehicle and 30 minutes or more per day for all vehicles under the Proposed Transaction. Consequently, the Proposed Transaction is not anticipated to have a significant impact on emergency response in Union City.

3.2 COMMUNITY RESOURCES AND LAND USE

This section discusses the affected environment and potential environmental impacts of the Proposed Transaction and the No-Action Alternative on community resources and land use in the project area. To evaluate impacts of proposed operational changes, a corridor extending approximately 0.25 mile on either side of the railroad centerline of the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection was defined as the study area. To evaluate potential impacts of proposed construction activities on the L&I Line, the study area includes a corridor extending approximately 0.25 mile from the centerline of the L&I Line in the areas of the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement. Community resources and land use in the study area were evaluated using the latest available aerial photography as well as information from available comprehensive plans, land use plans, and zoning maps from the political jurisdictions (for example, cities and counties) in the study area. The boundaries of the political jurisdictions were determined from 2013 U.S. Census reference maps (U.S. Census Bureau 2013).

3.2.1 Community Resources

As defined in the Draft EA, community resources include fire stations, police stations, municipal buildings, medical facilities, places of worship, cemeteries, libraries, schools, day care centers, retirement homes, parks, roadways, commuter rail, bike paths and trails, and pedestrian sidewalks and trails.

3.2.1.1 Affected Environment

The Indianapolis Line Subdivision traverses Indianapolis, fifteen other cities and towns, and fifteen townships[3] in five counties in Indiana, as well as five cities and towns and nine townships in two counties in Ohio, as shown in Table 3.2-1. The rail line passes through a mix of urban and rural areas. Existing public facilities in this portion of the study area include fire stations, police stations, municipal buildings, medical facilities, places of worship, cemeteries, libraries, colleges, public and private schools, and state and local parks.

The Indianapolis Terminal Subdivision – Louisville Secondary Branch traverses a well-developed urban area in the City of Indianapolis (see Table 3.2-1). Existing public facilities in this portion of the study area include fire stations, police stations, municipal buildings, medical facilities, places of worship, libraries, public and private schools, a senior nursing facility, and local parks. A proposed commuter transit system (Indy Connect), which would include the use of bus and light rail service, is being studied by the Federal Transit Administration (FTA), INDOT, and Indy Connect. Indy Connect is a partnership of the Indianapolis Metropolitan Planning Organization (MPO), Central Indiana Regional Transportation Authority (CIRTA), and IndyGo (Indy Connect 2014a). The ongoing reviews of Indy Connect include the potential use of the Indianapolis Terminal Subdivision – Louisville Secondary Branch and the L&I Line as connections to Indy Connect (Indy Connect 2014b). The Indy Connect system is planned to begin operation in 2021 (Indy Connect 2014b).

Table 3.2-1. Changes in Rail Operations Under the Proposed Transaction by Rail Line and Jurisdiction

Rail Line	Length (miles)	Existing Trains Per Day	Proposed Trains Per day	Change	Jurisdictions
Indianapolis Line Subdivision	120.1	23	34	+11	***Marion County, IN*** Indianapolis Lawrence Center Township Warren Township Lawrence Township ***Hancock County, IN*** McCordsville Fortville Vernon Township

[3] Townships are geographic and political subdivisions of a county, and are a local unit of government.

Rail Line	Length (miles)	Existing Trains Per Day	Proposed Trains Per day	Change	Jurisdictions
					Madison County, IN Ingalls Pendleton Anderson Chesterfield Green Township Fall Creek Township Anderson Township Union Township ***Delaware County, IN*** Daleville Yorktown Muncie Selma Salem Township Yorktown Township Center Township Liberty Township ***Randolph County, IN*** Parker City Farmland Winchester Union City Monroe Township White River Township Wayne Township ***Darke County, OH*** Union City Ansonia Versailles Jackson Township Brown Township Richland Township Wayne Township ***Shelby County, OH*** Russia Sidney Loramie Township Washington Township Cynthian Township Turtle Creek Township Clinton Township

Rail Line	Length (miles)	Existing Trains Per Day	Proposed Trains Per day	Change	Jurisdictions
Indianapolis Terminal Subdivision – Louisville Secondary Branch	4.0	4	17	+13	***Marion County, IN*** Indianapolis Center Township Perry Township
Louisville Connection	2.7	6	18	+12	***Jefferson County, KY*** Louisville
L&I Line at potential Elvin and Brook siding extensions and proposed Flatrock River Bridge replacement	4	2	17	+15	***Johnson County, IN*** Franklin Franklin Township Needham Township ***Bartholomew County, IN*** Columbus Columbus Township

Source: U.S. Census Bureau, 2013, 2013 Topologically Integrated Geographic Encoding and Referencing (TIGER)/Line Shapefiles, Counties and Equivalents, County Subdivisions, and Places, August 22, accessed April 25, 2014 and May 22, 2014, http://www.census.gov/geo/maps-data/data/tiger-line.html.

In addition to the municipalities in Indiana, there are other initiatives such as the *Indiana State Rail Plan*, Industrial Rail Service Fund, Build Indiana Fund, and U.S. Department of Agriculture (USDA) Rural Development Indiana that could affect the Proposed Transaction rail segments and public facility planning in the study area.

The portions of the L&I Line in the study area traverse two cities in two counties in Indiana, as shown in Table 3.2-1. The route traverses mostly urban areas. A library, a college and stadium, a public school, a retirement home, a city park, a cultural and recreational center, and an aquatic center are adjacent to or near the potential Elvin siding extension in Franklin, Indiana. A place of worship is near the potential Brook siding extension in Columbus, Indiana.

The southern half of the proposed Flatrock River Bridge replacement is within Noblitt Park, a 46-acre recreation facility in Columbus, Indiana, and crosses over the Columbus People Trail. The Columbus People Trail, a 20-mile trail network through Columbus, traverses Noblitt Park and connects to several other parks and recreation facilities throughout Columbus.

The Louisville Connection traverses a well-developed urban area in the City of Louisville, Kentucky. Existing public facilities in this portion of the study area include a fire station, places of worship, libraries, the University of Louisville, public and private schools, and local parks.

3.2.1.2 Environmental Impacts of Proposed Operational Changes

Potential impacts of proposed operational changes on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection on community resources were evaluated and are discussed below.

Proposed Transaction

Physical access to community resources would not change by implementing the Proposed Transaction. In addition, community resources would not be displaced by implementing the Proposed Transaction. Potential changes in access time to community resources are discussed in Section 3.1, Transportation. Potential noise and vibration impacts on community resources adjacent to or near the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection are discussed in Section 3.8, Noise and Vibration. The Indy Connect rail transit system is in the planning stages; potential impacts on this system are discussed in Section 3.12, Cumulative Effects.

No-Action Alternative

Because operational changes associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on community resources are not anticipated as a result of the No-Action Alternative.

3.2.1.3 Environmental Impacts of Proposed Construction on L&I Line

Proposed Transaction

The Proposed Transaction would occur within existing ROW. Physical access to community resources would not permanently change as a result of the Proposed Transaction. Access to some facilities could be temporarily affected by potential construction of the Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge. The portion of the Columbus People Trail that passes under the Flatrock River Bridge likely would be temporarily closed during the approximately 2-week construction period during replacement of the Flatrock River Bridge. However, the Columbus People Trail also crosses under the L&I Line approximately 1,000 feet south of the Flatrock River Bridge, and bicycle and pedestrian traffic could be rerouted to this crossing. Track improvements could potentially affect the alternate crossing location, but not likely at the same time as the bridge replacement; regardless, most of the trail system could continue to be used during construction activities. Potential traffic delays affecting access to community resources are discussed in Section 3.1, Transportation.

No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on community resources would not be expected under the No-Action Alternative.

3.2.2 Land Use

NEPA regulations, as well as the Board's regulations implementing NEPA, require an analysis of the effects of the Proposed Transaction on land use and on the consistency of the proposed project with existing land use plans.

3.2.2.1 Affected Environment

In the portion of the study area where proposed operational changes would occur under the Proposed Transaction (that is, along the Indianapolis Line Subdivision, Indianapolis Terminal

Subdivision – Louisville Secondary Branch, and Louisville Connection), the following eleven regional planning agencies manage and plan for different aspects of land use:

- City of Indianapolis and Marion County Department of Metropolitan Development
- Indianapolis MPO
- Hancock County Area Plan Commission
- Madison County Planning Commission
- Madison County Council of Governments
- Delaware-Muncie Metropolitan Plan Commission
- Randolph County Area Planning Commission
- Darke County Planning and Zoning
- Shelby County Regional Planning Commission
- City of Louisville Metro Planning & Design Services Division
- Kentuckiana Regional Planning and Development Agency

In addition, six municipalities in Indiana (McCordsville, Fortville, Ingalls, Anderson, Pendleton, and Chesterfield) and two municipalities in Ohio (Union City and Versailles) have local jurisdiction over planning and zoning. Digital land use maps and information from these agencies were used to determine existing and proposed land use for the study area. Comprehensive land use plans were available for the following four counties in the study area: Marion, Madison, and Delaware counties in Indiana and Jefferson County in Kentucky. Comprehensive land use plans were not available for the remaining counties in the study area: Hancock and Randolph counties in Indiana and Darke and Shelby counties in Ohio.

Land use in the study area is a mix of residential, commercial, and industrial uses in urban areas and agricultural uses in rural areas. Several historic districts are adjacent to the Indianapolis Line Subdivision and Indianapolis Terminal Subdivision – Louisville Secondary Branch in Marion County, and adjacent to the Louisville Connection in Louisville (City of Indianapolis and Marion County no date [n.d.]; Louisville/Jefferson County Information Consortium 2014).[4]

The *Indianapolis Metropolitan Planning Area 2035 Long-Range Transportation Plan* discusses freight rail's important role in the region, and the preservation and enhancement of efficient and safe freight movement in the Metropolitan Planning Area (Indianapolis MPO 2011). The comprehensive land use plan for Madison County calls for supporting and retaining existing industry and infrastructure, including rail transportation facilities, and the goal of encouraging additional growth and creating a more viable and versatile multi-modal transportation network through promoting the region's strong rail infrastructure and existing resources (Madison County Planning Commission 2001). The *Muncie-Delaware County Comprehensive Plan* is supportive of rail infrastructure but expresses concern for increased congestion and accident frequency in the vicinity of at-grade crossings (HNTB 2000). Currently, four of the public at-grade crossings in Muncie (Walnut Street, Jefferson Street, Elm Street, and Monroe Street) experience congestion, and four of the public at-grade crossings in Delaware County outside of Muncie have been the site of an accident in the last year (see Section 3.1, Transportation).

[4] This section of the EA considers historic districts only to the extent that they are defined on land use maps. For a complete evaluation of historic and archaeological resources, see Section 3.10, Cultural Resources.

In the portion of the study area where proposed construction would occur under the Proposed Transaction (that is, along the L&I Line near the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement), the following five regional planning agencies manage and plan for different aspects of land use:

- Indianapolis MPO
- Johnson County Planning and Zoning
- Franklin Planning and Engineering
- Columbus Area MPO
- City of Columbus Planning Department

Land use along the L&I Line in Franklin is primarily residential, with an area of public use, including a library, a college, and recreation facilities, near the northern end of the proposed Elvin siding extension (City of Franklin 2013). Land use along the L&I Line in Columbus and Bartholomew County is primarily commercial and industrial, with some residential, agricultural, and public uses, including Noblitt Park (Johnson County 2012; City of Columbus – Bartholomew County Planning Department 2002).

The Johnson County comprehensive plan, *Plan the Land 2030*, states that businesses are attracted to areas that have easy access to rail because many companies are returning to rail for shipping goods between locations (Johnson County 2011). The Columbus, Indiana, Comprehensive Plan, Land Use Plan Element, titled *Designing Our Future: A Community Planning Process*, and the "Bartholomew County Comprehensive Plan Element II – Land Use Plan" both encourage the development of industrial business parks along existing rail lines (City of Columbus – Bartholomew County Planning Department 2002 and 2003). The Columbus Area Metropolitan Planning Organization (CAMPO) *Transportation Plan 2012 – 2037* also discusses the importance of the L&I Line to area industry and notes that the proposed partnership with CSXT "represents a giant leap forward in the capability of the L&I" (CAMPO 2011).

3.2.2.2 Environmental Impacts of Proposed Operational Changes

Proposed Transaction

Potential impacts on existing land use, future land use and zoning, planned development, development trends, and special land use designations in the study area were considered. The Proposed Transaction would accommodate continuing freight rail use in a more efficient manner and would be consistent with historic, current, and future land uses and land use plans. The Proposed Transaction would not impact or conflict with special land use designations. Therefore, the Proposed Transaction is not anticipated to adversely affect land use in the study area.

No-Action Alternative

Because operational changes associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on land use are not anticipated as a result of the No-Action Alternative.

3.2.2.3 Environmental Impacts of Proposed Construction on L&I Line

Proposed Transaction

Construction to implement the Proposed Transaction would be limited to existing ROW. Construction of the new Flatrock River Bridge would temporarily affect a portion of Noblitt Park, but the impacts would be temporary, limited to the duration of construction (that is, approximately 2 weeks). Land use would not be permanently impacted.

No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on land use would not be expected under the No-Action Alternative.

3.3 SOCIOECONOMICS

The Draft EA considered potential impacts from expenditures and employment in local economies and changes in population or demand for housing and public services along the L&I Line. This section of the Supplemental EA discusses the affected environment and potential environmental impacts of the Proposed Transaction and the No-Action Alternative on socioeconomic conditions in the project area. To analyze impacts of proposed operational changes, the study area consists of the eight counties traversed by the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection. The study area includes Marion, Hancock, Madison, Delaware, and Randolph counties in Indiana; Darke and Shelby counties in Ohio; and Jefferson County, Kentucky. For the purpose of analyzing impacts of proposed construction activities on the L&I Line, the study area includes areas identified along the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement in Johnson and Bartholomew counties, Indiana.

3.3.1 Affected Environment

For the portion of the study area where proposed operational changes would occur under the Proposed Transaction (that is, along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection), the population change from 2000 to 2010 for counties and municipalities is shown in Table 3.3-1. The census data generally show variable population changes throughout this portion of the study area. Marion, Hancock, Madison, and Delaware counties are part of the Indianapolis-Carmel-Muncie Combined Statistical Area (CSA). Darke and Shelby counties are part of the Dayton-Springfield-Sidney CSA (U.S. Census Bureau 2013).[5] Generally, the counties and municipalities in this portion of the study area associated with metropolitan areas, especially those along major transportation routes, are growing, while the populations of more rural, isolated areas are shrinking.

[5] Metropolitan Statistical Areas (MSAs) have at least one urban area of 50,000 or more in population, and adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties. If criteria are met, MSAs become components of Combined Statistical Areas.

Table 3.3-1. Population by Jurisdictions in the Study Area Where Proposed Operational Changes Would Occur

Jurisdiction	2000 Population	2010 Population	Percent Change
Marion County, Indiana[a]	**860,454**	**903,393**	**4.99**
Indianapolis, Indiana	781,870	820,445	4.93
Lawrence, Indiana	38,915	46,001	18.21
Hancock County, Indiana	**55,391**	**70,002**	**26.38**
McCordsville, Indiana	1,134	4,797	323.02
Fortville, Indiana	3,444	3,929	14.08
Madison County, Indiana	**133,358**	**131,636**	**-1.29**
Ingalls, Indiana	1,168	2,394	104.97
Pendleton, Indiana	3,873	4,253	9.81
Anderson, Indiana	59,734	56,129	-6.04
Chesterfield, Indiana	2,969	2,547	-14.21
Delaware County, Indiana	**118,769**	**117,671**	**-0.92**
Daleville, Indiana	1,658	1,647	-0.66
Yorktown, Indiana	4,785	9,405	96.55
Muncie, Indiana	67,430	70,085	3.94
Selma, Indiana	880	866	-1.59
Randolph County, Indiana	**27,401**	**26,171**	**-4.49**
Parker City, Indiana	1,416	1,419	0.21
Farmland, Indiana	1,456	1,333	-8.45
Winchester, Indiana	5,037	4,935	-2.03
Union City, Indiana	3,622	3,584	-1.05
Darke County, Ohio	**53,309**	**52,959**	**-0.66**
Union City, Ohio	1,767	1,666	-5.72
Ansonia, Ohio	1,145	1,174	2.53
Versailles, Ohio	2,589	2,687	3.79
Shelby County, Ohio	**47,910**	**49,423**	**3.16**
Russia, Ohio	551	640	16.15
Sidney, Ohio	20,211	21,229	5.04
Jefferson County, Kentucky	**693,604**	**741,096**	**6.85**
Louisville/Unincorporated Jefferson County, Kentucky[b]	406,745	597,337	46.90

Source: U.S. Census Bureau, 2011, 2010 Census Summary File 1, Table P1 – Total Population, August 25, accessed May 15 and June 4, 2014, http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

Notes:

[a] *County jurisdictions are italicized and include the total population of the county.*

[b] *On January 6, 2003, Louisville merged its city and county governments, creating a consolidated local government. For the 2000 Census, the U.S. Census Bureau enumerated the City of Louisville separately from Jefferson County. For the 2010 Census, the U.S.*

Census Bureau enumerated the City of Louisville and all unincorporated areas of Jefferson County together. The 2000 population listed in this table represents the population of Louisville (256,231) plus unincorporated areas of Jefferson County (150,514) in 2000.

The labor force numbers and unemployment rates for the portion of the study area where proposed operational changes would occur under the Proposed Transaction are presented in Table 3.3-2. Of the eight counties within this portion of the study area, Madison, Delaware, and Randolph counties had the highest unemployment rate in 2013 (9.0, 8.7, and 8.6 percent, respectively), which is above the average unemployment rate for the United States (7.4 percent) (U.S. Department of Labor, Bureau of Labor Statistics 2014). Employment in the transportation industry accounts for 2 to 5 percent of total employment in Indiana and the counties in this portion of the study area; employment in the rail sector constitutes less than 5 percent of the transportation industry employment, and less than 1 percent of total employment, in Indiana, Ohio, and Kentucky (U.S. Department of Commerce, Bureau of Economic Analysis 2014). CSXT employs approximately 1,700 people in Indiana, and operates a major rail yard (that is, Avon Yard) and other rail yards (including Hawthorne Yard) in Indianapolis (CSXT 2013a). CSXT employs approximately 3,300 people and operates several major rail yards in Ohio (CSXT 2013b). CSXT employs approximately 2,400 people in Kentucky and operates a major rail yard and other rail yards in Louisville (CSXT 2013c). However, none of these CSXT rail yards in Indiana, Ohio, or Kentucky are within the study area.

Table 3.3-2. Labor Force Data for the Study Area Where Proposed Operational Changes Would Occur, 2013 Annual Averages

Jurisdiction	Labor Force	Unemployment Rate (%)
Indiana	**3,179,948**	**7.5**
Marion County	469,131	7.7
Hancock County	37,056	6.4
Madison County	59,858	9.0
Delaware County	53,023	8.7
Randolph County	12,563	8.6
Ohio	**5,765,711**	**7.4**
Darke County	27,172	6.6
Shelby County	24,628	6.3
Kentucky	**2,065,883**	**8.3**
Jefferson County	369,260	8.1

Source: U.S. Department of Labor, Bureau of Labor Statistics, 2014, "Labor Force Data by County, 2013 Annual Averages," accessed April 18, 2014, http://www.bls.gov/lau/.

3.3.1.1 Study Area for Construction Activities

For the portion of the study area where proposed construction would occur under the Proposed Transaction (that is, along the L&I Line near the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement), the population change from 2000 to 2010 for counties and municipalities is shown in Table 3.3-3. Johnson and Bartholomew counties are part

of the Indianapolis-Carmel-Muncie CSA (U.S. Census Bureau 2013). The census data show moderate to rapid population growth along this corridor, associated with the growth of the Indianapolis metropolitan area.

Table 3.3-3. Population by Jurisdictions in the Study Area Where Proposed Construction Would Occur

Jurisdiction	2000 Population	2010 Population	Percent Change
Johnson County, Indiana	**115,209**	**139,654**	**21.22**
Franklin, Indiana	19,463	23,712	21.83
Bartholomew County, Indiana	**71,435**	**76,794**	**7.50**
Columbus, Indiana	39,059	44,061	12.81

Source: U.S. Census Bureau, 2011, 2010 Census Summary File 1, Table P1 – Total Population, August 25, accessed May 15 and June 4, 2014, http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

The labor force numbers and unemployment rates for the portion of the study area where proposed construction would occur under the Proposed Transaction are presented in Table 3.3-4. The unemployment rate in both Johnson and Bartholomew counties is below the average unemployment rate for the United States and Indiana (7.4 and 7.5 percent, respectively) (U.S. Department of Labor, Bureau of Labor Statistics 2014). Employment in the transportation industry accounts for 3 to 4 percent of total employment in Indiana and the counties in this portion of the study area; employment in the rail sector constitutes less than 5 percent of the transportation industry employment, and less than 1 percent of total employment, in Indiana (U.S. Department of Commerce, Bureau of Economic Analysis 2014). L&I employs 40 people in Indiana (Anacostia Rail Holdings 2014).

Table 3.3-4. Labor Force Data for the Study Area Where Proposed Construction Would Occur, 2013 Annual Averages

Jurisdiction	Labor Force	Unemployment Rate (%)
Indiana	**3,179,948**	**7.5**
Johnson County	74,610	6.2
Bartholomew County	41,110	5.9

Source: U.S. Department of Labor, Bureau of Labor Statistics, 2014, "Labor Force Data by County, 2013 Annual Averages," accessed April 18, 2014, http://www.bls.gov/lau/.

3.3.2 Environmental Impacts of Proposed Operational Changes

3.3.2.1 Proposed Transaction

Under the Proposed Transaction, CSXT would operate overhead traffic (that is, rail traffic with origins and destinations outside of the local area) on the L&I Line, but would not serve local

customers or industries along the L&I Line. The Proposed Transaction would result in an increase in through traffic from Sidney, Ohio, to Indianapolis and south to Louisville as CSXT diverts some of its rail traffic from its LCL Subdivision in Kentucky to the Indianapolis Line Subdivision, the Indianapolis Terminal Subdivision – Louisville Secondary Branch, and the L&I Line. The Proposed Transaction is not anticipated to substantially affect CSXT rail yard activities in Indiana, Ohio, or Kentucky. Because the Proposed Transaction consists of rerouting existing train traffic, it would not generate substantially increased expenditures in local economies, increase labor demand, result in increased commercial or industrial development, displace population, increase demand for housing or public services, or impact tax structures of governmental bodies in the study area.

As discussed in Chapter 1.0, the Proposed Transaction would provide CSXT additional rail network capacity to relieve potential congestion on the LCL Subdivision in Kentucky and allow CSXT to improve efficiency and provide more reliable, consistent, and recoverable service to customers in the Indianapolis-Cincinnati-Louisville area. The Proposed Transaction would also benefit L&I's customers by providing a more competitive route and providing L&I's markets with access to heavier gross weight railcars, double-stacked intermodal containers, and multi-level cars (that is, auto racks) that carry finished vehicles. The Port of Indiana at Jeffersonville, Indiana, would have better rail access to markets north of the Ohio River. In addition, improving service to Louisville would benefit southern Indiana markets (Bergstrom 2013).

3.3.2.2 No-Action Alternative

As discussed in Chapter 1.0, the LCL Subdivision currently operates at or above a level of train capacity that impacts CSXT's ability to operate a consistent, reliable, and recoverable railroad. CSXT expects the overall demand for freight rail transportation to increase, and expects the LCL Subdivision to continue operating at or above train capacity. Under the No-Action Alternative, the LCL Subdivision would continue to operate at or above capacity.

The No-Action Alternative would not affect CSXT expenditures in local economies, increase labor demand, result in increased commercial or industrial development, displace population, increase demand for housing or public services, or impact tax structures of governmental bodies in the study area.

3.3.3 Environmental Impacts of Proposed Construction on L&I Line

3.3.3.1 Proposed Transaction

Proposed construction would temporarily increase expenditures in and near Franklin and Columbus, Indiana. However, the magnitude of these changes would not substantially affect the local economies, displace population, increase demand for housing or public services, or impact tax structures of governmental bodies in the study area. Any impacts on employment for construction would be negligible and temporary.

3.3.3.2 No-Action Alternative

Construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative. Therefore, the No-Action Alternative would not affect baseline conditions in the study area.

3.4 TOPOGRAPHY, GEOLOGY, AND SOILS

This section discusses the affected environment and potential environmental effects of the Proposed Transaction and No-Action Alternative on the topography, geology, and soils in the project area.

3.4.1 Affected Environment

3.4.1.1 Topography

Topography is fairly level throughout the study area. Elevations along the Indianapolis Line Subdivision in Indiana range from approximately 800 feet above mean sea level (msl) in Indianapolis to 1,100 feet msl near the Indiana-Ohio state line. Most elevation changes are gradual, but local relief in the vicinity of stream valleys ranges from 50 to 100 feet (Indiana Geological Survey 2014a). Elevations along the Indianapolis Line Subdivision in Ohio are approximately 1,000 to 1,050 feet msl (U.S. Geological Survey [USGS] 2014). Elevations in the vicinity of the Indianapolis Terminal Subdivision – Louisville Secondary Branch are approximately 800 feet msl (Indiana Geological Survey 2014a). Elevations in the vicinity of the Louisville Connection range from approximately 420 to 460 feet msl (Kentucky Geological Survey 2014a).

Along the L&I Line, elevations in the vicinity of the potential Elvin siding extension range from approximately 700 to 750 feet msl. The elevation is nearly level at approximately 650 feet msl in the vicinity of the potential Brook siding extension and the proposed Flatrock River Bridge replacement (Indiana Geological Survey 2014a).

3.4.1.2 Geology

The landscape and subsurface of central Indiana, western Ohio, and northern Kentucky have been affected by several geologic processes, most notably glaciation. Glaciers advanced across most of Indiana and Ohio to near the present day Ohio River. These glaciers deposited glacial till[6] (primarily loam and silty clay loam) in central Indiana, glacial ground and ridge moraine[7] sediments in western Ohio, and glacial outwash[8] along the Ohio River, including the part of Louisville within the study area. The thickness of the glacial sediments varies from 150 to 200 feet in Indiana, 50 to 80 feet in Ohio, and 50 to 100 feet in Louisville, Kentucky. Alluvium was and is being deposited along many of the streams in the study area. Sediment depth in stream valleys (glacial and alluvial) is generally 150 to 200 feet (Indiana Geological Survey 2014b; Ohio Department of Natural Resources [ODNR] Division of Geological Survey 2005; Kentucky Geological Survey 2014b; USGS 2001). Glacial sediments are underlain by dolomite, limestone, and shale in Indiana, Ohio, and Kentucky (Indiana Geological Survey 2014c; ODNR Division of Geological Survey 2006; Kentucky Geological Survey 2014b).

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6 Till is a nonstratified (that is, not layered) mixture of materials (clay, silt, sand, pebbles, cobbles, and boulders) transported by a glacier and deposited directly by glacial ice.

7 Ground moraine is a continuous layer of glacial till forming a low-relief plain; ridge moraine was deposited parallel to the terminal edge of a glacier, marked by a ridge or hilly terrain.

8 Outwash is defined as sorted and stratified sand and gravel deposited by meltwater from glaciers.

There are no coal resources in or near the study area in Indiana, but there are oil and gas reserves, primarily north and east of Indianapolis. The Indianapolis Line Subdivision overlies the Trenton Oil Field from Lawrence, Indiana, to approximately 5 miles west of Union City, Indiana. Oil wells are common throughout this field; eight oil wells are located within 200 feet of the Indianapolis Line Subdivision. There are no oil or gas fields adjacent to the Indianapolis Terminal Subdivision – Louisville Secondary Branch. Most of the area adjacent to the Indianapolis Line Subdivision and Indianapolis Terminal Subdivision – Louisville Secondary Branch has a low potential for sand and gravel deposits; however, a few small scattered areas along stream channels have a high potential for sand and gravel deposits. There are no active quarries adjacent to either the Indianapolis Line Subdivision or Indianapolis Terminal Subdivision – Louisville Secondary Branch in Indiana (Indiana Geological Survey 2014d).

There are no widespread oil or gas fields or wells along the L&I Line. Most of the area adjacent to the L&I Line has a low potential for sand and gravel deposits; however, a few small scattered areas along stream channels have a high potential for sand and gravel deposits. There are no active quarries adjacent to the L&I Line (Indiana Geological Survey 2014d).

There are active quarries near the Indianapolis Line Subdivision in Ohio (ODNR 2012). There are no oil or gas fields near the Indianapolis Line Subdivision in Ohio. One exploratory oil well is located near Ansonia, Ohio, approximately 200 feet north of the Indianapolis Line Subdivision. This well does not produce oil (ODNR 2014).

There are no coal, oil or gas, or mineral resources in the vicinity of the Louisville Connection (Kentucky Geological Survey 2014c).

3.4.1.3 Soils

Soils in the study area formed from glacially deposited materials and are mostly loam and silty clay loam. The USDA Natural Resources Conservation Service (NRCS) has mapped 168 soil units in the study area along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection (USDA NRCS 2014a). These soil units reflect a variety of formation factors and parent material. Moderately to well-drained soils in the study area (mostly silt and loam soils) support cultivation of row crops, such as corn and soybeans. More poorly drained soils in the study area are used primarily as pasture or are left as wooded areas or wetlands. Approximately 80 percent of the soils in the study area along the Indianapolis Line Subdivision in Indiana and Ohio, and along the Indianapolis Terminal Subdivision – Louisville Secondary Branch in Indiana are mapped as prime farmlands (Indiana Geological Survey 2014e; USDA NRCS 2014a). All of the land along the Louisville Connection is urban; therefore, by definition, none is considered prime farmland. Forty of the 168 soil units identified above are rated as having moderate potential for erosion hazard on roads and trails, and 25 soil units are rated as having a severe potential for erosion hazard on roads and trails (USDA NRCS 2014a). These soils and their potential for erosion hazard are listed in Appendix C, Table C-1.

Although information about soils along the L&I Line was discussed in the Draft EA, the following focuses on the soils where construction would occur for the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement. The USDA NRCS has mapped 28 soil units in this portion of the study area, reflecting a variety of formation factors and parent material (USDA NRCS 2014b). Approximately 75 percent of the soils in this portion

of the study area in Indiana are mapped as prime farmlands (Indiana Geological Survey 2014e). Four of the 28 soil units identified above are rated as having moderate potential for erosion hazard on roads and trails, and two soil units are rated as having a severe potential for erosion hazard on roads and trails (USDA NRCS 2014b). These soils and their potential for erosion hazard are listed in Appendix C, Table C-2.

3.4.2 Environmental Impacts of Proposed Operational Changes

3.4.2.1 Proposed Transaction

Under the Proposed Transaction, construction is not planned along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, or Louisville Connection. Existing ground would not be disturbed, leading to no additional impacts on topography, geology, and soils in the study area.

3.4.2.2 No-Action Alternative

Because operational changes associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on topography, geology, and soils are not anticipated as a result of the No-Action Alternative.

3.4.3 Environmental Impacts of Proposed Construction on L&I Line

3.4.3.1 Proposed Transaction

Anticipated impacts on topography, geology, and soils would be the same as described in the Draft EA. Soils in the vicinity of the Flatrock River Bridge have a slight potential for erosion hazard. The limited construction areas would result in minimal impacts on soils. Because construction activities would disturb more than 1 acre, Applicants would need to obtain an NPDES permit from the Indiana Department of Environmental Management (IDEM). To prevent and contain soil erosion, the NPDES permit would require adequate design, grading, and use of BMPs to ensure that the soil resources would not be adversely affected by the Proposed Transaction. The Proposed Transaction would not result in erosion or siltation that would lead to measurable air or water degradation. Applicants would commence reclamation of disturbed areas as soon as reasonably practicable after Transaction-related construction ends along a particular stretch of the L&I Line. The goal of reclamation would be the rapid and permanent reestablishment of native ground cover on disturbed areas. If weather or season precludes the prompt reestablishment of vegetation, Applicants would use measures such as mulching or erosion control blankets to prevent erosion until reseeding could be completed. Applicants would limit ground disturbance to only the areas necessary for Transaction-related construction activities.

Applicants have volunteered to implement a number of mitigation measures that would avoid or minimize soil erosion and sedimentation (see Chapter 4.0, VM 2, VM 3, VM 8, VM 9, and VM 17 through VM 22).

3.4.3.2 No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on topography, geology, and soils would not be expected under the No-Action Alternative.

3.5 WATER RESOURCES

This section discusses the affected environment and potential environmental effects of the Proposed Transaction and the No-Action Alternative on water resources (that is, surface water, groundwater, floodplains, wetlands, and water quality) in the project area. Water resources are natural and human-made sources of water that are available for use by, and for the benefit of, humans and the environment. Water resources were identified using a variety of federal and state sources, listed in Appendix D. Activities related to the Proposed Transaction that could have potential impacts on water resources may be regulated by several federal and state agencies, including USEPA, USACE, U.S. Coast Guard, IDEM, Ohio Environmental Protection Agency (Ohio EPA), and Kentucky Department for Environmental Protection (Kentucky DEP), as discussed in Appendix D.

3.5.1 Affected Environment

The Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection are located in the Upper White, Mississinewa, Upper Great Miami, and Silver-Little river basins in Indiana, Ohio, and Kentucky. The area affected by the potential Elvin siding extension on the L&I Line is located within the Driftwood River basin. The area affected by the potential Brook siding extension and the proposed Flatrock River Bridge replacement on the L&I Line is located within the Flatrock-Haw River basin (USGS 2014a).

3.5.1.1 Surface Water

Surface water resources are defined as lakes, ponds, rivers, and streams, as defined by National Hydrography Dataset (NHD). Surface water resources adjacent to the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, as well as the areas affected by the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement on the L&I Line, were evaluated for potential impacts from the Proposed Transaction. The Indianapolis Line Subdivision crosses 59 streams, ditches, canals, and artificial paths of streams; the Indianapolis Terminal Subdivision – Louisville Secondary Branch crosses one perennial stream and two artificial paths of streams.[9] The Louisville Connection does not cross any NHD-mapped streams. On the L&I Line, the

[9] Flow types are defined by USGS (2014b and 2014c). Perennial streams are those in natural channels that flow continuously. Intermittent streams are those in natural channels that flow only at certain times of the year based on groundwater levels, precipitation, springs, or snowmelt. Ephemeral streams are those in natural channels that flow only during and immediately after precipitation or snowmelt. An artificial path is an abstraction to facilitate hydrologic modeling through open water bodies and along coastal and Great Lakes shorelines and to act as a surrogate for lakes and other water bodies. A canal or ditch is an artificial open waterway constructed to transport water, to irrigate or drain land, to connect two or more bodies of water, or to serve as a waterway for watercraft.

potential Elvin siding extension crosses eight unnamed intermittent streams and two ephemeral streams, the potential Brook siding extension crosses one unnamed intermittent stream, and the proposed Flatrock River Bridge replacement crosses a segment of the Flatrock River.[10] In Appendix D, Table D.1-1 lists the rivers, streams, and other surface water features (that is, canals, ditches, and artificial paths of streams) crossed by these rail lines. Numerous lakes and ponds are located in the vicinity of the Indianapolis Line Subdivision and the L&I Line at the locations of the two potential siding extensions and the proposed Flatrock River Bridge replacement, but none is crossed by these rail lines. No lakes or ponds are located along the Indianapolis Terminal Subdivision – Louisville Secondary Branch or the Louisville Connection.

The White River is navigable where the Indianapolis Line Subdivision crosses it in Delaware County, Indiana. The Flatrock River is navigable at its junction with the East Fork of White River (approximately 2 miles southeast of where the L&I Line crosses the Flatrock River) and downstream. However, the Flatrock River is not navigable at the L&I Line crossing. No other streams crossed by the Indianapolis Line Subdivision, the Indianapolis Terminal Subdivision – Louisville Secondary Branch, or the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement on the L&I Line in Indiana are listed as navigable (Indiana Natural Resources Commission n.d.). None of the streams crossed in Ohio are listed as navigable (USACE 2012).

3.5.1.2 Groundwater

The groundwater system in the project area consists mainly of shallow sand and gravel deposits of stream valley aquifers, and glacial sediments in the Ohio River valley. In central Indiana, shallow till and outwash sand and gravel aquifers are present near the surface. Limestone and dolomite bedrock aquifers underlie the surficial aquifers (Indiana Department of Natural Resources [Indiana DNR] 2014). Principal aquifers in Ohio include sand and gravel aquifers in stream valleys and bedrock aquifers, primarily limestone and dolomite (Kostelnick 1983; Raab 1993). In the project area in western Kentucky, the main source of groundwater is the Ohio River alluvial aquifer (USGS 1995). Most municipalities along the Indianapolis Line Subdivision, the Indianapolis Terminal Subdivision – Louisville Secondary Branch, and the Louisville Connection obtain their drinking water supplies from groundwater. The exceptions are Indianapolis (surface water from Fall Creek and the White River, supplemented with groundwater); Muncie, Indiana (surface water from the White River); Sidney, Ohio (surface water from Tawawa Creek and the Great Miami River, supplemented with groundwater), and Louisville, Kentucky (surface water from the Ohio River) (USEPA 2014; IDEM 2014a and 2014b; City of Sidney 2014; Louisville Water Company 2014). In the areas of the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement on the L&I Line, all municipalities obtain their drinking water supplies from groundwater (IDEM 2014c and 2014d).

[10] Ephemeral drainages are listed for only the areas mapped during the wetland delineations performed at the sites of the potential Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge on the L&I Line in April 2014.

Depths to groundwater in the project area range from less than 10 feet to approximately 30 feet in the surficial aquifers in Indiana to 70 to 140 feet in Ohio (Indiana DNR 2005, 2006a, 2006b, 2010, and 2011; Raab 1993; Kostelnick 1983). The depth to groundwater in the vicinity of the Louisville Connection is approximately 30 feet (Kentucky Geological Survey 2014).

The Safe Drinking Water Act requires states to develop a wellhead protection program to protect public water supplies from pollution. In Indiana, IDEM administers the wellhead protection program, which is regulated through the Indiana Wellhead Protection Rule (327 Indiana Administrative Code 8-4.1). In Ohio, the Ohio EPA administers the wellhead protection program through Ohio Administrative Code 3745. In Kentucky, the wellhead protection program is administered by Kentucky DEP and is regulated through the Water Supply Planning Regulation (Kentucky Administrative Regulation 401 4:220). These programs limit new potential sources and potential routes of contamination within fixed radii around public water supply wells. The Indianapolis Line Subdivision passes through one wellhead protection area east of Muncie but does not pass through any other wellhead protection areas in Indiana (IDEM 2014e). In Ohio, cities with Ohio EPA-approved wellhead protection areas that withdraw groundwater close to the Indianapolis Line Subdivision include Union City, Versailles, and Russia (Ohio EPA 2014a; ODNR 2007a and 2007b). The Indianapolis Terminal Subdivision – Louisville Secondary Branch and the Louisville Connection do not pass through any wellhead protection areas (IDEM 2014e; Kentucky DEP 2014).

3.5.1.3 Floodplains

The Federal Emergency Management Agency (FEMA) defines floodplains as "Any land area susceptible to being inundated by flood waters from any source" (FEMA 2012). Floodplains reduce the severity of floods by providing naturally occurring features that store floodwater and reduce floodwater velocities (FEMA 2013). Human development in floodplains alters the dynamics of floodplains, reduces the functions that floodplains provide, and increases the potential for flood-related damage. Congress established the National Flood Insurance Program (NFIP) in 1968 to provide risk reduction from flood-related losses through federally backed flood insurance provided to communities that enforce minimum NFIP floodplain management standards.[11] In support of the NFIP, FEMA provides Flood Insurance Rate Maps (FIRMs) identifying FEMA flood zones. FIRMs identify flood zones where flooding may occur and the likelihood (the annual percent chance) of flooding in a particular flood zone.

Along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, where only operational changes would occur, the following FEMA-mapped flood zones would be encountered:

- Outside of the 500-year floodplain (unshaded Zone X)
- 500-year floodplain (shaded Zone X)
- 100-year floodplain (Zone AE)
- Regulatory floodway (within Zone AE)

[11] Minimum NFIP-approved floodplain management standards are intended to protect developments that exist within floodplains from future flood events, and to prevent new or proposed developments within floodplains from increasing the threat of flood-related damages. Regulations that define minimum criteria are located in 44 C.F.R. § 60.3.

These flood zones are defined in Table 3.5-1. FIRM panels depicting the area along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection are available on FEMA's Map Service Center (MSC) website.[12]

Table 3.5-1. FEMA Flood Zones Defined

Flood Zone	Definition[a, b]	Subject to Federal, State, and Local Regulations
Unshaded Zone X (Outside of the 500-Year Floodplain)	"…areas outside the 1-percent and .2-percent-annual-chance floodplains."	No
Shaded Zone X (500-Year Floodplain)	"…areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee."	Yes
Zone AE (100-Year Floodplain)	"Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods."	Yes
Regulatory Floodway (Located within 100-Year Floodplain)	"…the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height."	Yes

Source: FEMA, 2014a, Definitions of FEMA Flood Zones, accessed May 6, 2014, https://msc.fema.gov/webapp/wcs/stores/servlet/info?storeId=10001&catalogId=10001&langId=-1&content=floodZones&title=FEMA%2520Flood%2520Zone%2520Designations.

Notes:

a A 1-percent-annual-chance flood = 100-year flood.

b A 0.2-percent-annual-chance flood = 500 year flood.

[12] Because operational changes would not impact floodplains, FIRM panels for areas that would be affected by only operational changes are not included in this Supplemental EA.

Floodplains along the entire L&I Line were identified in the Draft EA. In this Supplemental EA, floodplains along the L&I Line were evaluated in areas that could be affected by the potential construction of the Elvin and Brook siding extensions and the proposed replacement of the Flatrock River Bridge. For the purposes of this evaluation, floodplains were identified using FEMA's MSC (FEMA 2014b), and federal, state, and local floodplain regulatory information was gathered from websites for FEMA; the city of Columbus, Indiana; and Bartholomew County, Indiana.

The potential Elvin siding extension is located in Johnson County, Indiana, and the area where construction could occur is depicted on FIRM panels 18081C0231D, 18081C0223D, and 18081C0234D (see Appendix D, Attachment D-1) (FEMA 2014b). The potential Elvin siding extension is located outside of the 500-year floodplain and is mapped by FEMA as an unshaded Zone X flood zone area. Unshaded Zone X flood zones are not considered regulated flood zones. Figure 3.5-1 depicts the proposed Elvin siding extension and the area outside of the 500-year floodplain.

The potential Brook siding extension and the proposed Flatrock River Bridge are located on the western edge of the city of Columbus, Indiana, in Bartholomew County. Proposed construction areas associated with the Brook siding extension and the Flatrock River Bridge replacement are depicted on FIRM panels 1800070020D and 1800070010D (see Appendix D, Attachment D-1) (FEMA 2014b). The potential Brook siding extension and the proposed Flatrock River Bridge replacement would encounter the following three flood zones:

- Outside of the 500-year floodplain (unshaded Zone X) – crossed by approximately 1,873 linear feet of the proposed Brook siding extension
- 500-year floodplain (Shaded Zone X) – crossed by approximately 430 linear feet of the proposed Brook siding extension
- 100-year floodplain (Zone AE) – crossed by approximately 6,655 linear feet of the proposed Brook siding extension

The remaining 2,711 linear feet of the potential Brook siding extension and the proposed Flatrock River Bridge replacement would be constructed within the Flatrock River regulated floodway and the 100-year floodplain (Zone AE).[13] The existing Flatrock River Bridge does not allow for the passage of a 100-year flood, which likely worsens upstream flooding (Civilstar, Inc. 2013). Figure 3.5-2 depicts the potential Brook siding extension, the location of the proposed Flatrock River Bridge replacement, and the associated flood zone areas.

The 500-year floodplain (shaded Zone X), the 100-year floodplain (Zone AE), and floodways within the 100-year floodplain are subject to existing federal, state, and local floodplain regulations. The city of Columbus and Bartholomew County actively participate in the NFIP and enforce standards and regulations required by the NFIP and described in 44 C.F.R. § 60.3 through local ordinances (City of Columbus 2013) (Indiana Code [IC] 14-28-1). The state of Indiana, through the Indiana DNR, also enforces minimum standards set forth in 44 C.F.R. § 60.3.

[13] The Flatrock River Bridge is approximately 500 feet long.

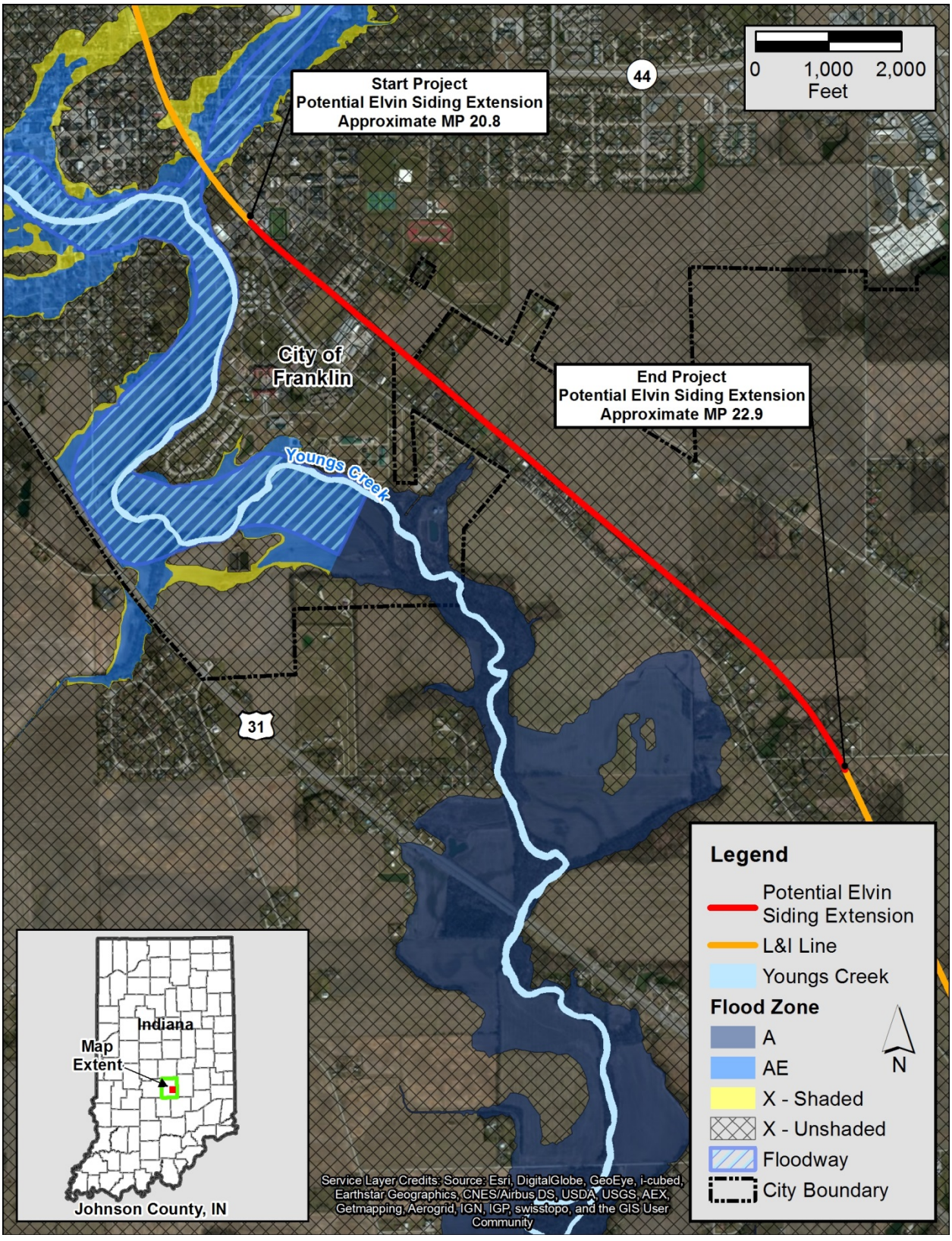

Figure 3.5-1. Flood Zones near the Potential Elvin Siding Extension

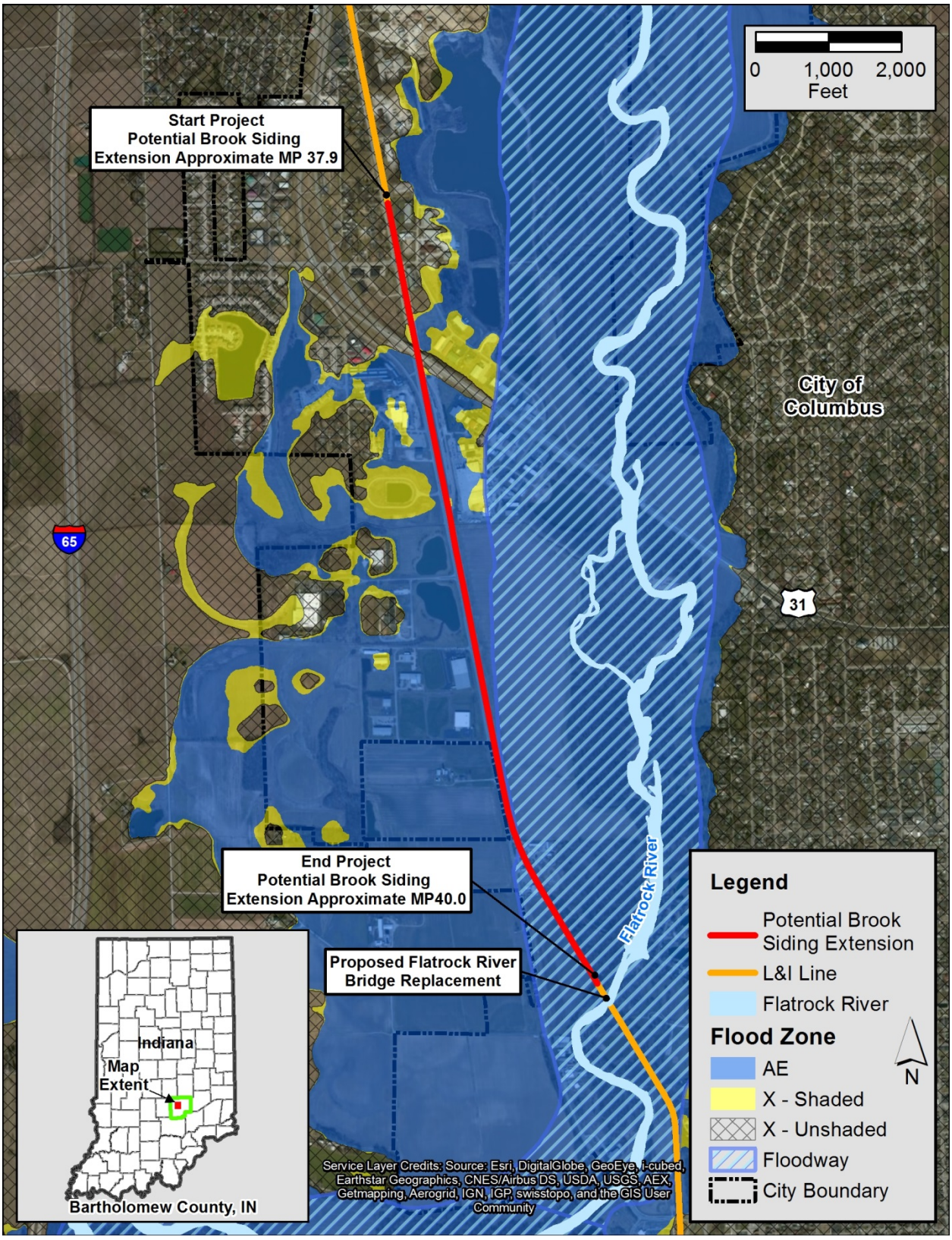

Figure 3.5-2. Flood Zones near the Potential Brook Siding Extension and Proposed Flatrock River Bridge Replacement

3.5.1.4 Wetlands

USACE and USEPA define wetlands in 40 C.F.R. § 230.3(t) as:

> Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

More specifically, wetlands include areas that display the following characteristics (USEPA 2013):

1. A predominance of plant species adapted to the prolonged presence of water (that is, hydrophytes)
2. Presence of hydric soils that develop in wetland conditions
3. Water at or near the surface for a defined portion of the growing season

Wetlands and other waters of the U.S. [14] were identified in the areas that could be affected by operational changes under the Proposed Transaction; that is, along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection. To identify wetlands, lakes, and ponds, the U.S. Fish and Wildlife Service's (USFWS's) National Wetlands Inventory (NWI) website was used (USFWS 2014). To identify rivers or stream channels (waterways) crossed by the Proposed Transaction, USGS's NHD website was used (USGS 2013). Additional discussion of wetlands and waterways crossed by the Proposed Transaction is provided in Section 3.5.1.1, Surface Water. Wetlands, lakes, and ponds were found along the Indianapolis Line Subdivision; wetlands include emergent, and forested or scrub/shrub wetlands. Wetlands, lakes, or ponds were not found along the Indianapolis Terminal Subdivision – Louisville Secondary Branch or the Louisville Connection. Waterways identified by the NHD as being crossed by the Proposed Transaction were identified along the Indianapolis Line Subdivision and the Indianapolis Terminal Subdivision – Louisville Secondary Branch, and include perennial, intermittent, ephemeral, and artificial path waterways, as discussed in Section 3.5.1.1. However, no waterways were identified by the NHD as being crossed by the Louisville Connection. A complete list of waterways crossed by the Proposed Transaction is provided in Appendix D, Table D.1-1.

Wetlands and other waters of the U.S. along the L&I Line were identified in the Draft EA. However, wetland delineations were performed in April 2014 in areas within L&I ROW that could be affected by construction of the potential Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge on the L&I Line. The Flatrock River Bridge is located near the southern end of the potential Brook siding extension. The wetland delineations also identified other potential waters of the U.S. The delineation report, which documents the locations of wetlands and other waters of the U.S. identified for the Proposed Transaction and provides additional details of wetland delineation methodologies, is provided in Appendix D, Attachment D-2.

[14] Waters of the U.S. include all waters defined in 40 C.F.R. § 122.2, including lakes, ponds, and rivers and stream channels (waterways), as well as wetlands.

Wetlands were identified in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Environmental Laboratory 2010) and the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). For purposes of delineating wetlands and waterways, a study area was identified for the potential siding extensions and proposed bridge replacement. The potential Elvin siding extension would be constructed west of the existing track, and the potential Brook siding extension would be constructed east of the existing track. The wetland delineation was completed within L&I ROW only on the side of the rail line where the potential construction activities could occur. The study area for the proposed Flatrock River Bridge replacement was an area that included 100 feet on either side of the L&I Line to accommodate potential access and staging areas associated with the bridge replacement. In some instances, the wetlands that were identified within L&I ROW extended outside of the aforementioned study area boundaries. In these instances, the wetlands were delineated beyond the study area.

Along the potential Elvin siding extension, the wetland delineation identified two wetlands (both classified as palustrine emergent) and three waterways within L&I ROW. Along the potential Brook siding extension, one emergent wetland was identified within L&I ROW and one forested wetland was identified within and adjacent to L&I ROW southeast of the Flatrock River Bridge. Delineated wetlands, their acreages, and the nearest potential or proposed construction area are listed in Table 3.5-2, and wetland locations are shown in the Wetland Delineation Report (see Appendix D, Attachment D-2). Delineated waterways and the nearest potential or proposed construction area are listed in Table 3.5-3 and are also shown in the Wetland Delineation Report (see Appendix D, Attachment D-2).

Table 3.5-2. Delineated Wetlands

Sample Point[a]	Wetland Classification[b] (Cowardin)	Area[c] (acre)	Nearest Potential or Proposed Construction Area
S-1	PEMA/PEMC	0.02	Elvin siding extension
S-3		0.25	Elvin siding extension
S-4		0.02	Brook siding extension
S-9	PFOA	0.54	Flatrock River Bridge replacement
Total Wetland Area		**0.83**	

Notes:

[a] *S = sample point recorded during the wetland delineation. Sample points S-2, S-5, S-6, S-7, S-8, and S-10 did not meet wetland criteria.*

[b] *PEMA/PEMC = palustrine emergent temporarily/seasonally flooded wetland; PFOA = palustrine forested temporarily flooded wetland.*

[c] *Area represents the total area delineated within and adjacent to the study area. This value does not represent the potential impact area of the Proposed Transaction.*

Table 3.5-3. Delineated Waterways

Waterway ID[a]	Flow Regime[b]	Name	Area (linear feet)	Nearest Potential or Proposed Construction Area
WOUS-1	Perennial	Unnamed	236	Elvin siding extension
WOUS-2	Ephemeral	Unnamed	457	Elvin siding extension
WOUS-3	Ephemeral	Unnamed	36	Elvin siding extension
WOUS-4	Perennial	Unnamed	332	Brook siding extension
WOUS-5	Perennial	Flatrock River	935	Flatrock River Bridge replacement
Total Linear Feet			**1,996**	

Notes:

[a] *WOUS = water of the U.S.*

[b] *Perennial = conveys flows all year during normal conditions; Ephemeral = conveys flows during and immediately after wet weather events.*

3.5.1.5 Water Quality

Section 303(d) of the CWA requires states to publish a list of streams and lakes every 2 years that are not meeting their designated uses because of excess pollutants. These streams and lakes are referred to as impaired waters. In Indiana, Ohio, and Kentucky, the state's 303(d) waters are determined by IDEM, Ohio EPA, and Kentucky DEP, respectively. Fifteen of the waterways crossed by the Indianapolis Line Subdivision and one waterway crossed by the Indianapolis Terminal Subdivision – Louisville Secondary Branch are considered impaired; these are located within Indiana and Ohio. Segments of streams crossed by the potential Elvin and Brook siding extensions are not impaired. The segment of the Flatrock River crossed by the Flatrock River Bridge on the L&I Line is not impaired. The Louisville Connection does not cross any impaired waters. In Appendix D, Table D.4-1 lists the impaired waters crossed by the Indianapolis Line Subdivision and the Indianapolis Terminal Subdivision – Louisville Secondary Branch; their designated uses and 303(d)-listed impairments are also identified.

Stillwater River is crossed by the Indianapolis Line Subdivision just east of Ansonia, Ohio. The Stillwater River is listed by Ohio EPA as a "superior high quality water." Stillwater River is listed as a state scenic and recreational river approximately 0.5 mile south and downstream of the Indianapolis Line Subdivision (Ohio EPA 2014b). No other waters of "superior high water quality" have been identified in the project area.

3.5.2 Environmental Impacts of Proposed Operational Changes

Potential impacts of proposed operational changes on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection on surface waters, groundwater, floodplains, wetlands, and water quality were evaluated and are discussed in the following sections.

3.5.2.1 Proposed Transaction

Transaction-related increases in train traffic would not be expected to adversely impact surface water, groundwater, floodplains, wetlands, and water quality on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection. Furthermore, the additional train traffic on the CSXT rail lines as a result of the Proposed Transaction would not be carrying hazardous material cargo (that is, there would be no change in the quantities of hazardous materials moving on the CSXT rail lines as a result of the Proposed Transaction). Therefore, a detailed analysis of water resources impacts as a result of operational changes was not performed along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection.

3.5.2.2 No-Action Alternative

Because operational changes associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on water resources are not anticipated as a result of the No-Action Alternative.

3.5.3 Environmental Impacts of Proposed Construction on L&I Line

Potential impacts on the L&I Line from construction of the Elvin and Brook siding extensions, if either or both are determined necessary for operations, and proposed replacement of the Flatrock River Bridge on surface water, groundwater, floodplains, wetlands, and water quality were evaluated and are discussed in the following sections.

3.5.3.1 Proposed Transaction

Surface Water

Construction activities associated with the Proposed Transaction could include adding capacity to the existing sidings at Elvin and Brook to allow for up to 10,000-foot-long trains. In addition, the railroad bridge over the Flatrock River would be replaced to accommodate heavier trains and double-stacked and multilevel railcars. Construction activities would be limited to work upon and within existing ROW. No construction activities would occur within surface water resources, with the exception of the Flatrock River Bridge. Proposed replacement of the Flatrock River Bridge would temporarily affect the Flatrock River; flow would be affected by temporary dam or coffer structures while bridge piers are constructed.

Because the Flatrock River at the L&I crossing is not navigable, the Proposed Transaction would not be subject to Section 9 or Section 10 of the Rivers and Harbors Act.

Groundwater

The Proposed Transaction would not affect groundwater or groundwater wells at the sites of potential construction of the Elvin and Brook siding extensions on the L&I Line because of the depth of groundwater (that is, 40 to 70 feet) and the limited depth of excavation. Construction of piers for the proposed replacement of the Flatrock River Bridge would temporarily displace small amounts of groundwater, but groundwater levels would return to preexisting levels. Groundwater quality and quantity would not be affected. Therefore, a detailed analysis of groundwater impacts as a result of proposed construction activities on the L&I Line was not performed. No wellhead protection areas are in the vicinity of the potential construction. Minor

amounts of fuel and lubricants would be stored on site and used in construction equipment, but BMPs developed in accordance with a stormwater pollution prevention plan that would be required for the NPDES permit would minimize any risk of contamination to groundwater. In addition, Applicants have offered a voluntary mitigation measure (see Chapter 4.0, VM 4) requiring all contractors to use BMPs, including daily inspections of all equipment for any fuel, lube oil, hydraulic, or antifreeze leaks. If leaks are found, Applicants will require the contractor to immediately remove the equipment from service and repair or replace it.

Floodplains

The potential Elvin siding extension, if needed, would be constructed outside of the 500-year floodplain (unshaded Zone X) (see Figure 3.5-1). Construction activities occurring outside of the 500-year floodplain typically are not subject to federal, state, or local floodplain regulations. Therefore, impacts on a regulated floodplain are not anticipated to result from the potential Elvin siding extension, and it is anticipated that floodplain permits would not be required if the Elvin siding extension is constructed.

Portions of the potential Brook siding extension, if needed, would be constructed in the 500-year and 100-year floodplains (shaded Zone X and Zone AE flood zones, respectively); the Flatrock River regulated floodway is located within this 100-year floodplain (see Figure 3.5-2). Any development or construction activities within these flood zones are subject to federal, state, and local regulations. As a result, a Construction in a Floodway permit from Indiana DNR and a local floodplain development permit from the city of Columbus would be required prior to the potential construction of the Brook siding extension. While a design plan has not been prepared for the potential Brook siding extension, estimates of fill material that could be needed to construct the Brook siding extension are provided in Table 3.5-4. Estimates were based on CSXT's *Standard Specifications for the Design and Construction of Private Sidetracks*, issued June 1, 2007 (CSXT 2007); the USGS National Elevation Dataset (NED) (USGS 2014d); and assumed construction criteria. A more detailed discussion of the methodology for estimating fill is provided in Appendix D, Section D.2.

Table 3.5-4. Estimated Quantity of Fill for the Potential Brook Siding Extension

Flood Zone	Linear Feet	Cross-Sectional Area (ft^2)	Volume (ft^3)	Volume (acre-ft)
Shaded Zone X	430	100	43,000	0.99
Zone AE	6,655	100	665,500	15.28
Floodway (Within Zone AE)	2,211	100	221,100	5.08
Total	**9,296**	**N/A**	**929,600**	**21.35**

The proposed Flatrock River Bridge replacement would be constructed within the regulated floodway (and within Zone AE) of the Flatrock River. Under the Proposed Transaction, the new Flatrock River Bridge would include longer spans and fewer piers. In addition, the clearance under the new Flatrock River Bridge would be increased to pass the current 100-year flood elevation. Hydrologic and hydraulic modeling would be needed to determine what actual

impacts, if any, that construction would have on the floodway and flood fringe areas. A Construction in a Floodway permit would be required for the Proposed Transaction.

The Construction in a Floodway permit and the local floodplain development permit would include any mitigation measures deemed necessary by Indiana DNR or the city of Columbus to offset impacts on the floodway resulting from the construction of the Flatrock River Bridge replacement. In addition to potential mitigation measures proposed by Indiana DNR related to floodway and flood fringe impacts, OEA notes that mitigation measures may be required as defined in the Indiana Natural Resources Commission's Information Bulletin #17 regarding floodway habitat mitigation (2014) (see Chapter 4.0, MM 6).

Applicants would lengthen culverts associated with the potential Elvin and Brook siding extensions as required, and would design the new Flatrock River Bridge with fewer, longer spans that would reduce the total number of piers such that the base flood elevation would not increase. In addition, the new Flatrock River Bridge would be designed to pass a 100-year flood, which would likely reduce upstream flooding.

Wetlands

The potential extension of the Elvin and the Brook sidings is anticipated to impact delineated wetlands, identified in Table 3.5-2, above. Because construction activities associated with the potential siding extensions would occur entirely within L&I ROW, only those wetlands within L&I ROW would be impacted. Total impacts on emergent wetlands within the L&I ROW from the potential construction of the Elvin and Brook siding extensions are estimated to be approximately 0.2 acre.

The potential extension of the Elvin and Brook sidings would also impact waterways that exist within L&I ROW, as listed in Table 3.5-3 above; approximately 440 linear feet of waterway were delineated within L&I ROW during the wetland delineation. Design plans for the potential extension of the Elvin and Brook sidings have not yet been prepared; however, should all waterways within L&I ROW along the potential Elvin and Brook siding extensions be impacted, impacts would total 440 linear feet of waterway. Waterways and portions of waterways that exist outside of L&I ROW along the potential Elvin and Brook siding extensions would not be impacted by construction activities.

The proposed replacement of the Flatrock River Bridge could impact forested wetlands. Total impacts would depend on the area needed to accommodate activities related to the bridge replacement. However, design plans for the Flatrock River Bridge replacement have not been prepared, and specific potential impacts on forested wetlands cannot be quantified at this time. Should all forested wetlands within only the study area for the proposed Flatrock River Bridge replacement be impacted by bridge replacement activities, impacts on wetlands would total 0.13 acre.[15]

[15] The area of potential forested wetland impact (0.13 acre) includes only the area of forested wetland within the study area for the proposed Flatrock River Bridge replacement.

The replacement of the Flatrock River Bridge could also impact the Flatrock River. Although design plans have not been prepared, the proposed Flatrock River Bridge would include longer spans with fewer piers. Therefore, construction activities associated with the new bridge piers would minimize potential impacts on the Flatrock River.

In accordance with Section 404 of the Clean Water Act (CWA), impacts on wetlands, including the discharge of dredged or fill material, would require USACE notification, and wetland impacts exceeding 0.1 acre would require compensatory mitigation in accordance with USACE regulations in the state of Indiana. Impacts on wetlands totaling less than 0.5 acre can be permitted under a CWA Section 404 Nationwide Permit. Impacts on wetlands totaling greater than 0.5 acre would likely need to be permitted under a CWA Section 404 Individual Permit.

Maximum wetlands impacts from the Proposed Transaction would range from 0.13 acre with replacement of the Flatrock River Bridge to 0.33 acre if the Elvin and Brook sidings are also extended. Therefore, the work should qualify for a permitting under a Nationwide Permit, but compensatory mitigation would be required. With mitigation, the potential impacts on wetlands from the Proposed Transaction would be minimal.

CSXT also would be required to obtain a Section 401 Water Quality Certification (WQC) from IDEM. A WQC ensures that a proposed discharge of dredged or fill material into a water of the U.S. would not violate state water quality standards.

Applicants have offered voluntary mitigation measures related to wetlands and other waters of the U.S. (see Chapter 4.0, VM 1 through VM 3, and VM 5 through VM 7). Specifically, Applicants would compensate for wetland impacts that cannot be avoided and for impacts that are determined by USACE to be on waters of the United States for construction related to the Proposed Transaction (VM 1). In addition, Applicants would use BMPs to minimize sedimentation into streams and waterways during construction, would disturb the smallest area possible around any streams, and would conduct reseeding efforts to ensure proper revegetation of disturbed areas as soon as reasonably practicable following Transaction-related construction activities (VM 2).

To control erosion, Applicants would establish staging and lay down areas for Transaction-related construction material and equipment at least 50 feet from jurisdictional waters of the U.S. and in areas that are not environmentally sensitive. Applicants would not clear any vegetation between the staging area and the waterway or wetlands. To the extent reasonably practicable, areas with non-jurisdictional isolated waters would not be used for staging and lay down and would be impacted only when necessary for construction. When Transaction-related construction activities, such as culvert and bridgework, require work in streambeds, Applicants would conduct these activities, to the extent reasonably practicable, during low-flow conditions (VM 3).

Applicants would employ BMPs to control turbidity and disturbance to bottom sediments of surface waters during Transaction-related construction, as well as BMPs in wetlands or other waters of the U.S. to avoid adverse downstream impacts on fish, mussels, and other aquatic biota (VM 5). During Transaction-related construction, Applicants would prohibit construction vehicles from driving in or crossing streams at other than established crossing points unless approved by appropriate federal or state permits (VM 6). Finally, Applicants would, to the extent reasonably practicable and consistent with BMPs, ensure that any fill placed below the ordinary high water line of wetlands and streams is appropriate material selected to minimize

impacts on wetlands and streams. All stream crossing points would be returned to their pre-construction contours to the extent reasonably practicable and the crossing banks would be reseeded or replanted with native species immediately following Transaction-related construction (VM 7).

Water Quality

Construction activities associated with the Proposed Transaction would not affect any impaired surface waters (that is, 303(d)-listed water resources), and no waters of high quality are present. Regardless, Applicants have offered voluntary mitigation measures related to water quality (see Chapter 4.0, VM 4, VM 8, and VM 9). Specifically, during Transaction-related construction activities, Applicants would require all contractors to use BMPs, including daily inspections of all equipment for any fuel, lube oil, hydraulic, or antifreeze leaks. If leaks are found, Applicants would require the contractor to immediately remove the equipment from service and repair or replace it (VM 4). In addition, Applicants would obtain a NPDES stormwater discharge permit from USEPA or appropriate state agencies (VM 8). BMPs implemented in accordance with the NPDES permit would minimize the risk of release pollutants and contamination of surface water. Finally, prior to any Transaction-related construction activities, Applicants would comply with any regulations required in the preparation of a construction Stormwater Pollution Prevention Plan (VM 9).

3.5.3.2 No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on water resources would not be expected under the No-Action Alternative.

3.6 BIOLOGICAL RESOURCES

This section discusses the affected environment and potential environmental effects of the Proposed Transaction and the No-Action Alternative on vegetation; wildlife and wildlife habitat; federally and state-listed threatened, endangered, and rare species; and migratory birds in the project area. The federal and state regulations that protect these biological resources include the following:

- Endangered Species Act of 1973, as amended (16 U.S.C. §§ 1531–1544)
- Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703–712)
- Fish and Wildlife Coordination Act of 1934, as amended (16 U.S.C. §§ 661–667c)
- Indiana Nongame and Endangered Species Act of 1973 (IC 14-22-34)
- Indiana Nature Preserves Act (IC 14-31-1)
- Indiana DNR Fish and Wildlife Administrative Rules (312 Indiana Administrative Code § 9)
- Ohio DNR Protection of Species Threatened with Statewide Extinction (Ohio Revised Code § 1531.25)
- Kentucky Endangered Species of Fish and Wildlife (301 Kentucky Administrative Regulations [KAR] § 3:061)

Since the Draft EA was issued, the list of threatened and endangered species that may exist in the project area has changed. Updated species lists are provided in Appendix E, Attachments E-1 and E-2).

In addition, this Supplemental EA includes analysis of the potential for wildlife to be hit by operating trains (that is, wildlife strikes) under the Proposed Transaction. The Draft EA noted that potential wildlife strikes could increase along the L&I Line, but that any increase would be offset by rail traffic decreases on CSXT's connecting rail lines. USEPA submitted comments stating that the conclusion drawn in the Draft EA was not supported by any analysis (see Appendix A). To address USEPA's comment, land cover and potential wildlife habitat availability (including, but not limited to, threatened and endangered species habitat availability) were compared among rail lines that would experience increases in rail traffic (that is, the Indianapolis Line Subdivision and L&I Line) and decreases in rail traffic (that is, the Toledo Subdivision, Cincinnati Terminal Subdivision, and LCL Subdivision) as a result of the Proposed Transaction. This approach was taken to determine if the Proposed Transaction could result in an overall increase or decrease in wildlife strikes, including strikes of threatened and endangered species. Subsequently, there is some overlap of the wildlife strikes analysis and the analysis of potential impacts on threatened and endangered species. Potential wildlife strikes were not analyzed along the Indianapolis Terminal Subdivision – Louisville Secondary Branch and the Louisville Connection because these rail lines are located in urban areas and do not have adequate habitat for vulnerable wildlife, including threatened and endangered species.

Finally, this Supplemental EA includes analysis of proposed impacts on forested areas. USEPA submitted comments on the Draft EA requesting quantification and additional characterization of forested areas that could potentially be impacted by the Proposed Transaction (see Appendix A). To address USEPA's comment, forested areas along the L&I Line were identified and evaluated in areas that could be affected by construction. This analysis included a review of USGS 2011 National Land Cover Database (NLCD) mapped forested areas[16] and aerial imagery, as well as field verification to determine the boundaries, acreages, and tree species composition of forested areas. Forested areas were identified along the Indianapolis Line Subdivision but were not evaluated in detail because tree removal would not be necessary where only operational changes would occur. Forested areas were not found along the Indianapolis Terminal Subdivision – Louisville Secondary Branch or the Louisville Connection because these rail lines are located in urban areas.

3.6.1 Affected Environment

In the Draft EA, OEA identified existing biological resources along the L&I Line by using 2011 aerial photography, USGS topography maps, geographic information system (GIS) files, and consultations with federal and state agencies. The discussion of the affected environment for biological resources along the L&I Line is incorporated by reference in accordance with 40 C.F.R. § 1502.21.

[16] For the analysis of forested areas, the NLCD forested coverage, which includes deciduous forest, evergreen forest, and mixed forest, was used. For the analysis of wildlife and wildlife habitat, the definition of forested areas is broader and includes woody wetlands and scrub-shrub areas, which are likely to contain species that use forested, woody wetlands, and scrub-shrub habitats in a similar manner.

In the Supplemental EA, biological resources in the project area were identified by using USEPA ecoregions, the NLCD, federal and state lists of threatened and endangered species, and lists of common species from state resource agencies, as described below.

3.6.1.1 Vegetation

The project area is located in several USEPA Level IV Ecoregions, as described below and shown in Figure 3.6-1 (Woods et al. 2002a and 2002b):

- Loamy, High Lime Till Plains – This ecoregion contains loamy, limy, glacial deposits. Originally, beech forests, oak-sugar maple forests, and elm-ash swamp forests grew on nearly level terrain. Today, the vegetation is dominated by corn, soybeans, and livestock production.
- Clayey, High Lime Till Plains – This ecoregion is less productive and more artificially drained than the Loamy, High Lime Till Plains. The native beech forests and elm-ash swamp forests have been replaced with corn, soybeans, wheat, and livestock farming.
- Whitewater Interlobate Area – This ecoregion is characterized by dolomitic drift and meltwater deposits that overlie limestone, calcareous shale, and dolomitic mudstone. Native tree cover has been replaced with corn, soybeans, and livestock production.
- Pre-Wisconsinan Drift Plains – This ecoregion has deeply-leached, acidic till and thin loess soils. Originally, beech forests and elm-ash swamp forests were dominant. Today, soybeans are common, as are corn, tobacco, and livestock farming.
- Outer Bluegrass – This ecoregion contains discontinuous glacial outwash and leached, till deposits. At the time of settlement, open savanna woodlands were found on most uplands, white oak stands occurred on acidic soils, and cane grew along streams. Today, pastureland and cropland are widespread, and dissected areas are wooded.
- Hills of the Bluegrass – This ecoregion is underlain by calcareous shale, siltstone, and limestone. The upland soils are not as fertile as Outer Bluegrass, but support white oak, hickory, and cedar forests. Less than 10 percent of this ecoregion is suited for row crop agriculture, and the remainder is wooded, pastureland, or hayland.

In general, the vegetation adjacent to the Indianapolis Line Subdivision and L&I Line is cultivated crops, pasturelands, and developed lands. The Indianapolis Terminal Subdivision – Louisville Secondary Branch and Louisville Connection are located in urban areas. Minimal native vegetation remains along these latter two rail lines, and it has been replaced by grassy lots and tree lines intermixed with residential, commercial, and industrial properties.

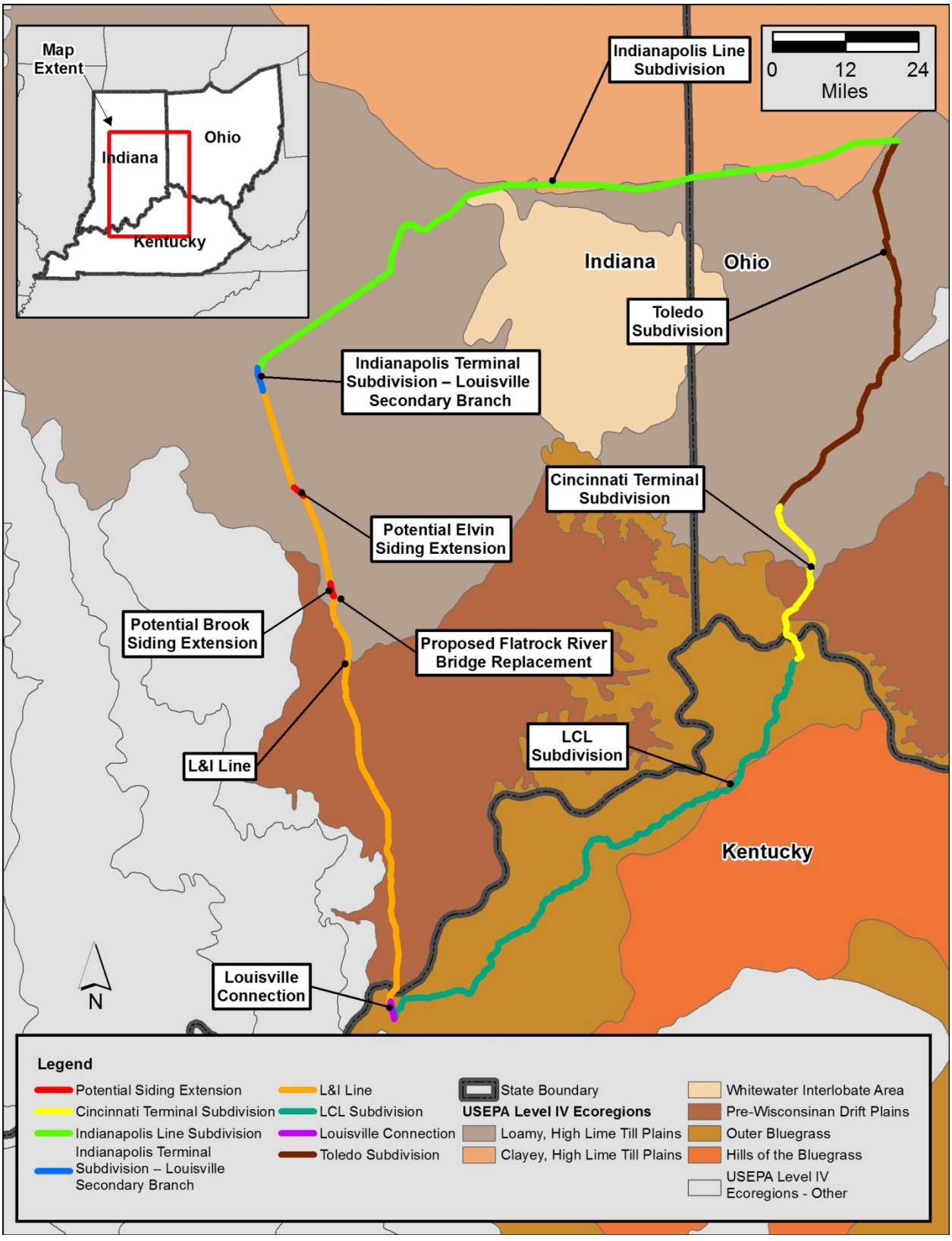

Figure 3.6-1. Ecoregions in the Project Area

3.6.1.2 Wildlife and Wildlife Habitat

Common wildlife species in Indiana, Ohio, and Kentucky that are also hunted or trapped as game include cottontail rabbit (*Sylvilagus floridanus*), squirrel (*Sciurus carolinensis*), beaver (*Castor canadensis*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), mink (*Neovison vison*), muskrat (*Ondatra zibethicus*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), pheasant (*Phasianus colchicus*), quail (*Colinus virginianus*), ruffed grouse (*Bonasa umbellus*), crow (*Corvus brachyrhynchos*), wild turkey (*Meleagris gallopavo*), mourning dove (*Zenaida macroura*), various species of waterfowl, and white-tailed deer (*Odocoileus virginianus*) (Indiana DNR 2013; ODNR 2014; KDFWR 2014).

In the Draft EA, wildlife habitat was identified along the L&I Line with a focus on parks, preserves, and natural areas. In this Supplemental EA, an additional methodology has been used to characterize the presence of wildlife habitat along the rail lines in the project area. For this analysis, the area of land cover types within 0.5 mile of each rail line was quantified using the NLCD (USGS 2014a). The intent of this methodology is to allow for an analysis of potential effects on wildlife caused by the proposed shifts in rail traffic in the project area. Land cover along the rail lines, as an indication of wildlife habitat, was evaluated and compared to determine whether trains would be operating more frequently through habitat where sensitive and vulnerable species are most likely to occur.

The land cover types along the Indianapolis Line Subdivison, L&I Line, Toledo Subdivision/Cincinnati Terminal Subdivision,[17] and LCL Subdivision were quantified to evaluate the availability of potential habitat for wildlife. As noted previously, the Indianapolis Terminal Subdivision – Louisville Secondary Branch and the Louisville Connection were not analyzed relative to wildlife because these rail lines are located in urban areas and do not have adequate habitat for native wildlife. The NLCD (USGS 2014a) was used to calculate forested areas[18] and other land cover types within 0.5 mile of those rail lines, as shown in Table 3.6-1. For this analysis, the National Transportation Atlas Database's 2013 Railway Network (USDOT 2013) was digitized to match aerial imagery. Figures showing the land cover types along each rail line are presented in Appendix F.

Along both the L&I Line and the Indianapolis Line Subdivision, where rail traffic is proposed to increase, the primary land uses are agricultural lands and developed areas. The Toledo Subdivision/Cincinnati Terminal Subdivision, where rail traffic would decrease, is dominated by developed and agricultural lands. The LCL Subdivision, where traffic would decrease, crosses primarily forested areas, agricultural lands, and developed lands.

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[17] The Toledo Subdivision and the Cincinnati Terminal Subdivision are considered together in the analysis of wildlife strikes because these rail lines have the same existing and proposed train traffic and speeds.

[18] For the analysis of forested areas, the NLCD forested coverage, which includes deciduous forest, evergreen forest, and mixed forest, was used. For the analysis of wildlife and wildlife habitat, the definition of forested areas is broader and includes woody wetlands and scrub-shrub areas, which are likely to contain species that use forested, woody wetlands, and scrub-shrub habitats in a similar manner.

Table 3.6-1. Land Cover along Rail Lines in the Project Area[a]

Land Cover[b]	L&I Line		Indianapolis Line Subdivision		Toledo Subdivision/ Cincinnati Terminal Subdivision		LCL Subdivision	
	Acres	% Total Area[c]	Acres	% Total Area[c]	Acres	% Total Area[c]	Acres	% Total Area[c]
Total Area[d]	*68,062*	--	*76,869*	--	*64,712*	--	*68,287*	--
Deciduous Forest	10,913	16.0	3,830	5.0	6,518	10.0	27,050	39.6
Evergreen Forest	283	0.4	27	0.0	138	0.2	794	1.2
Mixed Forest	1	0.0	4	0.0	40	0.0	104	0.2
Shrub/Scrub	18	0.0	61	0.0	20	0.0	220	0.3
Woody Wetlands	51	0.0	102	0.1	31	0.0	407	0.5
Emergent Herbaceous Wetlands	58	0.0	218	0.3	395	0.6	98	0.1
Hay/Pasture	4,576	6.7	2,312	3.0	3,715	5.7	18,147	26.6
Herbaceous	409	0.6	1,108	1.4	218	0.3	867	1.3
Open Water	1,201	1.8	419	0.5	2,438	3.8	439	0.6
Cultivated Crops	24,909	36.6	37,165	48.3	12,407	19.2	1,706	2.5
Developed	25,546	37.5	31,577	41.1	38,533	59.5	18,432	27.0
Barren Land	97	0.1	46	0.0	259	0.4	23	0.0

Sources: USDOT, 2013, "National Transportation Atlas Database: Railway Network," Research and Innovative Technology Administration, Bureau of Transportation Statistics, accessed March 19, 2014, http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_atlas_database/2013/polyline.html.

USGS, 2014a, "National Land Cover Database 2011 (NLCD 2011)," Multi-Resolution Land Characteristics Consortium (MRLC), April 4, accessed April 25, 2014, http://www.mrlc.gov/nlcd2011.php.

Notes:

[a] *The Indianapolis Terminal Subdivision – Louisville Secondary Branch and the Louisville Connection are not included because they are located in urban areas.*

[b] *Land cover designations are from the National Land Cover Database.*

[c] *The % total areas do not equal 100 due to rounding.*

[d] *The total area is the length of the rail line plus the area within 0.5 mile of the centerline of the rail line.*

Wildlife Strikes

Sensitive and vulnerable species that occur along the rail lines (that is, species with potential to be impacted by the Proposed Transaction and that have some level of federal protection or are important to the state) were identified for the wildlife strike analysis, presented in Appendix F. These species include threatened and endangered species, migratory birds and birds of conservation concern, state priority species, and game species.

Forested Areas

Forested areas in the project area were identified using the NLCD, which defines forested areas according to the following classifications (USGS 2014a):

- Deciduous Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change.
- Evergreen Forest – Areas dominated by trees general greater than 5 meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species maintain their leaves all year. The canopy is never without green foliage.
- Mixed Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. Neither deciduous nor evergreen species are greater than 75 percent of the total tree cover.

Forested areas were identified along the Indianapolis Line Subdivision but were not evaluated in detail because only operational changes would occur and tree removal would not be necessary. Forested areas were not found along the Indianapolis Terminal Subdivision – Louisville Secondary Branch or the Louisville Connection because these rail lines are located in urban areas.

Forested areas along the L&I Line were evaluated in areas that could be affected by potential construction of the Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge. While many forested areas exist near the L&I Line, for the purposes of this review, forested areas with the potential to be impacted by the Proposed Transaction include only those areas that directly abut existing L&I Line ROW and potential work areas associated with the proposed Flatrock River Bridge replacement. A preliminary bridge replacement study area that included 100 feet on either side of the L&I Line was identified, defining an area where impacts on forested areas could result from proposed bridge replacement activities.[19]

Potential forested areas were identified using the NLCD (USGS 2014a). Digitally mapped forested areas were overlaid on 2012 National Agriculture Imagery Program aerial imagery and verified in the field during the April 2014 wetland delineation. Following review of aerial imagery and field verification, the boundaries of NLCD forested areas were digitized using GIS to more accurately depict the location and size of forested areas. Forested areas were mapped

[19] The 100-foot-buffer was identified as the area where impacts on forested areas would most likely occur.

within a 200-foot-wide buffer of the L&I Line near those areas where proposed construction activities would occur.[20]

The Elvin siding extension, if constructed, is located in the southern portion of the Central Till Plain Natural Region in Indiana (Homoya 1985). Historically, the Central Till Plain Natural Region largely consisted of wooded or forested plains with smaller areas of swamp, marsh, prairie, and lakes and springs scattered throughout the natural region. Wetter forested areas of the Central Till Plain Natural Region were historically populated with species consisting of bur, pin, and swamp white oak (*Quercas macrcarpa, palustris,* and *bicolor*) red maple (*Acer rubrum*), American elm (*Ulmus americana*), and green ash (*Fraxinus pennsylvanica*) (Homoya et al. 1985). Upland forested areas contained species including beech (*Fagus grandifolia*), sugar and black maple (*Acer saccharum* and *nigrum*), white and red oak (*Quercas alba and rubra*), shagbark hickory (*Carya ovata*), and red elm (*Ulmus rubra*) (Homoya et al. 1985).

The Brook siding extension, if constructed, and the proposed Flatrock River Bridge replacement are located on the western edge of the Bluegrass Natural Region (Homoya 1985). Despite its name, the Bluegrass Natural Region was historically wooded, with smaller areas of non-wooded glade, cliff, and emergent wetland communities existing throughout the natural region (Homoya et al. 1985). Many of the historical forested areas on the western edge of the Bluegrass Natural Region existed in floodplains and swamps. Forested areas in swamps contained species of swamp cottonwood (*Populus heterophylla*), red maple, pin oak, and green ash. Forested areas in floodplains included species such as sweetgum (*Liquidamber styraciflua*), swamp chestnut oak (*Quercas michauxii*), American elm, and shellbark hickory (*Carya laciniosa*) (Homoya et al. 1985).

Based on the NLCD, 12 forested areas are present along the potential Elvin and Brook siding extensions and near the proposed Flatrock River Bridge replacement. These forested areas are listed in Table 3.6-2 and are shown Figures 3.6-2 and 3.6-3. All identified forested areas and their boundaries were field verified in April 2014. Combined, the 12 forested areas that directly abut existing L&I Line ROW total 16.37 acres. Upland forested areas were observed to contain deciduous species of osage orange (*Maclura pomifera*) and honey locust (*Gleditsia triacanthos*). Areas more prone to saturation were observed to contain deciduous species that included American sycamore (*Platanus occidentalis*), American elm, and eastern cottonwood (*Populus deltoides*).

[20] Some forested areas that directly abut construction areas along the L&I Line extend outside of the 200-foot-wide buffer; however, the analysis of forested areas was limited to forested areas within 200 feet of construction areas for the purposes of this Supplemental EA.

Table 3.6-2. Forested Areas Near Areas of Proposed Construction on the L&I Line

Forested Area ID[a]	Type[b]	Area (acres)	Nearest Proposed Construction Area
F-01	Deciduous	1.37	Potential Elvin siding extension
F-02	Deciduous	1.26	Potential Elvin siding extension
F-03	Deciduous	0.44	Potential Elvin siding extension
F-04	Deciduous	1.21	Potential Elvin siding extension
F-05	Deciduous	0.24	Potential Elvin siding extension
F-06	Deciduous	1.56	Potential Elvin siding extension
F-07	Deciduous	0.82	Potential Elvin siding extension
F-08	Deciduous	0.10	Potential Elvin siding extension
F-09	Deciduous	5.28	Potential Brook siding extension and proposed Flatrock River Bridge replacement
F-10	Deciduous	1.05	Potential Brook siding extension and proposed Flatrock River Bridge replacement
F-11	Deciduous	1.52	Proposed Flatrock River Bridge replacement
F-12	Deciduous	1.52	Proposed Flatrock River Bridge replacement
	Total area	**16.37**	

Notes:

[a] *See Figures 3.6-2 and 3.6-3.*

[b] *Potential types of forests identified by the National Land Cover Database include deciduous, evergreen, and mixed.*

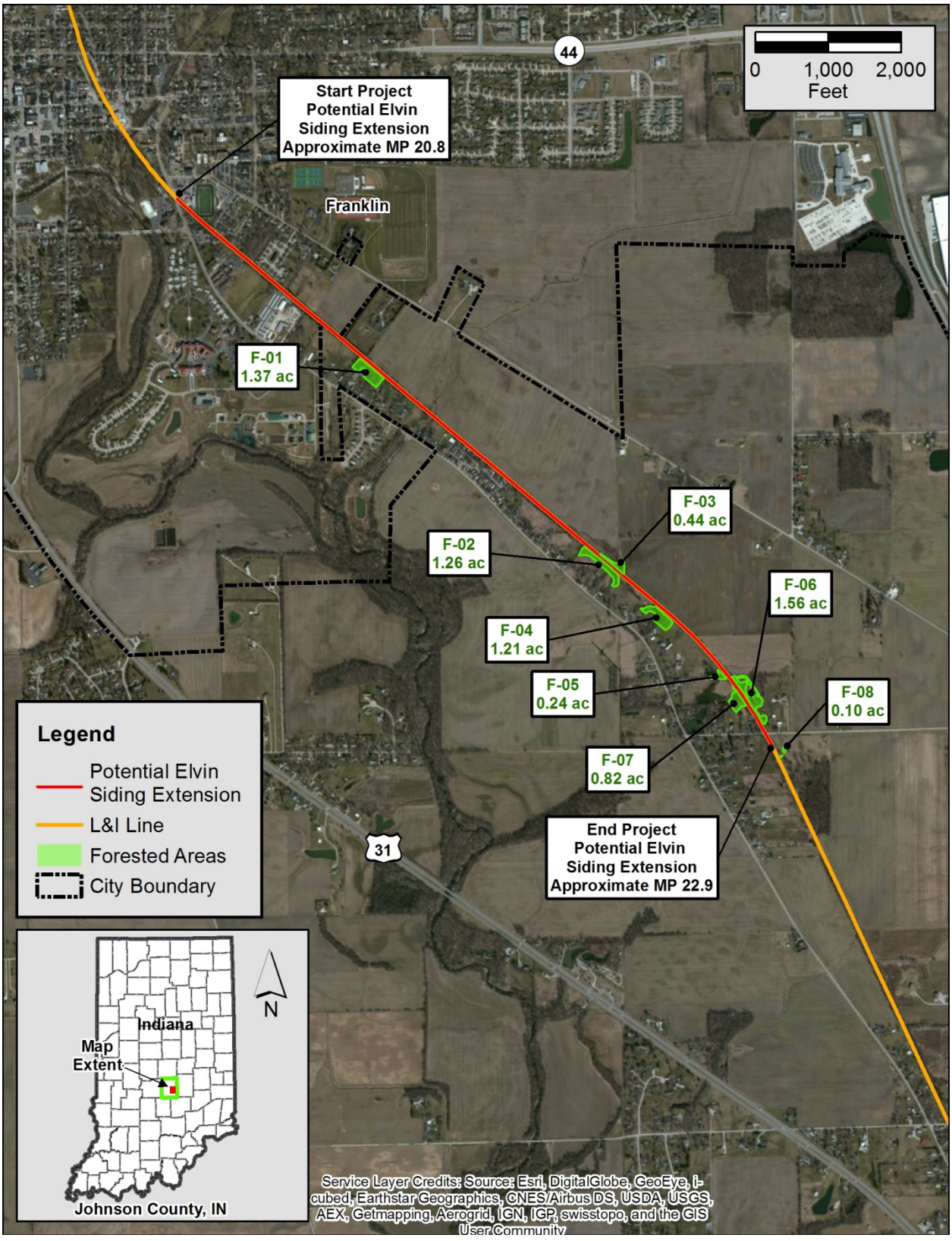


Figure 3.6-2. Forested Areas along the Potential Elvin Siding Extension

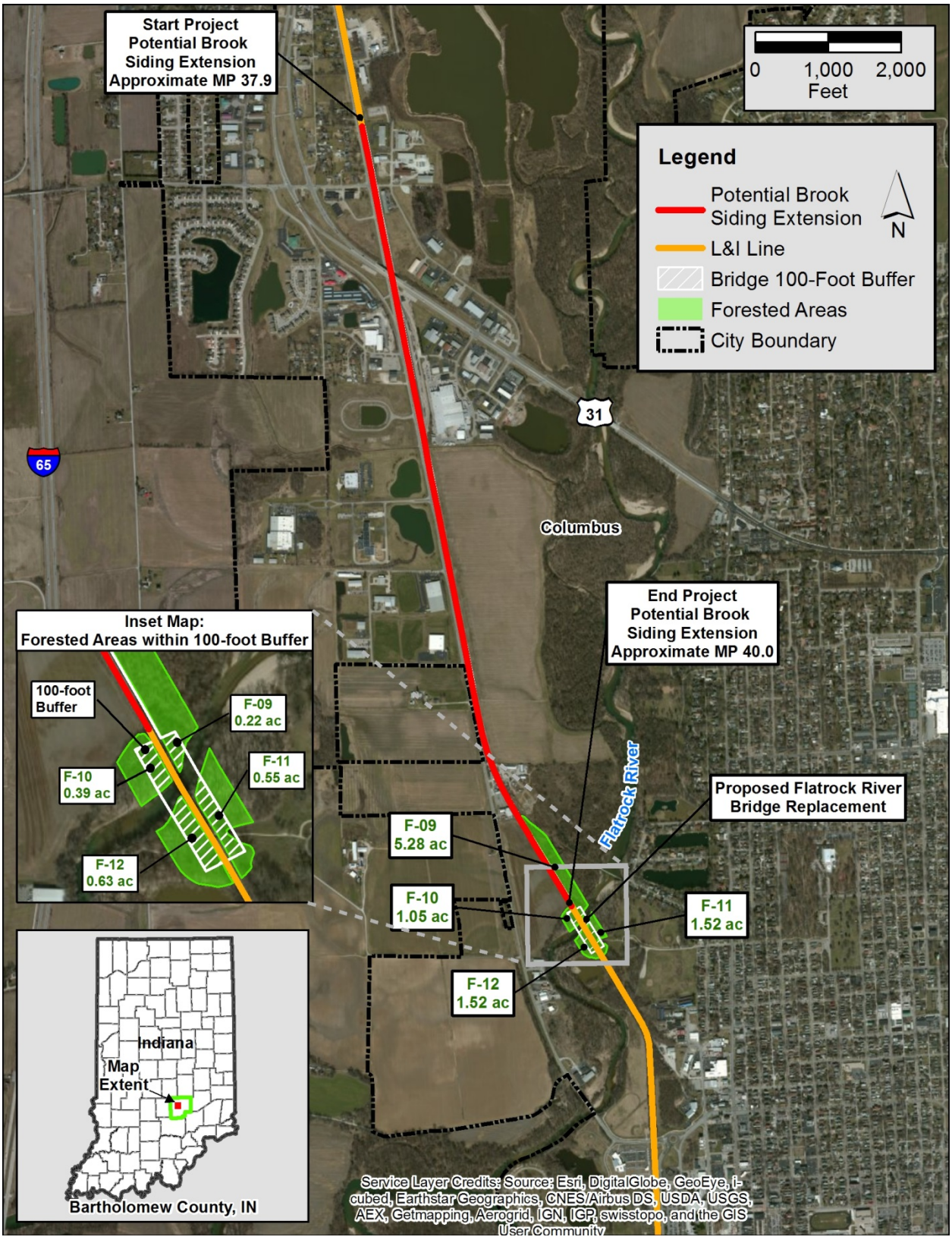


Figure 3.6-3. Forested Areas along the Potential Brook Siding Extension and Proposed Flatrock River Bridge Replacement

3.6.1.3 Federally Listed Threatened, Endangered, and Rare Species

The list of federally listed species that have potential to occur along or near the Indianapolis Line Subdivision, the L&I Line, or both (that is, two of the rail lines that would experience an increase in traffic), was obtained from USFWS's Information, Planning, and Conservation (IPaC) system website (USFWS 2014a); this list updates the species list presented in the Draft EA. In addition, one species was added to this list based on USFWS comments on the Draft EA[21] (USFWS 2013a) and subsequent communication with USFWS staff in Indiana (USFWS 2014b). The species that could occur along the Indianapolis Line Subdivision and L&I Line are listed in Table 3.6-3. There is no designated critical habitat adjacent to the Proposed Transaction.

Table 3.6-3. Federally Listed Species with Potential to Occur Along Indianapolis Line Subdivision and L&I Line

Common Name	Scientific Name	Status	Rail Line(s)
Birds			
Least tern	*Sterna antillarum*	Endangered	L&I Line
Mussels			
Clubshell	*Pleurobema clava*	Endangered	L&I Line
Fanshell	*Cyprogenia stegaria*	Endangered	L&I Line
Fat pocketbook	*Potamilius capax*	Endangered	L&I Line
Orangefoot pimpleback	*Plethobasus cooperianus*	Endangered	L&I Line
Pink mucket	*Lampsilis abrupta*	Endangered	L&I Line
Rabbitsfoot mussel[a]	*Quadrula cylindrica*	Threatened	L&I Line
Rayed bean	*Villosa fabailis*	Endangered	Indianapolis Line Subdivision, L&I Line
Ring pink	*Obavaria retusa*	Endangered	L&I Line
Sheepnose mussel	*Plethobasus cyphyus*	Endangered	L&I Line
Snuffbox mussel	*Epioblasma triquetra*	Endangered	Indianapolis Line Subdivision, L&I Line
Plants			
Running buffalo clover	*Trifolium stoloniferum*	Endangered	L&I Line
Insects			
Louisville cave beetle	*Pseudanophtalmus troglodytes*	Candidate	L&I Line
Mammals			
Gray bat	*Myotis grisescens*	Endangered	L&I Line
Indiana bat	*Myotis sodalis*	Endangered	Indianapolis Line Subdivision, L&I Line
Northern long-eared bat	*Myotis septentrionalis*	Proposed Endangered	Indianapolis Line Subdivision, L&I Line

[21] This USFWS letter from the Bloomington Field Office in Indiana serves to update early coordination comments provided in a joint comment letter from the USFWS Indiana and Kentucky field offices dated July 28, 2011.

Sources: USFWS, 2014a, The Information, Planning and Conservation System, Natural Resources of Concern, accessed April 22, 2014, http://www.fws.gov/ipac/index.html.

USFWS, 2013a, Letter from Scott Pruitt, Field Supervisor, USFWS, to Dave Navecky, Surface Transportation Board, September 30.

USFWS, 2014b, Personal communication (email message) from Robin McWilliams Munson, to Meagan Schnoor, HDR, regarding the rabbitsfoot mussel, May 7.

Note:

[a] *Rabbitsfoot was included in this list as requested by the USFWS Bloomington Field Office (USFWS 2013a; USFWS 2014b).*

3.6.1.4 State-Listed Threatened, Endangered, and Rare Species

State-Listed Threatened and Endangered Species

Lists of state-listed species that have potential to occur along or near the Indianapolis Line Subdivision and L&I Line were obtained from Indiana DNR (2014), ODNR (2012a and 2012b), and the Kentucky State Nature Preserves Commission (KSNPC) (2013). The list of species by county that have the potential to occur along the Indianapolis Line Subdivision is provided in Appendix E, Attachment E-1. The list of species by county that have the potential to occur along the L&I Line is provided in Appendix E, Attachment E-2.

State Priority Species

Indiana DNR and the Kentucky Department of Fish and Wildlife Resources (KDFWR) have identified species of greatest conservation need (Indiana DNR 2005; KDFWR 2013) (see Appendix F, Attachments F-2 and F-3). ODNR does not maintain a list of species of greatest conservation need. In Indiana, state priority species that occur commonly in the state and have the potential to be affected by the Proposed Transaction include two bats, a bird, a frog, and a pocket gopher; specifically, these species are the eastern pipistrelle (*Pipistrellus subflavus*), little brown bat (*Myotis lucifugus*), whip-poor-will (*Caprimulgus vociferous*), northern leopard frog (*Rana pipiens*), and plains pocket gopher (*Geomys bursarius*) (Indiana DNR 2005). State priority species to consider in Kentucky based on range information include the American black bear (*Ursus americanus*), eastern hellbender (*Cryptobranchus alleganiensis*), four-toed salamander (*Hemidactylium scutatum*), northern dusky salamander (*Desmognathus fuscus*), redback salamander (*Plethodon cinereus*), streamside salamander (*Ambystoma barbouri*), and midland smooth softshell (*Apalone mutica*) (KDFWR 2013).

3.6.1.5 Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) protects migratory birds from "hunting, taking, capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any…bird, or any part, nest, or egg" (16 U.S.C. § 704). USFWS maintains a list of birds protected under MBTA (USFWS 2013b).

The 1988 amendment to the Fish and Wildlife Conservation Act mandates USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act" (16 U.S.C. § 2912). USFWS has divided the United States into Bird Conservation Regions

(BCRs) and identified priority species within each BCR (USFWS 2008). The rail lines in the project area are within the Central Hardwoods and the Eastern Tallgrass Prairie BCRs, as shown in Appendix F. USFWS lists 26 birds of conservation concern in the Central Hardwoods BCR and 39 birds of conservation concern in the Eastern Tallgrass Prairie BCR; these lists are provided in Appendix F, Attachment F-1.

3.6.2 Environmental Impacts of Proposed Operational Changes

3.6.2.1 Proposed Transaction

Potential impacts of proposed operational changes on the Indianapolis Line Subdivision and L&I Line on vegetation; wildlife and wildlife habitat; federally and state-listed threatened, endangered, and rare species; and migratory birds were evaluated and are discussed in the following sections.

Vegetation

Vegetation would not be impacted in areas where only operational changes would occur because the only change from existing conditions would be an increase in train traffic along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, Louisville Connection, and L&I Line. Therefore, a detailed analysis of vegetation impacts as a result of operational changes was not performed. Vegetation maintenance practices along these rail lines would continue as required by maintenance and safety plans.

Wildlife and Wildlife Habitat

The most common land cover types found along the L&I Line and the Indianapolis Line Subdivision, where train traffic would increase, are agricultural lands, developed areas, and forested areas. Combined, land crossed by those two rail lines is 48 percent agricultural lands, 40 percent developed areas, and 11 percent forested areas. In contrast, land cover along the Toledo Subdivision/Cincinnati Terminal Subdivision and the LCL Subdivision, where traffic would decrease, is 27 percent agricultural lands, 43 percent developed areas, and 27 percent forested areas. The Indianapolis Terminal Subdivision – Louisville Secondary Branch and Louisville Connection were not assessed for land use types because these rail lines are located in urban areas. Generally, the Proposed Transaction would result in a decrease in rail traffic through forested areas, and an increase in traffic in areas with cultivated crops and pastures.

Wildlife Strikes

As stated in the preceding paragraph, the most common land cover types found along the L&I Line and the Indianapolis Line Subdivision, where train traffic would increase, are agricultural lands, developed areas, and forested areas. Combined, land crossed by those two rail lines is 48 percent agricultural lands, 40 percent developed areas, and 11 percent forested areas. In contrast, land cover along the Toledo Subdivision/Cincinnati Terminal Subdivision and the LCL Subdivision, where traffic would decrease, is 27 percent agricultural lands, 43 percent developed areas, and 27 percent forested areas. Therefore, the Proposed Transaction would result in a decrease in rail traffic through forested areas, and an increase in traffic in areas with cultivated crops and pastures. Because forested areas generally have higher diversity and abundance of wildlife, the Proposed Transaction could result in a decreased risk of wildlife being struck by

operating trains in the project area. However, because of the absence of data on the rate of wildlife strikes and on which species of wildlife are impacted, it is not possible to predict more accurately how rates of wildlife strikes would change as a result of shifts in rail traffic or changes in the speed of operating trains under the Proposed Transaction. Appendix F provides a detailed analysis of the effects of the Proposed Transaction on wildlife strikes.

Forested Areas

Forested areas would not be impacted in areas where only operational changes would occur because the only change from existing conditions would be an increase in train traffic. Therefore, a detailed analysis of forested area impacts as a result of operational changes was not performed along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection.

Federally Listed Threatened, Endangered, and Rare Species

Four federally listed or proposed terrestrial animal species—the least tern (*Sterna antillarum*), gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), and northern long-eared bat (*Myotis septentrionalis*)—have the potential to be affected by an increase in rail traffic, as described below. Because no designated critical habitat for the species occurs along the rail lines, the Proposed Transaction would have no effect on critical habitat.

Least Tern

The L&I Line is approximately 96 miles from the only known breeding colony of least terns in Indiana (Pruitt 2012). Aerial photography in Google Earth was overlain with named waterways and perennial waterways in the NHD (USGS 2014b) to evaluate whether least tern habitat occurs within any waterways crossed by the L&I Line. There are sandy shorelines along the Flatrock River and the East Fork White River near the crossings of the rail line; however, those shorelines are limited in scale. Most of the length of these rivers have tree-lined banks that decrease sight-lines for the birds and could attract predators, so the habitat is marginal at best. Further, there are no reports that these areas have been occupied by least terns in the past.

It is unlikely that least terns would be affected by an increase in rail traffic because the L&I Line is distant from the only known breeding colony in Indiana, this species is uncommon in the region, and nesting habitat does not occur or is uncommon along the rail line. The least tern is not found along the Indianapolis Line Subdivision (see Table 3.6-3).

Therefore, the Proposed Transaction would have no effect on least terns.

Gray Bat, Indiana Bat, and Northern Long-Eared Bat

According to USFWS, the gray bat is likely to occur along only the L&I Line (USFWS 2014a). In Indiana, a total of eight gray bats (two adult males and six lactating females) were netted in 1978 at Muddy Fork Creek (which is crossed by the L&I Line) in Clark County. In 1982, a colony of gray bats was found in an abandoned quarry near Sellersburg in Clark County, about 3 miles south of Muddy Fork Creek. The quarry was in a bluff at the edge of a lake, which extended into and throughout the quarry (Whitaker, Pruitt, and Pruitt 2001). The L&I Line is adjacent to the quarry site in Clark County.

The Indiana bat could occur along the Indianapolis Line Subdivision and the L&I Line. The Indiana bat roosts in trees in the summer and hibernates in caves in the winter (USFWS 2006).

The northern long-eared bat could occur along the Indianapolis Line Subdivision and the L&I Line. The northern long-eared bat has been proposed to be federally listed as an endangered species due to reductions in bat populations from white-nose syndrome, habitat loss, and wind farm operations (78 FR 61046–61080). Like the Indiana bat, northern long-eared bats roost in trees in the summer and hibernate in caves in the winter (USFWS 2013c).

As shown in Table 3.6-1, forested areas (that is, a combination of deciduous forest, evergreen forest, mixed forest, scrub/shrub, and woody wetlands) cover approximately 5.2 percent (4,025 acres) of land adjacent to the Indianapolis Line Subdivision and approximately 16.6 percent (11,266 acres) of land adjacent to the L&I Line. Those forested areas, and nearby waterways, could be used by bats for foraging, and trees within those forested areas could be used by Indiana bats and northern long-eared bats for summer roosting. None of this potential foraging and roosting habitat would be disturbed by an increase in train traffic. There is no known information about the vulnerability of bats to being struck or otherwise harmed by passing trains, or about the effects of increased train traffic on bats. Further detail on potential wildlife strikes is provided in Appendix F. In summary, no potential foraging or roosting habitat for the gray bat, Indiana bat, and northern long-eared bat along the rail line would be modified during train operations. Because of the minimal presence of forested areas along the Indianapolis Line Subdivision and L&I Line and the relatively small increase in nighttime train traffic (assuming half of the proposed increases in train numbers occurs at night), the possibility that individuals of these species could be struck by Transaction-related passing trains is small.

As discussed in the Draft EA and by USFWS (2013a), operation of trains would result in an increase in sound levels in the area of the quarry near Sellersburg in Clark County. Because gray bats there are already exposed to, and thus likely acclimated to, daily noise from trains, and because the increase in sound levels would be moderate, the effects of noise on gray bats at the quarry would likely be insignificant and discountable.

Therefore, the Proposed Transaction could affect, but is not likely to adversely affect, gray bat, Indiana bat, and northern long-eared bat.

State-Listed Threatened, Endangered, and Rare Species

The state-listed species that have the potential to be affected by an increase in rail traffic include 26 species of birds, 10 species of reptiles, and 1 mammal, as shown in Appendix E, Table E.5-1. There is potential for there to be localized effects on state-listed species from increased noise and vibration. In general, physiological and behavioral responses to noise include increased heart rate, panic, and escape behavior.

The land cover analysis presented in Table 3.6-1, above, shows that cultivated crops occur on a substantial portion of the land adjacent to the rail lines: 48.3 percent of the Indianapolis Line Subdivision and 36.6 percent of the L&I Line. For rail traffic increases that occur along the Indianapolis Line Subdivision and L&I Line, species that occur in or near cultivated lands, such as barn owls (*Tyto alba*) and northern harriers (*Circus cyaneus*), would be most vulnerable to being adversely affected by noise and other direct and indirect effects resulting from an increase in train traffic. Impacts on most of the species listed in Appendix E, Table E.5-1 would primarily be limited to the smaller areas of forested and wetland habitat crossed by the rail lines.

There is low occurrence of emergent wetlands, woody wetlands, and open water along the Indianapolis Line Subdivision and L&I Line, so state-listed species that use that habitat, such as the following, would be uncommon along those rail lines: Kirtland's snake (*Clonophis kirtlandii*), Eastern slender glass lizard (*Ophisaurus attenuates*), copperbelly water snake (*Nerodia erythrogaster*), Eastern mud turtle (*Kinostemon subrubrum*), spotted turtle (*Clemmys guttata*), Blanding's turtle (*Thamnophis butleri*), and Eastern massasauga (*Sistrurus catenatus*). Timber rattlesnakes (*Crotalus horridus*) and southeastern crowned snakes (*Tantilla coronata*) are found primarily in forested habitat. There is a potential for noise and vibration from Transaction-related passing trains to affect all of these species, but the impact would limited and short-term.

Migratory Birds

The effect of the Proposed Transaction (including wildlife strikes and noise and vibration) on migratory birds is difficult to quantify because migratory birds can occupy all habitat types, including developed lands. Forested areas are less disturbed, have more natural habitat conditions, have less human activity, and generally have a greater species diversity and abundance than other common land cover types. Forested areas are most abundant along the LCL Subdivision, where train traffic would be reduced, and less abundant along the Indianapolis Line Subdivision and L&I Line, where train traffic would increase. Thus, the risk to migratory birds in forested areas could decrease under the Proposed Transaction. Because of the absence of data on the rate of wildlife strikes and on which species of birds are impacted, it is not possible to predict more accurately how rates of wildlife strikes would change as a result of shifts in rail traffic or changes in the speed of operating trains under the Proposed Transaction. There is a potential for noise and vibration from Transaction-related passing trains to affect migratory birds, but any impact would be short-term.

3.6.2.2 No-Action Alternative

Because operational changes associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on vegetation; wildlife and wildlife habitat; federally and state-listed threatened, endangered, and rare species; and migratory birds are not anticipated as a result of the No-Action Alternative. The risk of wildlife, including threatened and endangered species and migratory birds, being struck by trains would remain the same as under existing conditions.

3.6.3 Environmental Impacts of Proposed Construction on L&I Line

3.6.3.1 Proposed Transaction

Potential impacts of the proposed replacement of the Flatrock River Bridge and the potential construction of the Elvin and Brook siding extensions on the L&I Line were evaluated relative to vegetation; wildlife and wildlife habitat; federally and state-listed threatened, endangered, and rare species; and migratory birds, and are discussed in the following sections.

Vegetation

Upgrading of the L&I Line, including potential construction of the Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge, would be limited to work upon and within existing ROW. Vegetation present in the footprints of the siding extensions and bridge would be displaced. Adjacent vegetation in the ROW could also be disturbed. However, Applicants have proposed to limit ground disturbance and reclaim disturbed areas with native vegetation (see Chapter 4.0, VM 17 and VM 18).

Wildlife and Wildlife Habitat

Land cover adjacent to the Flatrock River Bridge is primarily forested areas, with some emergent wetlands and agriculture. In general, forested areas are less disturbed, have more natural habitat conditions, have less human activity, and have a greater species diversity and abundance than other common land cover types in the region. Wildlife in forested areas and other areas adjacent to the rail line at the location of the proposed Flatrock River Bridge replacement would be temporarily adversely affected by noise and other disturbances during construction of the bridge. Impacts on forested areas are discussed below. The construction of the bridge would include pier installation for the new bridge and pier removal of the existing bridge. There could be temporary effects on aquatic species from sedimentation, changes in flow, and turbidity from bridge construction. However, as discussed in Sections 3.4.3.1 and 3.5.3.1, Applicants have volunteered to implement a number of mitigation measures that would avoid or minimize erosion and sedimentation.

The primary land uses adjacent to the potential siding extensions are agriculture and developed lands. Wildlife abundance and diversity are expected to be low in these areas. Because construction would occur within existing ROW, there would be minimal impacts on wildlife.

Wildlife Strikes

The potential construction of the Elvin and Brook siding extensions and the proposed replacement of the Flatrock River Bridge would have no effect on the potential for wildlife strikes.

Forested Areas

The potential Elvin and Brook siding extensions would be constructed entirely within existing ROW. While forested areas directly abut existing ROW along the potential Elvin and Brook siding extensions (see Figures 3.6-2 and 3.6-3, above), field verification of forested areas confirmed that no forested areas exist within the ROW itself. Therefore, no impacts on forested areas are anticipated to result from the potential construction of the siding extensions.

The Flatrock River Bridge exists just south of the southern extent of the potential Brook siding extension. The construction activities related to proposed replacement of the bridge would be limited to work upon and within the existing ROW. To estimate potential impacts on forested areas, a preliminary bridge replacement study area that included 100 feet on either side of the L&I Line was identified to define an area where impacts on forested areas could result from proposed bridge replacement activities (see Figure 3.6-3). Should all forested areas within the bridge replacement study area be impacted by proposed bridge replacement activities, potential impacts on forested areas would total 1.79 acres. Any impacts on forested areas would be

minimized to the extent possible through avoidance and minimization efforts described in Chapter 4.0, MM 6 and in the Indiana Natural Resource Commission's Information Bulletin 17, Floodway Habitat Mitigation (2014).

Federal Threatened, Endangered, and Rare Species

The Indiana bat and northern long-eared bat are the only federally listed or federally proposed species that could be affected by potential construction of the Elvin and Brook siding extensions in Johnson and Bartholomew counties, respectively, and the proposed construction of Flatrock River Bridge in Bartholomew County. Those species would be adversely affected only if trees must be removed to construct the proposed bridge replacement. As noted above, the potential siding extensions would be constructed entirely within existing ROW, where no trees are present; therefore, trees would not be removed if the two rail sidings are extended. Regarding the proposed bridge replacement, CSXT has committed to remove trees, if any, outside of the summer roosting period of the Indiana bat and northern long-eared bat (that is, from April 1 to September 30) (see Chapter 4.0, VM 11). This commitment should prevent bats from being harmed during the proposed bridge replacement if any tree removal would be deemed necessary.

The potential siding extensions and proposed bridge replacement would not impact caves, so impacts on the gray bat are not anticipated.

Proposed replacement of the Flatrock River Bridge could affect the rabbitsfoot mussel (*Quadrula cylindrica*), which is federally listed as threatened and occurs near or downstream of the project site. According to USFWS (2013a), the rabbitsfoot mussel has been found in the Flatrock River approximately 15 miles upstream of the L&I Line crossing. USFWS may require a mussel survey prior to bridge construction to assess if suitable habitat is present and/or if the mussel is found in the area of the proposed bridge replacement. The Flatrock River is not proposed critical habitat for the rabbitsfoot mussel (77 FR 63440-63536; USFWS 2014c). As discussed in Sections 3.4.3.1 and 3.5.3.1, Applicants have volunteered to implement a number of mitigation measures that would avoid or minimize erosion and sedimentation.

State Threatened, Endangered, and Rare Species

The evening bat (*Nycticelus humeralis*) would be adversely affected only if trees must be removed during construction. However, the potential construction of the siding extensions would not require tree removal, so impacts on the evening bat are not anticipated. Trees are present near the site of the proposed bridge replacement in Bartholomew County. At this location, CSXT has committed to remove trees, if any, outside of the Indiana bat's roosting period (that is, from April 1 to September 30) (see Chapter 4.0, VM 11), and this commitment is expected to apply to the evening bat's roosting period as well.

Land adjacent to the potential Elvin siding extension in Johnson County is entirely agricultural or developed. A majority of the potential Brook siding extension in Bartholomew County is adjacent to agricultural and developed lands. At the southern end of the potential Brook siding extension, near the Flatrock River Bridge, forested wetlands, emergent wetlands, and forested upland are adjacent to the rail line. Straw sedge (*Carex straminea*), Illinois hawthorne (*Crataegus prona*), cattail gay-feather (*Liatris pycnostachya*), Smith's bulrush (*Penstemon canescens*), branching bur-reed (*Sparganium androcladum*), and yellow nodding ladies'-tresses (*Spiranthes ochroleuca*) have the potential to occur in these habitats (see Appendix E, Attachment E-2, for the state-listed plant species that may occur along the L&I Line). None of

the state-listed plant species are likely to exist adjacent to the potential siding extensions. Indiana DNR may require plant surveys prior to construction if bridge construction were to extend beyond the ROW. Applicants have offered a voluntary mitigation measure that before beginning any Transaction-related construction activity, Applicants will survey all suitable habitats potentially impacted by the construction activity for state-listed threatened or endangered plant species. If any listed plant species are located, Applicants will implement a mitigation plan in consultation with the appropriate federal and state agencies (see Chapter 4.0, VM 10).

The pyramid pigtoe (or pink pigtoe) (*Pleurobema rubrum*) is found widespread, but rarely in the Ohio River drainage, in medium to large rivers in sand or gravel in areas with a good current (Illinois Natural History Survey 2014) (see Appendix E, Attachment E-2, for the state-listed mussel species that may occur along the L&I Line). The Flatrock River is part of the Ohio River drainage, so the pyramid pigtoe could potentially occur in the Flatrock River. State-listed mussel species that could be affected by the proposed replacement of the Flatrock River Bridge include the rabbitsfoot (discussed above) and pyramid pigtoe. Indiana DNR may require a mussel survey prior to bridge construction to assess if suitable habitat is present, if the mussels are found in the area of the proposed bridge replacement, or both. As discussed in Sections 3.4.3.1 and 3.5.3.1, Applicants have volunteered to implement a number of mitigation measures that would avoid or minimize erosion and sedimentation.

Migratory Birds

CSXT would comply with the requirements of the Migratory Bird Treaty Act and has committed to tree removal, if any, outside of the period from April 1 to September 30. This commitment would eliminate the potential for harm to nesting migratory birds in trees. However, OEA notes that this commitment applies to trees only and does not address ground- and shrub-nesting bird species. The potential impacts on migratory birds, in the absence of mitigation, would be minor because of the limited clearing that would be needed. Nevertheless, OEA preliminarily recommends a mitigation measure to address potential impacts on migratory birds (see Chapter 4.0, MM 10).

3.6.3.2 No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, no impacts on vegetation; wildlife and wildlife habitat; federally and state-listed threatened, endangered, and rare species; and migratory birds are anticipated as a result of the No-Action Alternative.

3.7 AIR QUALITY AND CLIMATE

This section discusses the affected environment and potential environmental effects of the Proposed Transaction and the No-Action Alternative on air quality and climate in the project area. For the purpose of analyzing impacts of proposed operational changes, a study area was identified along the Indianapolis Line Subdivision between Indianapolis, Indiana, and Sidney, Ohio; along the Indianapolis Terminal Subdivision – Louisville Secondary Branch in Marion County, Indiana; and along the Louisville Connection in Jefferson County, Kentucky. The Indiana counties in this study area include Marion, Hancock, Madison, Delaware, and Randolph, and the Ohio counties include Darke and Shelby. The Indiana counties of Clark and Floyd are

also discussed in this section because these counties border Jefferson County, Kentucky, and share a regional air classification with regard to particulate matter. For the purpose of analyzing impacts of proposed construction activities on the L&I Line, the study area includes areas identified along the potential Elvin and Brook siding extensions and the proposed Flatrock River Bridge replacement in Johnson and Bartholomew counties, Indiana.

Air quality generally is determined by comparing monitored pollutant concentrations with prescribed standards. The maximum level of a pollutant considered to be acceptable is specified by USEPA under the Clean Air Act (CAA). In 42 U.S.C. § 7409, the CAA established two types of National Ambient Air Quality Standards (NAAQS). The primary standards set limits to protect public health, and the secondary standards set limits to protect public welfare. USEPA's Office of Air Quality Planning and Standards has set NAAQS for the following six criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), respirable particulate matter (PM_{10} and $PM_{2.5}$), and sulfur dioxide (SO_2). Ambient air quality standards (AAQS) adopted by Indiana, Ohio, and Kentucky are no more stringent than the national standards, with the few exceptions noted in Table 3.7-1, below.

Since the issuance of the Draft EA, three new NAAQS have been proposed and implemented: the 2010 1-hour NO_2, the 2010 1-hour SO_2, and the 2012 annual and 24-hour $PM_{2.5}$. In addition, the 1997 8-hour ozone standard was revoked on July 20, 2013. This Supplemental EA discusses the impacts of all NAAQS on the counties in the study area defined above. There are four Indiana counties that were discussed in detail in the Draft EA: Bartholomew, Jackson, Johnson, and Scott. All of these counties are considered to be in attainment or unclassifiable with regard to the three new NAAQS. Johnson County, Indiana, was under a maintenance plan for the 1997 8-hour ozone standard; however, because this standard was revoked, an updated maintenance plan is no longer required. In addition, Johnson County is classified as attainment for the 2006 8-hour ozone standard. Lastly, Johnson County was previously classified as nonattainment for the 1997 annual $PM_{2.5}$ standard. However, on July 11, 2013, this area was reclassified as attainment with a maintenance plan for the 1997 annual $PM_{2.5}$ standard. Therefore, for these four counties, there are no changes to the air quality impacts presented in the Draft EA.

Table 3.7-1 shows the NAAQS for all of the pollutants discussed above. The NAAQS are expressed in parts per million (ppm) and parts per billion (ppb) by volume, milligrams per cubic meter of air (mg/m^3), or micrograms per cubic meter of air ($\mu g/m^3$), as applicable. To determine compliance with NAAQS, concentrations of pollutants are measured and averaged over a specified duration (ranging from 1 hour to 1 year, depending on the pollutant and standard) for comparison with the applicable standard.

Climate change refers to any significant change in the measures of climate lasting for an extended period of time. It includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer. For projects such as the Proposed Transaction, the short-term impacts from construction as well as the long-term impacts from the shift in rail traffic weigh into but do not determine impacts on climate. This section further discusses these short- and long-term impacts and their relation to climate change.

Table 3.7-1. National Ambient Air Quality Standards

Pollutant	Primary/ Secondary[a]	Level[b]	Averaging Time	Notes	Federal Register (FR) NAAQS Final Rule Citation[c]
Carbon Monoxide (CO)	Primary	9 ppm (10 mg/m^3)	8-hour	Not to be exceeded more than once per year.	76 FR 54294, Aug. 31, 2011
	Primary	35 ppm (40 mg/m^3)	1-hour	Not to be exceeded more than once per year.	
Lead (Pb)	Primary and Secondary	0.15 $\mu g/m^3$	Rolling 3-month average	Final rule signed October 15, 2008. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.	73 FR 66964, Nov. 12, 2008
Nitrogen Dioxide (NO_2)	Primary	100 ppb	1-hour	To attain this standard, the 3-year average of the 98^{th} percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).	75 FR 6474, Feb. 9, 2010; 61 FR 52852, Oct. 8, 1996
	Primary and Secondary	53 ppb (100 $\mu g/m^3$)	Annual (arithmetic mean)	The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.	
Ozone (O_3)	Primary and Secondary	0.075 ppm	8-hour	To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective March 27, 2008).	73 FR 16436, Mar. 27, 2008

Pollutant	Primary/ Secondary[a]	Level[b]	Averaging Time	Notes	Federal Register (FR) NAAQS Final Rule Citation[c]
Particulate Matter (PM_{10})	Primary and Secondary	150 µg/m^3	24-hour	Not to be exceeded more than once per year on average over 3 years.	52 FR 24634, July 1, 1987
Particulate Matter ($PM_{2.5}$)	2012 Primary (also Secondary in OH and KY)	12 µg/m^3	Annual (arithmetic mean)	To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 12 µg/m^3.	78 FR 3086, Jan. 15, 2013
	2012 Secondary (not in OH or KY) Former 1997 Primary and Secondary	15 µg/m^3	Annual (arithmetic mean)	To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 12 µg/m^3.	
	Primary and Secondary	35 µg/m^3	24-hour	To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective December 17, 2006).	
Sulfur Dioxide (SO_2)	Primary	75 ppb	1-hour	Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average concentrations at each monitor within an area must not exceed 75 ppb.	75 FR 35520, Jun. 22, 2010
	Secondary	0.5 ppm	3-hour	Not to be exceeded more than once per year.	38 FR 25678, Sept. 14, 1973

Source: USEPA, 2012, "National Ambient Air Quality Standards (NAAQS)," December 14, accessed May 5, 2014, http://www.epa.gov/air/criteria.html.

Notes:

[a] *Unless noted, state ambient air quality standards (AAQS) are the same as federal NAAQS.*

[b] *mg/m^3 = milligrams per cubic meter, ppb = parts per billion, ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter.*

[c] *State AAQS regulations can be found through the sources below. If values in the table do not match the most recent state regulations referenced, it is because the values above have been updated based on the referenced fact sheets and/or telephone conversations. The state regulations may be under revision; therefore, regulation standards do not match the standards the states are actually implementing at the time.*

Indiana

Indiana Administrative Code. Title 326, Air Pollution Control Division. Available online at http://www.in.gov/legislative/iac/T03260/A00010.PDF.

Indiana Department of Environmental Management (IDEM). 2014a. "Air Quality in Indiana: NAAQS." Accessed May 5, 2014. http://www.in.gov/idem/airquality/2340.htm.

IDEM. 2014b. "Air Quality in Indiana: Criteria Pollutants." Accessed May 5, 2014. http://www.in.gov/idem/airquality/2343.htm.

IDEM. 2014c. Telephone conversation between IDEM and HDR regarding ambient air quality standards. May 1.

Ohio

Ohio Administrative Code. 3745-25-02, Ambient Air Quality Standards. Effective June 14, 2012. Available online at http://www.epa.ohio.gov/portals/27/regs/3745-25/3745-25-02_Final.pdf.

Ohio Environmental Protection Agency (EPA). 2014. "National Ambient Air Quality Standards - Attainment Status." Accessed May 5, 2014. http://www.epa.ohio.gov/dapc/general/naaqs.aspx.

Kentucky

Kentucky Department for Environmental Protection (DEP). 2014a. "Division for Air Quality: Kentucky Air Monitoring." Energy and Environment Cabinet, Department for Environmental Protection. Accessed May 5, 2014. http://air.ky.gov/Pages/KentuckyAirMonitoring.aspx.

Kentucky DEP. 2014b. Telephone conversation between the Division for Air Quality, Kentucky DEP, and HDR, regarding ambient air quality standards. May 1.

3.7.1 Affected Environment

3.7.1.1 Air Quality

Throughout the study area, numerous air monitoring stations measure pollutants. IDEM operates the official air monitoring stations in all of the Indiana counties included in the study area. There are no air monitoring stations in Darke or Shelby counties in Ohio; however, there are monitoring stations in Miami County which is located just south of Shelby County. The Louisville Metro Air Pollution Control District operates monitors in Jefferson County, Kentucky. These monitoring stations are used, in part, to determine NAAQS attainment status for the criteria pollutants included in Table 3.7-1, above.

USEPA designates attainment and nonattainment areas. Attainment areas are those areas designated by USEPA as meeting the NAAQS while nonattainment areas do not meet the NAAQS. An area can be in attainment for one pollutant but out of attainment for another pollutant. After a nonattainment area meets the NAAQS for 3 years, a state can request that USEPA redesignate the area as being in attainment. If USEPA approves redesignation, a maintenance plan would describe the actions that would be taken for a period of 10 years to ensure that the area will meet the NAAQS. The area is classified as a maintenance area during this time.

The following discussion includes a summary of the attainment status of the study area for each of the criteria pollutants. Unless otherwise noted, the area attainment status information is from the USEPA Green Book website (USEPA 2013a). In Appendix G, Table G-1 lists the counties in the study area and their nonattainment status.

Carbon Monoxide

Carbon monoxide (CO) is defined by IDEM as

> a colorless, odorless gas formed when carbon in fuels is not completely burned. It is a product of motor vehicle exhaust, which contributes the most CO emissions nationwide. High concentrations of CO generally occur in areas with heavy traffic congestion. Other sources of CO emissions include industrial processes such as carbon black manufacturing, non-transportation fuel combustion, and natural sources such as wildfires. Peak CO concentrations in the ambient air typically occur during the colder months of the year when CO concentrations in automotive emissions are greater and nighttime inversion conditions are more frequent. CO, in the presence of solar radiation, reacts with other chemical compounds to form ground-level ozone. (IDEM 2014d)

Nearly all of the counties in the study area are in attainment or are unclassifiable for all CO standards. A portion of Marion County, Indiana, was classified as nonattainment for the 8-hour CO standard from 1978 through 1999. The area is described as part of the City of Indianapolis (an area bounded by 11th Street on the north, Capital on the west, Georgia Street on the south, and Delaware on the east). Redesignation of this area as an attainment maintenance area for CO was effective March 20, 2000, and a subsequent limited maintenance plan was approved by USEPA and published in the Federal Register on October 15, 2009.

Lead

Lead (Pb) is a metal that is both naturally occurring and found in manufactured products, and is also one of the six criteria pollutants regulated under the federal CAA. Sources of lead include smelters; mining operations; waste incinerators; battery manufacturing and recycling; combustion of coal, oil, or solid waste; and the production of lead shot and fishing sinkers (IDEM 2014e).

With the exception of a small area in Delaware County, Indiana, all of the counties in the study area are in attainment or are unclassifiable for lead. A small area in Muncie, Indiana, in Delaware County, is classified as nonattainment for lead. It is located adjacent to a lead acid battery manufacturing facility. This nonattainment area is approximately 1.2 miles south of the Indianapolis Line Subdivision.

Nitrogen Oxides

Nitrogen dioxide (NO_2) is defined by IDEM as

> one of a group of highly reactive gases known as nitrogen oxides (NO_x). Highly reactive gases are those that have a high potential to change in composition under certain conditions of pressure, temperature or light, or upon contact with another chemical. For example, when nitrogen oxides come into contact with volatile organic compounds (also a group of highly reactive gases) in conditions of sunlight and warm temperatures, the two gasses react to form ground-level ozone pollution. NO_x also contributes to the formation of other air pollutants, most notably fine particle pollution. Of all the gases known as nitrogen oxides, NO_2 is the component of greatest interest. NO_2 is emitted from a number of different sources when fuel is burned at high temperatures. These sources include industrial, commercial and residential combustion units, motor vehicles, and electric utilities. Federal and state programs, such as emission standards for motor vehicles and electric utilities and regulations on the regional transport of NO_x, have resulted in substantial reductions in NO_2 over the past 30 years. (IDEM 2014f)

The counties in the study area are in attainment or are unclassifiable for both the annual and 1-hour NO_2 standards.[22]

Ozone

While ozone (O_3) in the upper atmosphere benefits life by shielding the Earth from harmful ultraviolet radiation from the sun, high concentrations of ozone at ground level are a major health and environmental concern. Ozone is the major component of smog. Ozone is generally not emitted directly into the air, but is formed through complex chemical reactions between

[22] In the Federal Register on February 17, 2012 (77 FR 9532-9588), USEPA designated all areas of the country as unclassifiable/attainment for the 2010 1-hour NO_2 NAAQS. The notice also stated, "The EPA and state agencies are currently working to establish an expanded network of NO_2 monitors, expected to be deployed in 2013. Once 3 years of air quality data have been collected from the expanded network, the EPA will be able to evaluate NO_2 air quality in additional locations."

precursor emissions of volatile organic compounds (VOCs) and NO_x in the presence of sunlight. Sunlight and temperature stimulate these reactions so that peak ozone levels typically occur during warmer times of the year. It is most prevalent in Indiana, Ohio, and Kentucky between April 1 and September 30. Transportation and industrial sources emit both VOCs and NO_x. Diverse sources emit VOCs including motor vehicle traffic, chemical manufacturing, dry cleaners, paint shops, other sources using solvents, industrial boilers, and gasoline vapors (USEPA 2013b; IDEM 2014g).

All of the counties in the study area are either in attainment, maintenance, or unclassifiable for the 1997 8-hour ozone standard of 0.08 ppm and the 1997 1-hour ozone standard of 0.12 ppm. However, the 1997 8-hr ozone standard was revoked on July 20, 2013; therefore, updated maintenance plans are no longer required. With regard to the recent 2008 8-hour ozone standard of 0.075 ppm, none of the counties in the study area are considered nonattainment.

Particulate Matter

Particulate matter (PM) is also referred to as particle pollution and is defined by IDEM as "a complex mixture of particles, including dust, dirt, soot, smoke, and liquid droplets that are found in the air in sizes small enough to be inhaled" (2014h). Particles that are between 2.5 and 10 micrometers in diameter are referred to as PM_{10}, and particles that are smaller than 2.5 micrometers in diameter are referred to as $PM_{2.5}$. "For comparison, the diameter of a human hair is approximately 70 micrometers" (IDEM 2014h).

IDEM also notes that

> PM comes from residential combustion activities such as furnaces, air conditioners, wood fireplaces, and outdoor hydronic heaters. PM is also created from industrial combustion activities such as large boilers, process heaters and incinerators, and vehicle exhaust. The composition of particles varies widely. Some particles are emitted directly into the air from cars, trucks, buses, homes, factories, construction sites, unpaved roads, stone crushing, and wood burning. Other particles are formed in the air as sunlight and water vapor chemically react with gases emitted from fuel combustion. (IDEM 2014h)

Particulate Matter (PM_{10})

The counties in the study area are in attainment or are unclassifiable for the 24-hour PM_{10} standard.

Particulate Matter ($PM_{2.5}$)

Clark and Floyd counties in Indiana, and Jefferson County, Kentucky, are classified as nonattainment for the 1997 annual $PM_{2.5}$ standard of 15 $\mu g/m^3$, and are included in the Louisville, Kentucky-Indiana annual $PM_{2.5}$ nonattainment area. Based on favorable ambient air monitoring results, both states have petitioned to have these counties redesignated as attainment with respect to the 1997 annual $PM_{2.5}$ standard.

On December 14, 2012, USEPA strengthened the annual primary standard for $PM_{2.5}$ to 12 $\mu g/m^3$ and retained the 24-hour standard of 35 $\mu g/m^3$. USEPA also retained the existing standards for PM_{10} (78 FR 3086-3287). By December 13, 2013, states had to declare their status with respect to the 2012 $PM_{2.5}$ annual standard. USEPA anticipates making final decisions by December

2014 regarding the designation of counties for the 2012 $PM_{2.5}$ annual standard. For the counties included in the study area, the states have petitioned the areas to be designated attainment or unclassifiable for the 2012 $PM_{2.5}$ annual standard. In the petition letters to USEPA, both the states of Indiana and Kentucky provided ambient air monitoring data that shows a steadily downward trend for $PM_{2.5}$ ambient air concentrations (IDEM 2013; Kentucky DEP 2013).

Sulfur Dioxide

Sulfur dioxide (SO_2) is defined as IDEM as

> one of a group of highly reactive gases known as sulfur oxides (SO_x). Highly reactive gases are those that have a high potential to change in composition under certain conditions of pressure, temperature or light, or upon contact with another chemical. For example, sulfur dioxide released into the atmosphere dissolves in water vapor to form acid rain. SO_2 is emitted from fossil fuel combustion at power plants and other industrial facilities. Other sources of SO_2 include industrial processes such as extracting metal from ore and the burning of high sulfur fuels by locomotives, large ships, and non-road equipment. Federal and state programs such as the Acid Rain Program and vehicle engine and fuel standards (*Tier 2 Tailpipe and Fuel Standards and Diesel Fuel Sulfur Standards*) have resulted in a substantial reduction of SO_2 emissions over the past 30 years. (IDEM 2014i)

Nearly all of the counties in the study area are in attainment or are unclassifiable for the 1971 SO_2 standards. Marion County, Indiana, is currently a maintenance area for the 1971 standard and has been since January 1997.

In June 2010, USEPA set a new 1-hour primary standard for SO_2 of 75 ppb. In the Federal Register on August 5, 2013, USEPA published the area designations for the new standard (78 FR 47191–47205). The portion of Marion County that includes Wayne, Center, and Perry townships was designated as nonattainment. Within this area, the state of Indiana reported that only one of the ambient air monitors registered an exceedance of the 1-hour standard. This monitor is located near the southwest corner of Center Township between two power plants (USEPA 2013c). The Indianapolis Terminal Subdivision – Louisville Secondary Branch runs 1.5 miles to the east of the monitor. In addition, a small area of the southwest portion of Jefferson County, Kentucky, was designated as nonattainment for the 2010 SO_2 standard; it is located approximately 12 miles southwest of the Louisville Connection.

Air Toxics

In addition to the criteria air pollutants for which there are NAAQS, USEPA regulates emissions of so-called air toxics, some of which are also classified as hazardous air pollutants (HAPs) under the CAA. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources, area sources (such as dry cleaners), and stationary sources (such as factories or refineries).

Mobile source air toxics (MSATs) are a subset of the 187 HAPs identified under the CAA, plus diesel particulate matter (DPM). MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds present in fuel are emitted to the air when the fuel evaporates or passes through an engine unburned. Other toxics are emitted from the incomplete

combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or impurities in oil or gasoline. The principal air toxics emitted from mobile sources are acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and DPM (FHWA 2013).

USEPA is the lead federal agency for administering the CAA and has certain responsibilities regarding the health effects of MSATs. USEPA issued a Final Rule for the "Control of Hazardous Air Pollutants from Mobile Sources" (72 FR 8428–8570), in which it examined the impact of existing and newly promulgated mobile source emission control and fuel quality programs on emissions of MSATs. USEPA projects that between 1999 and 2030, even with a 57 percent increase in highway vehicle miles traveled and higher levels for other sectors, emissions control programs will substantially reduce MSATs nationwide.

According to USEPA estimates, the lifetime cancer risk from all sources of air pollution ranges from 1 to 25 cases per million people in rural areas, and from 25 to 50 cases per million people in urban areas. These risks compare with an overall lifetime cancer risk from all causes of 333,000 cases per million people. Although little is known about the existing levels of MSATs in the study area, it is apparent, based on the nationwide reductions forecast by USEPA, that MSAT concentrations and associated risks generally should decline in coming decades, even with substantial growth in mobile and stationary source activity.

3.7.1.2 Climate

The climate in Indiana and northern Kentucky was discussed in the Draft EA and is incorporated by reference in accordance with 40 C.F.R. § 1502.21. Overall, the climate in West-Central Ohio is similar to the climate in Indiana and Northern Kentucky as described in the Draft EA (National Climatic Data Center 2006).

In the far northeastern portion of the study area, near Sidney, Ohio, the climate of Ohio is continental, characterized by a relatively large range of seasonal variability with cold winters and warm, humid summers. It is affected by warm maritime tropical air masses that bring summer heat and humidity but that also produce occasional mild winter days (National Climatic Data Center 2006). The average annual temperature from 1971 to 2000 was 50.3°F, and the average annual precipitation was 38.44 inches (World Media Group, LLC 2014). The average annual snowfall for these same years was 11.58 inches. The Sidney 1-day maximum and minimum temperatures for 1948 through 2001 are 102°F and –31°F, respectively. The average number of days with a high temperature equal to or greater than 90°F was approximately 13 per year, and approximately 8 days per year had a low temperature below 0°F. The highest 1-day precipitation for the period was 4.65 inches, and the highest 1-day snowfall was 20.2 inches (Midwestern Regional Climate Center 2014a, 2014b, and 2014c).

Urban Heat Island Effect

The urban heat island (UHI) effect is used to describe situations in which urban areas are 2 to 10°F warmer than their rural surroundings due to replacement of natural land cover with buildings, roads, and other infrastructure (USEPA 2003 and 2013d). These changes can contribute to higher urban temperatures in the following ways (USEPA 2003):

- The displacement of trees and vegetation minimizes the natural cooling effects of shading and evaporation of water from soil and leaves.

- Tall buildings, roads, and parking ramps absorb and reradiate heat.
- Waste heat from vehicles, factories, and air conditioners may add warmth to their surroundings.

The UHI effect can be reduced by increasing tree and vegetative cover, creating green roofs (also called rooftop gardens or eco-roofs), installing cool—mainly reflective—roofs, and using cool pavements (USEPA 2013d).

Global Climate Change

In contrast to the localized temperature differences that the UHI effect causes, global climate change is a term used to describe the gradual increase or decrease in worldwide average surface temperatures, or changes in precipitation, wind, or other climate variables. The earth's average temperature has increased 1.4°F over the last 100 years, and additional increases of 2 to 11°F are projected over the next century. Humans are largely responsible for these changes (USEPA 2014). The main human contributions to global climate change are attributed to the emissions of what are commonly referred to as greenhouse gases (GHG), such as carbon dioxide (CO_2), and to changes in land cover and land use that can affect the amount of CO_2 that the land surface takes up or releases.

Many other factors can affect global climate, including solar variation, volcanic activity, ocean current cycles, variations in the Earth's orbit, and orientation of the Earth on its rotational axis. Concerns expressed in recent years are that humankind's emissions of GHG may warm the climate, possibly affecting precipitation patterns as well.

There are currently GHG reporting rules applicable to sources of GHG emissions as well as stationary source air quality permitting rules; however, these do not directly affect the Proposed Transaction.

3.7.2 Environmental Impacts of Proposed Operational Changes

3.7.2.1 Proposed Transaction

Under the Proposed Transaction, operational changes (that is, increased train traffic resulting from the rerouting of trains from other CSXT rail lines) would occur on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection. These changes would be made possible by improvements on the L&I Line, including the potential construction of the Elvin and Brook siding extensions and the proposed replacement of the Flatrock River Bridge. Together, the operational changes and proposed construction would result in improved efficiencies for CSXT in the project area.

The air emissions analysis focuses on improvements in CSXT efficiencies in the Midwest region as a result of the Proposed Transaction as compared to the No-Action Alternative, and is a qualitative analysis.

Decrease in Regional Emissions Due to Improvements in Efficiency

As discussed in Section 1.2, Purpose and Need, the Proposed Transaction would allow CSXT to improve its efficiencies and allow greater control over the handling of its trains in the Midwest region. Under the Proposed Transaction, 11 additional trains would travel across the Indianapolis Line Subdivision, 13 additional trains would travel across the Indianapolis Terminal

Subdivision – Louisville Secondary Branch, and 12 additional trains would travel across the Louisville Connection. Because of these increases in train numbers, there would be an associated increase in fuel consumed along these three CSXT lines and, therefore, higher air emissions. However, the additional freight being hauled on these segments would be displaced from existing lines, and to the extent that the new routes improve system-wide fuel efficiency, there would be a net reduction in fuel use and associated emissions of criteria pollutants and GHG.

The proposed improvements on the L&I Line would improve CSXT's gross-ton of freight per mile (GTM) efficiency. This improvement, along with an improved ability to control traffic in the Midwest, would enhance efficiencies through shorter train travel times. Improvements in these efficiencies and shorter travel routes for trains under the Proposed Transaction would have a tendency to reduce fuel use and therefore lower air emissions. Air emissions would be further minimized due to recent improvements in anti-idling technologies for locomotives.

Therefore, for pollutants that are more significant locally (that is, PM_{10}, $PM_{2.5}$, and CO), some areas within the study area could experience slight localized degradation in air quality because of the increased fuel use associated with both increases in trains and in the gross-tonnage hauled along the rail lines associated with the Proposed Transaction as compared to the No-Action Alternative. However, improvements in overall GTM efficiencies would tend to offset these decreases in air quality. For pollutants that are more significant regionally (that is, NO_x and VOC [as precursors to ozone], SO_2, and CO_2), it is anticipated that the system-wide improvements would cause the region to experience a net benefit to air quality.

In general, rail emissions for future years would be lower than existing rail emissions for all pollutants as newer locomotives designed to meet more stringent emission standards enter the fleet (USEPA 2008). A system-wide reduction in overall emissions in future years would also occur for CSXT and all rail operations for the same reason.

Decrease in Emissions Due to Fuel Savings from Locomotive Engine Idling Reductions

Fuel savings due to reductions in locomotive engine idling time were not calculated but are expected to be realized as part of the overall efficiency improvements anticipated under the Proposed Transaction. Any reductions in locomotive engine idling time would reduce fuel usage, which would subsequently result in reductions of air emissions.

Decrease in Emissions Due to Ultra Low Sulfur Diesel Fuel Requirements

In the Federal Register on June 29, 2004, USEPA adopted new emission standards for nonroad diesel engines and sulfur reductions in nonroad diesel fuel, both of which apply to locomotives. Nonroad diesel fuel sulfur reductions of more than 99 percent from 2004 levels were estimated to provide significant health benefits as well as facilitate the introduction of high-efficiency catalytic exhaust emission control devices as these catalytic devices are damaged by sulfur. USEPA adopted a two-step approach to sulfur control, with all land-based nonroad locomotive and marine engine diesel fuel going from uncontrolled sulfur levels of approximately 3,000 ppm sulfur to 500 ppm in June 2007. Then in June 2010, the sulfur cap for land-based nonroad engine diesel fuel was reduced to the final standard of 15 ppm, known as ultra low sulfur diesel. Two years later, in 2012, a 15 ppm cap for nonroad locomotive and marine engine diesel fuel went into effect. The reduction to 15 ppm sulfur provides additional, direct control of PM and

SO_x emissions and is an enabling technology for the application of advanced emission control technologies (69 FR 38958-39273).

As a result of the nonroad diesel fuel regulations, regional air quality has benefitted as has been demonstrated by the states' improved ambient air monitoring results. Even though the implementation date for the 15 ppm sulfur cap has passed and the short-term benefit of lower diesel sulfur levels has been realized, locomotive engine technologies will continue to benefit and advance as the removal of sulfur from the fuel system enables control technologies to reach even greater pollutant removal efficiencies.

Decrease in Emissions Due to Locomotive Engine Exhaust Emissions Regulations

In March 2008, USEPA adopted standards that reduced the allowable emissions of diesel PM and NO_x from locomotives and marine diesel engines. This three-part program aims to (1) tighten emissions standards for existing locomotives and large marine diesel engines when they are remanufactured (implementation starting in 2008), (2) set near-term engine exhaust emissions standards, referred to as Tier 3 standards, for newly built locomotives and marine diesel engines (implementation in 2009), and (3) set longer-term standards, referred to as Tier 4 standards, for newly built locomotives and marine diesel engines that reflect the application of high-efficiency after treatment technology (implementation in 2015 for locomotives). USEPA also finalized new idle reduction requirements for newly built and remanufactured locomotives, and adopted provisions to encourage a new generation of clean switch locomotives based on clean nonroad diesel engine standards.

USEPA estimated 90 percent PM reductions and 80 percent NO_x reductions from Tier 4 engines meeting these standards compared to engines meeting the previous Tier 2 standards. By 2030, this program will reduce annual emissions of NO_x by about 800,000 tons and PM emissions by 27,000 tons, and those projected emission reductions continue to grow beyond 2030 as fleet turnover is completed (USEPA 2008).

The locomotive engine exhaust standards apply nationally to all locomotive engines; therefore, all areas in the region will benefit from the tighter restrictions that have been placed on the locomotive engines. With the final Tier 4 implementation date in 2015, higher emission reductions can be expected. Therefore, it is anticipated that air quality in the region will continue to benefit from the additional emissions regulations both in the near-term as well as into the future.

Emissions from Fuel Consumed by Delayed Vehicles

With the increased train numbers on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection under the Proposed Transaction, at-grade crossings on these three rail lines would experience increases in motor vehicle delay and increases in emissions from idling vehicles. Outside of the study area (that is, along the CSXT lines in Ohio and Kentucky from which the trains would be rerouted under the Proposed Transaction), at-grade crossings would experience decreases in motor vehicle delay and decreases in emissions from idling vehicles. Any changes in emissions due to vehicle delay are not expected to have a significant impact on pollutants that are regional in nature, such as NO_x and VOC (as precursors to ozone), CO_2, and SO_2. For pollutants that have a more localized impact, such as CO, PM_{10}, $PM_{2.5,}$ and air toxics, at-grade crossings that experience an increase in

vehicle delay could also experience an increase in the impact on air quality compared to the existing impact caused by vehicles currently delayed.

The potential for localized air quality impacts is greatest at at-grade crossings with the highest vehicle volumes (creating the longest queues when delayed). USEPA guidance specifies criteria based on traffic level of service (LOS) for screening the roadway intersections affected by a project and selecting intersections, if necessary, for detailed air quality analysis (see Section 3.1, Transportation, for further discussion of LOS). USEPA guidance considers unsignalized intersections (that is, intersections without traffic lights) and signalized intersections (that is, intersections with traffic lights) that operate at LOS A, B, or C not to have sufficient traffic congestion to cause or contribute to local CO or particulate concentrations that might exceed the NAAQS and does not require air quality assessment for these intersections. USEPA considers signalized intersections that operate at LOS D, E, or F to have sufficient traffic congestion that the associated vehicle emissions might cause or contribute to local CO and PM concentrations that could exceed the NAAQS within maintenance and nonattainment areas. Such intersections are subject to further air quality analysis.

In Appendix B, Attachment B-3 shows the LOS analysis for the at-grade crossings in the study area. The results show that the LOS at some crossings would remain the same under the Proposed Transaction while the LOS at other crossings would degrade by one or two levels. Some crossings located in Marion, Madison, and Delaware counties in Indiana and in Jefferson County, Kentucky, would operate at LOS D, E, or F. Therefore, these crossings would be subject to further air quality assessment with respect to localized impacts from CO and PM emissions.

For ambient air CO impacts, it is unlikely that an increase in traffic delay would result in unacceptable air quality CO concentration because CO emissions from vehicles have been drastically reduced over the last 30 years. This is due to developments in engine technology resulting in more efficient combustion, application of exhaust control technology to reduce CO emissions (such as catalytic converters), cleaner fuels (that is, removing lead from gasoline because it fouled the catalytic converters), and vehicle inspection and maintenance programs designed to enforce emission standards and maintain an owner's automobile for maximum combustion efficiency. The success of these measures has resulted in the removal of all counties in the country from the CO nonattainment classification. Therefore, further CO hot spot analysis is not warranted.

For PM ambient air impacts, the focus is on the transportation-related sources that most contribute PM emissions in the areas of concern. USEPA guidance on hot spot analysis for CO and PM emissions explains that "Available traffic information such as current volumes and expected volumes should be included, including any information regarding the types of percentages of diesel and other vehicles on the affected roadway(s)" (USEPA 2006). The guidance also states, "EPA specified in 40 CFR 93.123(b)(1) of the final rule that projects of air quality concern are certain highway and transit projects that involve *significant levels of diesel vehicle traffic*, [emphasis added] or any other project that is identified in the $PM_{2.5}$ or PM_{10} SIP [state implementation plan] as a localized air quality concern" (USEPA 2006). The reason for the differentiation as to percentage of gasoline versus diesel vehicles is that PM emissions from gasoline-powered vehicles such as passenger cars are very small. PM emissions from the combustion of gasoline are negligible because gasoline is a relatively particulate-free fuel. For diesel-powered vehicles such as transport trucks, however, the PM contribution is higher because

diesel fuel is derived from the distillates of oil production and has inherently large particulate concentrations.

The at-grade crossings that were projected to operate at LOS D, E, or F under the Proposed Transaction were further examined to consider truck traffic, as shown in Table 3.7-2.

Table 3.7-2. Truck Traffic at At-Grade Crossings at LOS D, E, and F

County and State	Rail Line	At-Grade Crossing	Level of Service (LOS)	Percentage of Truck Traffic
Marion, IN	Indianapolis Line Subdivision	New York Street	D	14
		Michigan Street	D	14
		Vermont Street	D	3
		St. Clair Street	D	2
Madison, IN	Indianapolis Line Subdivision	Jefferson Street	F	1
		Walnut Street	F	1
Delaware, IN	Indianapolis Line Subdivision	Elm Street	F	4
		Monroe Street	F	4
Jefferson, KY	Louisville Connection	Kentucky Street	E	13
		Shipp Street	E	11

Source: FRA, 2014, "Crossing Inventory and Accident Reports," Office of Safety Analysis, accessed May 2014, http://safetydata.fra.dot.gov/officeofsafety/publicsite/crossing/crossing.aspx.

USEPA guidance explains that even crossings that operate at LOS D, E, or F can qualify as a project that is not an air quality concern under 40 C.F.R. §§ 93.123(b)(1)(i) and (ii). The following is an example of such a case: "Any new or expanded highway project that *primarily* [emphasis added] services gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at Level-of-Service D, E, or F" (USEPA 2006). Therefore, for the at-grade crossings listed in Table 3.7-2, the roads involved service gasoline vehicles at the rate of 86 percent or more. In addition, the diesel truck fleet is becoming more populated by newer trucks subject to stringent exhaust PM standards that apply to 2007 and later model years. Implementation of these exhaust standards has resulted in decreasing diesel truck PM emissions.

USEPA guidance also suggests reviewing the nonattainment status with respect to PM in the areas of concern (that is, at the at-grade crossings listed in Table 3.7-2). For the 1997 annual $PM_{2.5}$ NAAQS, the Marion County, Indiana, area (which also includes Hamilton and Johnson counties in Indiana) is currently a maintenance area (these counties were reclassified on July 11, 2013), and the Jefferson County, Kentucky, area (which also includes Clark and Floyd counties in Indiana) is currently classified as nonattainment. Kentucky petitioned for the Jefferson County area to be reclassified as attainment in March 2012. However, both Indiana and Kentucky have petitioned USEPA to classify both of these areas as attainment with regard to the $PM_{2.5}$ 2012 annual standard, which is stricter than the 1997 annual standard. These reclassification petitions are based on 3 years of ambient air monitoring data (that is, 2011 to

2013) and demonstrate that the measures taken as part of the maintenance plans for these areas were effective and have had a positive impact on the regional $PM_{2.5}$ ambient air concentration. The final USEPA determinations are expected by December 2014. Therefore, these petitions purport that the counties within the study area are not areas of concern with regard to existing $PM_{2.5}$ ambient air concentrations.

As a result of the air quality assessment above, no adverse air quality impacts at localized at-grade crossings are expected as a result of vehicle delay because of the low percentage of diesel truck traffic, reduced emissions from the truck fleet each year, and the improving air quality in these areas.

Impacts on NAAQS Maintenance Areas and Nonattainment Areas

The Proposed Transaction is not expected to change the attainment, maintenance or nonattainment status for any pollutant in the study area. While there are several maintenance areas and six nonattainment areas in the study area, emissions from the Proposed Transaction are not expected to (1) contribute to the delay of attainment for those areas seeking to move from nonattainment to attainment or (2) jeopardize attainment for those areas currently operating under a maintenance plan. The following discussion addresses the current nonattainment areas and the relative impacts on air quality from the Proposed Transaction.

Lead Nonattainment Area in a Portion of Delaware County, IN

The designated boundary area for lead nonattainment in Delaware County is very small and contains a lead acid battery manufacturing plant at its center. Lead nonattainment areas are generally localized and small because the emissions sources are discrete and the lead does not disperse very far from the originating source. Diesel emissions are not heavily laden with lead due to the low levels of lead in the fuel. In fact, USEPA compilations of emission factors, as well as the USEPA models for quantifying lead emissions from motor vehicles, do not identify emission factors for lead from the combustion of diesel. Lastly, the additional train traffic through Muncie would be on a pass-through line, not a junction or terminal where extended idling or rail traffic delays are expected. Therefore, the Proposed Transaction is not anticipated to add to the ambient air lead concentration in or around the current lead nonattainment area.

SO_2 Nonattainment Areas in Marion County, IN, and Jefferson County, KY

The Marion County, Indiana, SO_2 nonattainment area is made up of three townships, and the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and L&I Line cross through two of them. As previously mentioned, a single monitor has recorded a single exceedance of the 1-hour standard and is located in proximity to two power plants. The SO_2 emissions from the power plants are far greater than the SO_2 from the passing locomotives, so much so that the minimal SO_2 emissions from the additional trains would not be reflected in the ambient air concentration at the monitoring station (USEPA 2013c). The Jefferson County, Kentucky, SO_2 nonattainment area is 12 miles southwest of the Louisville Connection. This distance is great enough that the minimal SO_2 emissions from the additional trains would not be expected to impact that nonattainment area.

$PM_{2.5}$ Nonattainment Area in Clark and Floyd Counties, IN, and Jefferson County, KY

The states of Indiana and Kentucky have petitioned for this area to be redesignated attainment as far back as 2008. The $PM_{2.5}$ air concentrations have been consistently trending downward. In addition, the states believe that current monitoring data show this area to be in attainment with the new (lower) 2012 $PM_{2.5}$ standard. The $PM_{2.5}$ emissions from the additional trains are small compared to existing stationary and mobile sources, and the added trains would not be expected to compromise attainment status. In addition, the advancement of engine technology and engine exhaust emission standards are driving down overall PM emissions from diesel engines. This will continue to favorably impact the $PM_{2.5}$ ambient concentration for the entire region.

Conformity Issues

The General Conformity Rule (40 C.F.R. § 93, Subpart B) ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state's plans to meet national standards for air quality. Established under the CAA (Section 176(c)(4)), the General Conformity Rule plays an important role in helping states and tribes improve air quality in those areas that do not meet the NAAQS. Under the General Conformity Rule, federal agencies must work with state, tribal, and local governments in a nonattainment or maintenance area to ensure that federal actions conform to the air quality plans established in the applicable state or tribal implementation plan (USEPA 2013e).

The General Conformity Rule can apply to freight rail projects. However, STB project approvals involving changes in rail operations are not subject to the General Conformity Rule. This is because the STB does not have a "continuing program responsibility," as defined under the General Conformity Rule (40 C.F.R. § 93.152), for any emissions ensuing from rail operations resulting from a proposed project. Therefore, the General Conformity Rule does not apply to the Proposed Transaction.

Transportation conformity addresses only air pollution from on-road mobile sources or certain commuter rail transit projects, which include emissions created by cars, trucks, buses, commuter rail, and motorcycles (FHWA 2011). For transportation conformity rules to apply, a project must be an FHWA or FTA project, meaning it would be funded or approved by at least one of these agencies. Because the Proposed Transaction is not an FHWA or FTA project, transportation conformity rules do not apply to this project.

Lastly, STB sets its own thresholds for analyzing air impacts from a project (similar to a conformity review). These thresholds can be found in 49 C.F.R. § 1105.7(e)(5). Two of the criteria used to determine whether the air emissions should be quantified are (1) the attainment status of the counties affected by the project and (2) the number of additional trains through the affected counties. An additional 11 to 13 trains are anticipated on the rail lines in the study area (see Section 3.7.2.1, above). The STB analysis thresholds are three additional trains through a nonattainment area and eight additional trains through an attainment area. Even though these thresholds would be exceeded, no new trains are being added to the region, but rather existing trains would be rerouted for more efficient rail operations under the Proposed Transaction, which would reduce regional air emissions. Therefore, STB has determined that air emissions do not need to be quantified for this project.

Climate

Urban Heat Island Effect

The Proposed Transaction could include construction of two siding extensions and would include replacement of the Flatrock River Bridge on the L&I Line. No construction of any kind would occur on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, or Louisville Connection under the Proposed Transaction. A very minor loss of vegetative cover could occur with the two siding extensions (if constructed). However, the Proposed Transaction would not entail the construction of new buildings or paved areas (that is, areas that contribute to the UHI effect), and would result in only minor losses in vegetative cover, which mitigates the UHI effect. Therefore, the Proposed Transaction is not expected to have a noticeable impact on the local UHI effect as compared to the No-Action Alternative.

Global Climate Change

The Proposed Transaction's main potential contribution to global climate change would be through the emissions of GHG, primarily CO_2, from the combustion of diesel fuel. However, as discussed above, fuel use is expected to decrease under the Proposed Transaction because of expected improvements to the efficiency of operations in the Midwest region. To the degree that GHG emissions have any impact on the global climate, a regional reduction of fuel usage would result in a reduction of GHG emissions and, therefore, lessen the impact on global climate change.

CSXT states that it considers potential climate change impacts as part of its overall risk management process. In preparation for potential extreme weather events, which may or may not be associated with global climate change, Applicants have procedures in place to protect trains, locomotives, personnel, and other properties and individuals. Some of these procedures are as follows:

- When conditions restrict visibility, speed must be regulated to ensure that crew members can observe and comply with track signals.
- In unusually heavy rain, storms, or high water, trains and locomotives and other equipment must approach and be prepared to stop at bridges, culverts, and other potentially hazardous points until it is safe to resume movement.
- Trains or locomotives are not to be operated over track that is submerged in water until the track has been inspected and is known to be safe for movement. Locomotives must not be operated through water that is more than 3 inches above the top of the rail.
- Trains or locomotives are not to be operated over track that is submerged underwater and has been inspected and known to be safe for movement.
- On main tracks, hot weather inspections must be performed when the rail temperature is forecast to exceed the designated rail laying temperature. Signs of tight (abnormal) rail conditions include kinky or wavy rails, lifting tie plates, and gaps in ballast at the ends of ties. When tight rail conditions are present, a speed restriction of 10 mph must be placed or the track removed from service until repairs or adjustments are made.

- If ambient temperatures drop 25°F or more in 24 hours and the low temperature is 20°F or below, then a 25 mph slow order is placed on the track.
- If ambient temperatures drop 25°F or more in 24 hours and the low temperature is 5°F or below, then a 10 mph slow order is placed on the track.

3.7.2.2 No-Action Alternative

Because operational changes associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on air quality and climate are not anticipated as a result of the No-Action Alternative.

3.7.3 Environmental Impacts of Proposed Construction on L&I Line

Under the Proposed Transaction, construction activities on the L&I Line would include construction of the Elvin and Brook siding extensions and replacement of the Flatrock River Bridge.

3.7.3.1 Proposed Transaction

Air Quality

Under the Proposed Transaction, construction activities would be limited, small-scale, and temporary. Earthwork would be limited to that necessary for the proposed bridge replacement, and could include additional earthwork related to the two potential siding extensions. Fugitive dust emissions resulting from the earthwork would be handled in a prompt and appropriate manner to minimize offsite impacts such as nuisance dust. Applicants have offered a voluntary mitigation measure to minimize fugitive dust emissions created during Transaction-related construction activities. Applicants will implement appropriate fugitive dust suppression controls, such as spraying water or other approved measures. Applicants will also regularly operate water trucks on haul roads to reduce dust (see Chapter 4.0, VM 14).

Emissions resulting from operation of construction equipment would likely be limited to combustion emissions from the diesel engines and equipment. These emissions would be negligible because of the limited and temporary nature of the proposed construction activities as well the small scale of the construction activity. Applicants will work with their contractors to make sure that Transaction-related construction equipment is properly maintained and that mufflers and other required pollution-control devices are in working condition in order to limit construction-related air emissions (see Chapter 4.0, VM 15). In addition, all construction equipment would use nonroad or onroad engines that meet the applicable USEPA engine emission standards for either mobile or stationary sources. Finally, current USEPA regulations require the use of ultralow sulfur diesel in all these engines, which would further minimize engine exhaust emission. The above measures, along with good construction management practices, would minimize emissions during construction activities.

Climate

Urban Heat Island Effect

Impacts on the UHI effect from construction-related activities would be negligible because construction activities would not remove or replace substantial amounts of natural features nor would it install long-term equipment or structures to cause or contribute to a UHI effect.

Global Climate Change

Impacts on global climate change due to air emissions from construction-related activities would be negligible because the emissions would be of very small order and over a short time period.

3.7.3.2 No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on air quality and climate are not anticipated as a result of the No-Action Alternative.

3.8 NOISE AND VIBRATION

This section discusses the affected environment and potential environmental effects of the Proposed Transaction and the No-Action Alternative on noise and vibration in the project area. Section 3.8.1 describes noise and vibration concepts and the regulatory setting; Section 3.8.2 describes the affected environment for noise and vibration; Section 3.8.3 describes the analysis methodology; Section 3.8.4 describes potential noise and vibration impacts of the proposed operational changes on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection; and Section 3.8.5 discusses potential impacts of the proposed construction activities on the L&I Line.

3.8.1 Noise and Vibration Concepts and Regulatory Setting

3.8.1.1 Noise Concepts and Regulatory Setting

Sound is made up of tiny fluctuations in air pressure. Sound is characterized by its amplitude (how loud it is), frequency (also referred to as pitch), and duration. Within the range of human hearing, sound can vary in amplitude by over one million units. Therefore, a logarithmic scale, known as the decibel (dB) scale, is used to quantify sound volume and to compress the scale to a more manageable range. Noise is simply defined as unwanted sound; however, the terms "noise" and "sound" are often used interchangeably.

The human ear does not hear all frequencies equally. In fact, the human hearing organs of the inner ear deemphasize very low and very high frequencies. The most common weighting scale used to reflect this selective sensitivity of human hearing is the A-weighted sound level (dBA). The range of human hearing extends from approximately 3 dBA to around 140 dBA. Table 3.8-1 provides typical A-weighted noise levels for various sound sources.

Table 3.8-1. Typical Noise Levels

Sound Source (Distance From Source to Human Ear)	dBA	Response Descriptor
Carrier deck jet operation	140	Limit of amplified speech
	130	Painfully loud
Jet takeoff (200 feet) Auto horn (3 feet)	120	Threshold of feeling and pain
Jet takeoff (2,000 feet)	110	
Shout (0.5 feet) New York subway station	100	Very annoying
Heavy truck (50 feet) Pneumatic drill (50 feet)	90	Hearing damage (8-hour exposure)
Passenger train (100 feet) Helicopter (in flight, 500 feet) Freight train (50 feet)	80	Annoying
Freeway traffic (50 feet)	70	Intrusive
Air conditioning unit (20 feet) Light auto traffic (50 feet)	60	
Normal speech (15 feet)	50	Quiet
Living room, bedroom, library	40	
Soft whisper (15 feet)	30	Very quiet
Broadcasting studio	20	
	10	Just audible
	0	Threshold of hearing

Source: CEQ, 1970, Environmental Quality: The First Annual Report of the Council on Environmental Quality, Washington, D.C., U.S. Government Printing Office.

Most sounds are made up of a wide range of frequencies and are termed broadband sounds. Sounds that are focused to a particular frequency (and harmonic multiples of that frequency) are tonal sounds. Sound sources can be constant or time-varying. Environmental noise is often presented over periods of time, allowing time-varying signals to be represented by sound levels averaged over intervals (for example, an hour). The equivalent noise level (L_{eq}) is an energy-based average noise level that occurs over a 1-hour period: it is a mean (versus median) noise level. Community noise is often represented using the day-night noise level (L_{dn}), which is a 24-hour equivalent average with a 10-dBA penalty applied to nighttime hours (that is, between 10:00 p.m. and 7:00 a.m.). Additional information about noise and vibration was provided in the Draft EA and is incorporated by reference in accordance with 40 C.F.R. § 1502.21.

The Board's regulations in 49 C.F.R. § 1105.7(e)(6) require a noise analysis if rail traffic would increase by at least 100 percent as measured by annual gross ton miles, if rail traffic would increase by eight or more trains per day, or if carload activity at rail yards would increase by at least 100 percent. Noise analyses are required at intermodal facilities if truck traffic would increase by 50 trucks per day or 10 percent of the ADT. If these activity thresholds are exceeded, the Board requires a determination as to whether the transaction would cause an

incremental noise-level increase of at least 3 dBA on an L_{dn} basis, or whether the noise level would increase to 65 dBA (L_{dn}) or greater. If either of these thresholds is met, the Board requires that noise-sensitive receptors (for example, schools, libraries, hospitals, residences, retirement communities, and nursing homes) in the area be identified, and the projected noise increase for these receptors determined. In previous transactions, OEA noted that a 3-dBA increase in L_{dn} could result from a 100 percent rise in train traffic, a substantial change in operating conditions, changed equipment, or a shift of operations from daytime to nighttime. Nighttime noise often dominates the L_{dn} because of the 10-dBA penalty.

Typically, train activities produce noise from a variety of sources, including operations, rail yards, and noise from wheels and horns. The noise a train generates when it travels along a rail line is referred to as wayside noise. Wayside train noise includes locomotive engine noise, wheel/rail contact, braking, and coupling/uncoupling operations. Noise from wheel/rail contact varies based on the type of rail used. Jointed rail, which is made of rail segments bolted together using joint bars, makes more noise than continuous welded rail, where rail segments are welded together to form one continuous rail that may be several miles long. The noise emitted by locomotive horns is referred to as grade crossing noise (because locomotive horns often are used where public roads cross rail lines at grade).

A Quiet Zone (QZ) is an at-grade crossing at which trains do not sound their horns in order to minimize the noise level for nearby residents. However, the horns can be silenced only when appropriate safety measures compensate for their absence.

The FRA regulation on using locomotive horns at public at-grade crossings (49 C.F.R. Parts 222 and 229) requires that locomotive horns be sounded upon approaching every "unsealed" public at-grade crossing. An unsealed public at-grade crossing is defined as a train and public road crossing without grade separation, four-quadrant gating,[23] or crossing guard with median barrier. At QZs established in accordance with the rule, locomotive horns are not routinely sounded.

Generally, FRA regulation preempts state and local laws that may have the effect of restricting or prohibiting the use of locomotive horns at public at-grade crossings. Communities wishing to establish QZs must equip proposed at-grade crossings with adequate safety measures to compensate for the decreased safety created by the elimination of horn use. The additional safety measures are generally implemented at the community's expense and must meet federal specifications. There are currently no QZs on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, Louisville Connection, or the L&I Line.

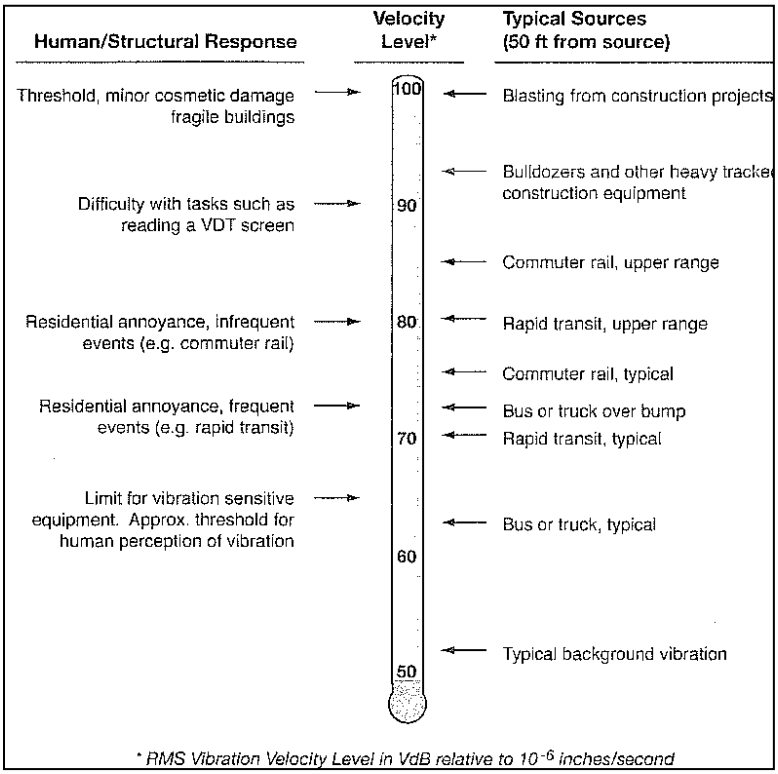
3.8.1.2 Vibration Concepts

Vibration consists of rapidly fluctuating motions. However, humans respond to vibration based on the average motion over a period of 1 second. Therefore, human response to vibration is calculated as the root mean square (RMS) amplitude of a motion over a 1-second period. For convenience, decibel notation is used to describe vibration levels. FTA has adopted the notation VdB (for vibration decibels), which is decibels relative to a reference quantity of 1 microinch per second (10^{-6} in/s).

[23] A four-quadrant gating system consists of gates that extends across both the approach and departure roadway lanes on both sides of the at-grade crossing. The four-quadrant gates typically inhibit nearly all traffic movement through the crossing while the gates are in the down position.

Ground-borne vibration (GBV) can be a serious concern for residents or at facilities that are sensitive to vibration, such as laboratories or recording studios. The effects of GBV include perceptible movement of building floors, interference with vibration-sensitive instruments, rattling of windows, and shaking of items on shelves or hanging on walls. Additionally, GBV can cause the vibration of room surfaces, resulting in ground-borne noise (GBN). GBN is typically perceived as a low-frequency rumbling sound.

In contrast to airborne noise, GBV is not an everyday experience for most people. The background vibration level in residential areas is usually 50 VdB or lower—well below the threshold of perception for humans, which is around 65 VdB. Levels at which vibration interferes with sensitive instrumentation, such as medical imaging equipment or extremely high-precision manufacturing, can be much lower than the threshold of human perception. Most perceptible indoor vibration is caused by sources within a building, such as the operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible GBV are construction equipment, steel-wheeled trains, and traffic on rough roads, though in most soils, GBV dissipates very rapidly. Figure 3.8-1 illustrates common vibration sources and the human and structural response to GBV.



Source: FTA, 2006, Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06, Office of Planning and Environment, May, Available online at http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf.

Figure 3.8-1. Typical Vibration Levels

3.8.2 Affected Environment

The affected environment consists of lands adjacent to the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, where rail traffic would increase under the Proposed Transaction. The Indianapolis Line Subdivision extends from Indianapolis to Sidney. The affected area is primarily rural agricultural lands, but the rail line does pass through several municipalities. Noise-sensitive receptors, as defined by the Board, include residences, schools, libraries, hospitals, retirement communities, and nursing homes. These receptors are found in greatest numbers in or near municipalities. The Indianapolis Terminal Subdivision – Louisville Secondary Branch is within Indianapolis, and the affected environment is urban. The Louisville Connection is within Louisville, and the affected environment is also urban.

Existing noise levels in the project area were not measured. However, areas adjacent to the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection currently experience wayside noise, and areas adjacent to public at-grade crossings currently experience grade crossing noise. The existing operational data for the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection are summarized in Table 3.8-2.

Table 3.8-2. Existing Rail Line Operational Characteristics

Rail Line	Segment No.	Milepost		Total Trains per Day	Locomotives[a]	Average Railcars[b]	Speed (mph)	Throttle Setting[c]	Track Condition[d]
		Begin	End						
Indianapolis Line Subdivision	CSXT-06	163.5	283.6	23	2	101	50	8	Jointed
Indianapolis Terminal Subdivision – Louisville Secondary Branch	CSXT-06a	0.0	4.0	4	2	101	25	8	Jointed
Louisville Connection	CSXT-01a	TR 0.4	0.0	6	2	101	10	8	Jointed

Notes:

[a] *Each train typically has two locomotives.*

[b] *The average number of railcars per train was calculated from the total train length assuming each car is 70 feet long (after subtracting the locomotives).*

[c] *The locomotives have eight throttle settings; the higher the setting, the faster the locomotive moves and the louder it is.*

[d] *A jointed track is made of rail segments bolted together using joint bars.*

3.8.3 Analysis Methodology

3.8.3.1 Operation-Related Noise

The tools employed for the noise modeling included FTA's calculations for fixed-guideway (for example, freight rail, light rail, and commuter rail) and stationary noise sources (FTA 2006), the three-dimensional acoustical analysis software called Cadna-A, and a GIS database created for this project. The noise modeling methodology consisted of the following steps:

- Identify segments of rail line with a noise emission increase ≥ 3 dBA on an L_{dn} basis.
- Calculate noise emission levels of train noise sources (that is, wheel/rail, locomotive, and locomotive horn).
- Calculate sound propagation from train noise sources.
- Calculate the shielding due to intervening obstructions.
- Identify noise-sensitive receptors projected to experience an $L_{dn} \geq 65$ dBA.
- Identify noise-sensitive receptors projected to experience an $L_{dn} \geq 70$ dBA and an increase in $L_{dn} \geq 5$ dBA.

Sound power levels (SWL) used in this noise assessment were derived from FTA's guidance document titled *Transit Noise and Vibration Impact Assessment* (FTA 2006). Additional detail is provided in Appendix H. Each noise source (that is, wheel/rail, locomotive, and locomotive horn) was modeled as a moving point source in Cadna-A to predict the sound propagation. The Cadna-A input parameters for each source were sound power level, number of events per hour, speed, and source height. Following FTA methods, the locomotives and horns used a noise source height of 8 feet, and the railcars used a height of 2 feet. Site-specific terrain, buildings, and barriers were not modeled, but methods from the FRA horn noise model (FRA 2000) were used to calculate general shielding conditions (see Appendix H). The 70-dBA and 5-dBA increase threshold was used to evaluate opportunities for noise mitigation, and is based on precedent set by previous Board actions.

3.8.3.2 Operation-Related Vibration

The vibration assessment performed for the project is based on FTA's guidance document titled *Transit Noise and Vibration Impact Assessment* (FTA 2006). FTA's guidance document provides a base curve indicating the vibration level for locomotive-powered passenger or freight trains based on a specific speed and specific conditions. Adjustment factors were applied to reflect the speeds and conditions of the Proposed Transaction. The vibration level curve and adjustment factors were used to determine the distance to 72 VdB, and are the most stringent FTA criteria for residential land uses.

The tools employed for the vibration modeling included FTA's general vibration assessment source calculations and a GIS database created for this project.

3.8.3.3 Construction-Related Noise

Construction-related noise was assessed by identifying a representative selection of the types of equipment likely to be used. The rated horsepower of the construction equipment was converted to kilowatts and then to SWL. The SWLs were adjusted to account for common quantities of construction equipment and the assumption that the equipment would operate for 45 minutes per

hour (that is, a 75 percent utilization factor). The sound pressure levels (SPLs) at 100, 200, 500, and 1,000 feet were calculated from the adjusted SWLs.

3.8.3.4 Construction-Related Vibration

Construction-related vibration was not evaluated because operational vibration levels are higher and occur more regularly than construction-related vibration. Impact pile driving could produce GBV levels that are somewhat higher than operational vibration levels that are anticipated under the Proposed Transaction. Vibratory pile driving would produce GBV levels that are more representative of operational vibration levels. Both pile driving technologies would produce vibration in highly localized areas immediately adjacent to the driven pile, and use of best management practices would allow either technology to be used in a manner that would minimize the vibration effects outside of the ROW.

3.8.4 Environmental Impacts of Proposed Operational Changes

3.8.4.1 Noise

Under the Proposed Transaction, the operational characteristics of the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection would be as shown in Table 3.8-3.

Table 3.8-3. Proposed Rail Line Operational Characteristics

Rail Line	Segment No.	Milepost		Total Trains per Day	Locomotives[a]	Average Railcars[b]	Speed (mph)	Throttle Setting[c]	Track Condition[d]
		Begin	End						
Indianapolis Line Subdivision	CSXT-06	163.5	283.6	34	2	101	50	8	Jointed
Indianapolis Terminal Subdivision – Louisville Secondary Branch	CSXT-06a	0.0	4.0	17	2	101	25	8	Jointed
Louisville Connection	CSXT-01a	TR 0.4	0.0	18	2	101	10	8	Jointed

Notes:

[a] *Each train typically has two locomotives.*

[b] *The average number of railcars per train was calculated from the total train length assuming each car is 70 feet long (after subtracting the locomotives).*

[c] *The locomotives have eight throttle settings; the higher the setting, the faster the locomotive moves and the louder it is.*

[d] *A jointed track is made of rail segments bolted together using joint bars.*

Under the Proposed Transaction, the increase in trains per day would generally increase train noise levels (in particular, locomotive horn noise), and it is often the most influential factor in changes to overall noise levels. Therefore, the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection are projected to meet or exceed thresholds for noise analysis, as provided in the Board's regulations in 49 C.F.R. § 1105.7(e)(6) (see Section 3.8.1.1). The increase in train traffic on each rail line segment is shown in Table 3.8-4.

Table 3.8-4. Rail Line Segments Requiring Noise Analysis

Rail Line	Segment No.	Milepost		Trains per Day		
		Begin	End	Existing	Proposed	Change
Indianapolis Line Subdivision	CSXT-06	163.5	283.6	23	34	+11
Indianapolis Terminal Subdivision – Louisville Secondary Branch	CSXT-06a	0.0	4.0	4	17	+13
Louisville Connection	CSXT-01a	TR 0.4	0.0	6	18	+12

All three rail lines— the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection—are projected to experience an increase in rail traffic in excess of eight trains per day, which exceeds the Board's thresholds for noise analysis. Therefore, the next step in the noise assessment is to evaluate whether the Proposed Transaction has potential to cause a 3-dBA increase on an L_{dn} basis (another one of the Board's thresholds for noise analysis). This is determined using the following equation: 10*log(future trains per day/existing trains per day). Table 3.8-5 shows the results of this assessment.

Table 3.8-5. Projected Change in Noise Level (L_{dn})

Rail Line	Segment No.	Milepost		Trains per Day		Potential Change in L_{dn} (dBA)	Further Analysis Required?
		Begin	End	Existing	Proposed		
Indianapolis Line Subdivision	CSXT-06	163.5	283.6	23	34	+1.7	No
Indianapolis Terminal Subdivision – Louisville Secondary Branch	CSXT-06a	0.0	4.0	4	17	+6.3	Yes
Louisville Connection	CSXT-01a	TR 0.4	0.0	6	18	+4.8	Yes

Only two rail line segments are projected to experience a noise increase of 3 dBA L_{dn}, so only these two segments require further noise assessment to quantify the number of noise-sensitive land uses (as defined by the Board) that are projected to experience an L_{dn} of 65 dBA or greater.

The locomotives, railcars, and locomotive horns were modeled in Cadna-A as moving point sources, and Cadna-A produced noise contours under both the existing conditions and the Proposed Transaction. The two segments requiring further analysis were located in urban areas of Indianapolis and Louisville. This analysis conservatively assumed that most of the ground cover in urban areas near the rail line is acoustically hard or reflective (for example, pavement or sidewalks) rather than acoustically soft or absorptive (for example, grass or a field of crops). Therefore, the Cadna-A default ground absorption was set to 0 (0 percent absorptive) to account for the acoustically reflective hard pavement surfaces. In addition, the FRA horn noise model's "Light Suburban" general shielding was applied to the entirety of both segments. Shielding refers to buildings or other structures in the path between the train (that is, the source of the locomotive horn noise) and the receiving land uses. Structures in the noise propagation path have the ability to block the path, or shield the receiving land uses from the noise (see Appendix H for additional information about shielding).

The existing and proposed number of trains per day was divided by 24 to determine the number of trains per hour for use in Cadna-A. The FRA grade crossing database, supplemented by visual inspection of digital aerial photographs, identified where locomotive horn use occurs. These locations were included in the Cadna-A model. Federal regulations require two long, one short, and one long horn blasts beginning between 15 and 20 seconds from all at-grade crossings for trains operating at speeds below 60 mph (49 C.F.R. Part 222). That pattern of locomotive horn use was simulated in this analysis at all crossings because proposed train speeds would be below 60 mph (see Table 3.8-3).

Analysis results indicate that under the Proposed Transaction, the number of noise-sensitive receptors projected to experience an L_{dn} of 65 dBA or greater would increase, as shown in Table 3.8-6. As shown in Table 3.8-6, the number of noise-sensitive receptors on the Indianapolis Terminal Subdivision – Louisville Secondary Branch subject to noise levels of 65 dBA L_{dn} or greater under the Proposed Transaction would increase by approximately 718 receptors. For the Louisville Connection, the number of noise-sensitive receptors subject to noise levels of 65 dBA L_{dn} or greater under the Proposed Transaction would increase by approximately 457 receptors.

The increase in affected receptors is largely due to an increase in the number of trains per day and thereby an increase in locomotive horn use at public at-grade crossings. The slow train speeds (that is, 10 mph and 25 mph), combined with the increase in horn events, increase the total noise exposure. This results in an increase in the number of affected receptors. The Indianapolis Terminal Subdivision – Louisville Secondary Branch is longer, is adjacent to more residential areas, and has more at-grade crossings than the Louisville Connection. Therefore, the number of affected receptors is greater in Indianapolis than in Louisville. The 65-dBA L_{dn} contours are presented on aerial photographs in Appendix H, Attachment H-1.

Table 3.8-6. Noise Analysis Results for the 65-dBA L_{dn} Contour

Rail Line	Segment No.	County, State	Municipality	Number of Receptors Projected to be Exposed to 65 dBA L_{dn} or Greater		
				Existing	Proposed	Change
Indianapolis Terminal Subdivision – Louisville Secondary Branch	CSXT-06a	Marion County, IN	Indianapolis	239	957	+718
Louisville Connection	CSXT-01a	Jefferson County, KY	Louisville	21	478	+457

To identify areas that would experience Transaction-related noise increases that could be perceived as adverse and where mitigation could be warranted, OEA's noise assessment also identified the number of noise-sensitive receptors projected to experience noise levels of 70 dBA L_{dn} or greater and an increase in L_{dn} of 5 dBA or greater. As shown in Table 3.8-5, only one segment is projected to experience an L_{dn} increase of 5 dBA or greater—segment CSXT-06a, the Indianapolis Terminal Subdivision – Louisville Secondary Branch. A 70 dBA L_{dn} contour was generated for this segment and is also shown in Appendix H, Attachment H-1, overlaid on aerial photographs for the Indianapolis area. Table 3.8-7 shows that approximately 346 noise-sensitive receptors would be subject to potentially adverse increases in noise levels under the Proposed Transaction. The Louisville Connection is not projected to experience an increase of 5 dBA or greater on an L_{dn} basis. Therefore, no 70-dBA L_{dn} contour was prepared.

Table 3.8-7. Noise Analysis Results for the 70-dBA L_{dn} Contour

Rail Line	Segment No.	County, State	Municipality	Number of Receptors Projected to be Exposed to 70 dBA L_{dn} or Greater and an Increase of 5 dBA or Greater		
				Existing	Proposed	Change
Indianapolis Terminal Subdivision – Louisville Secondary Branch	CSXT-06a	Marion County, IN	Indianapolis	0	346	+346

Applicants have offered voluntary mitigation measures in response to potentially adverse increases in noise levels that could occur under the Proposed Transaction (see Chapter 4.0, VM 46 through VM 52). Specifically, Applicants would work with affected communities to mitigate train noise to levels by cost-effective means as are agreed to by an affected community and Applicants (VM 46). In addition, Applicants would cooperate with interested communities for the establishment of QZs and would assist in identifying supplemental or alternative safety measures, practical operational methods, or technologies that may enable the community to establish QZs (VM 47).

Applicants would work with their contractors to maintain Transaction-related maintenance vehicles in good-working order with properly functioning mufflers to control noise (VM 48). In addition, Applicants would consider lubricating curves where doing so would both be consistent with safe and efficient operating practices and significantly reduce noise for residential or other noise-sensitive receptors (VM 49). Applicants would also continue to employ safe and efficient operating procedures that, in lieu of, or as complement to, other noise mitigation measures can have the collateral benefit of effectively reducing noise from train operations. Such procedures would include:

- Inspecting rail car wheels to maintain wheels in good working order and minimize the development of wheel flats
- Inspecting new and existing rail for rough surfaces and, where appropriate, grinding these surfaces to provide a smooth rail surface during operations
- Regularly maintaining locomotives and keeping mufflers in good working order (VM 49)

Applicants would comply with FRA regulations establishing decibel limits for train operations (VM 50). In addition, to minimize noise and vibration, Applicants would install and maintain rail and rail beds according to American Railway Engineering and Maintenance-of-Way Association (AREMA) standards (VM 51). Finally, upon request, Applicants would consult with communities affected by wheel squeal at existing locations, and would cooperate in determining the most appropriate methods for lubricating curves, as discussed in VM 49 (VM 52).

3.8.4.2 Vibration

The criteria used to evaluate GBV associated with the Proposed Transaction generally follow FTA guidance (FTA 2006). FTA established different vibration impact thresholds (that is, criteria) for projects that have varying levels of train traffic. FTA's "frequent events" criteria, which represent the highest event frequency (that is, the most trains per day) and most stringent vibration limits, are used in this assessment for the existing and proposed conditions. Vibration from freight trains is assessed in terms of the maximum vibration caused by a train. The maximum vibration level of the train is compared to the criteria, irrespective of the number of train pass-by events. The vibration level of a train pass-by event is affected by track conditions, the location of special track work (for example, crossovers), train speed, and the ground propagation conditions between the rail line and the receiver.

The criterion for GBV effects at a residence or other buildings where people sleep is 72 VdB (vibration decibels) referenced to 1 microinch per second on an RMS basis. Using FTA methods, the assessment developed estimates of GBV from existing and proposed future trains. FTA adjustment factors were applied to general locomotive-powered freight vibration levels as follows:

- Track conditions – The 5 VdB jointed track adjustment was applied to the existing and proposed conditions, and the 10 VdB special track adjustment was applied where two rails intersected (that is, where two rail lines cross).
- Coupling to building foundation – The -5 VdB wood frame home adjustment was applied.
- Receiver factors – The -2 VdB one floor above grade adjustment was applied to account for basements, and the 6 VdB floor amplification adjustment was applied to account for the resonances of floors, walls, and ceilings.

Table 3.8-8 summarizes the calculated distances to the 72-VdB vibration effect threshold for the rail lines that met the Board's thresholds for noise analysis.

Table 3.8-8. Vibration Analysis Distances

Rail Line	Segment No.	Milepost		Distance to 72 VdB Vibration Level (feet)			
				Existing		Proposed	
		Begin	End	Jointed Rail	Special Track	Jointed Rail	Special Track
Indianapolis Terminal Subdivision – Louisville Secondary Branch	CSXT-06a	0.0	4.0	155	250	155	250
Louisville Connection	CSXT-01a	TR 0.4	0.0	70	115	70	115

Train-induced GBV is not evaluated on a cumulative, or daily exposure, basis. Rather, it is evaluated by looking at the highest vibration levels that are expected to occur during each vibration event (that is, train pass-by). Therefore, an increase in the number of trains per day does not by itself lead to an increase in vibration. However, it would lead to an increase in the number of vibration events. Under the Proposed Transaction, jointed rail would continue to be used, so the vibration levels during individual train pass-by events would not change on these rail line segments. Segment CSXT-06a has a greater speed than segment CSXT-01a, which would result in higher vibration levels and an increased distance to the 72-VdB contour on the Indianapolis Terminal Subdivision – Louisville Secondary Branch. The 72-VdB contours for the rail lines and special track intersections are overlaid on aerial photographs in Appendix H, Attachment H-1. The number of receptors within the 72-VdB for the existing and proposed conditions are shown in Table 3.8-9. Because the Proposed Transaction is not projected to change the GBV levels, there is no increase in the number of receivers exposed to train-induced GBV.

Table 3.8-9. Vibration Analysis Results for the 72-VdB Contour

Rail Line	Segment No.	County, State	Municipality	Number of Receptors Projected to be Exposed to 72 VdB or Greater	
				Existing	Proposed
Indianapolis Terminal Subdivision – Louisville Secondary Branch	CSXT-06a	Marion County, IN	Indianapolis	53	53
Louisville Connection	CSXT-01a	Jefferson County, KY	Louisville	1	1

3.8.4.3 No-Action Alternative

Because operational changes associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on noise or vibration are not anticipated as a result of the No-Action Alternative.

3.8.5 Environmental Impacts of Proposed Construction on L&I Line

3.8.5.1 Proposed Transaction

Under the Proposed Transaction, construction activities on the L&I Line could include construction of the Elvin and Brook siding extensions (if constructed) and would include replacement of the Flatrock River Bridge. The calculation of common railroad construction equipment noise levels was described in the Draft EA, Section 3.8.4.1, and is incorporated by

reference in accordance with 40 C.F.R. § 1502.21. The construction equipment noise levels are summarized in Table 3.8-10.

Table 3.8-10. Common Railroad Construction Equipment Noise

Equipment	Horsepower	Kilowatt	SWL (dBA)	Quantity	Utilization Factor (%)	Adjusted SWL (dBA)	L_{eq} in dBA at the Stated Distances (feet)			
							100	200	500	1,000
Front loader	300	224	122	1	75	121	84	78	70	64
Backhoe	150	112	119	2	75	121	84	78	70	64
Dozer (D-7)	300	224	122	2	75	124	87	81	73	67
Dump truck	350	261	123	4	75	128	90	84	76	70
Water truck	350	261	123	1	75	122	84	78	70	64
Pile driver	400	298	124	1	75	122	85	79	71	65
Mobile crane	400	298	124	1	75	122	85	79	71	65
Grader	300	224	122	1	75	121	84	78	70	64
Concrete truck	350	261	123	1	75	122	84	78	70	64
Large compactor	250	186	122	1	75	120	83	77	69	63
Small compactor	15	11	109	1	75	108	71	65	57	51
Crew pickup trucks	250	186	122	20	75	133	96	90	82	76

Estimates of noise levels from multiple pieces of the same construction equipment (for example, the backhoe and the dozer) are conservative because the calculations assumed that the equipment was used at the same stationary location. Typically, construction equipment is moving around in and spread out across the construction area, making this assessment conservative. In addition, construction activity would occur in the ROW; therefore, noise and vibration associated with the proposed bridge replacement and potential siding extensions are anticipated to be minor and temporary in areas outside of the ROW. In addition, Applicants have offered a voluntary mitigation measure to consult with affected communities and work with the construction contractors to minimize, to the extent reasonably practicable, Transaction-related construction noise disturbances near any residential areas (VM 16).

3.8.5.2 No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on noise and vibration are not anticipated as a result of the No-Action Alternative.

3.9 ENERGY RESOURCES

This section discusses the affected environment and potential environmental effects of the Proposed Transaction and the No-Action Alternative on energy resources, specifically fuel consumption. As discussed in the Draft EA, OEA must consider the effect of the Proposed Transaction on the transportation of recyclable commodities and the potential for the Proposed Transaction to result in an increase or decrease in overall energy efficiency. However, these items were not quantified because the Proposed Transaction is not expected to affect the amount or route of energy-producing and recyclable commodities transported through the study area.

3.9.1 Affected Environment

The total energy use across CSXT's entire system of rail lines was calculated in the Draft EA and is incorporated by reference in accordance with 40 C.F.R. § 1502.21. CSXT's system-wide fuel use on current routes is approximately 1.3 million gallons per day, and its system-wide fuel efficiency is 1,031 GTM per gallon of diesel fuel.

3.9.2 Environmental Impacts of Proposed Operational Changes

3.9.2.1 Proposed Transaction

Under the Proposed Transaction, CSXT trains would be rerouted as discussed in Chapter 2.0. These changes in operations, made possible by proposed improvements on the L&I Line, would result in improved efficiencies in the project area, as discussed in relation to air quality in Section 3.7.2. Rerouting of trains under the Proposed Transaction would improve CSXT's GTM efficiency and would enhance efficiencies through shorter train travel times and reduced idling times. Commodities that are currently transported in the project area would not change as a result of the Proposed Transaction. In addition, transportation of commodities is expected to be more efficient as part of the overall expected efficiency improvements. Therefore, the Proposed Transaction is expected to decrease fuel consumption by CSXT locomotives and would not adversely impact the transportation of recyclable commodities.

3.9.2.2 No-Action Alternative

As described in the Draft EA, under the No-Action Alternative, energy use would not change from its existing use. Therefore, the No-Action Alternative would not impact energy use. The No-Action Alternative would not result in fuel savings from mileage and idling reductions.

3.9.3 Environmental Impacts of Proposed Construction on L&I Line

3.9.3.1 Proposed Transaction

Potential construction of the Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge would allow CSXT trains to operate more efficiently and realize the energy savings that would result from the Proposed Transaction.

3.9.3.2 No-Action Alternative

Construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative. Consequently, energy savings that would result from the Proposed Transaction are not anticipated to be as great as under the No-Action Alternative.

3.10 CULTURAL RESOURCES

This section discusses the affected environment and potential environmental effects of the Proposed Transaction and the No-Action Alternative on cultural resources in the project area. In addition, coordination has continued after the Draft EA was issued and is summarized herein.

Cultural resources are culturally and historically valued aspects of the human and natural environment. They include historic and prehistoric properties as well as intangible sociocultural attributes. NEPA requires that federal agencies consider the impacts of their actions on resources of cultural and historic importance. Federal agencies usually comply with NEPA's cultural resource requirements by conducting cultural resource studies designed to satisfy federal responsibilities specified in Section 106 of the National Historic Preservation Act (NHPA) and by relying on public scoping and consultation to identify cultural and historic resources important to communities and members of the public.

Section 106 of the NHPA (16 U.S.C. § 470f) directs federal agencies to take into account the effects of their undertakings on historic properties and to provide the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to participate in a Section 106 review process. The regulations at 36 C.F.R. Part 800, issued by ACHP, set forth a sequential decision-making process. This process specifies how federal agencies are to satisfy the requirements of Section 106 and is commonly referred to as the Section 106 process. In relation to the Section 106 process, the term "historic property" is defined as:

> …any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. (36 C.F.R. § 800.16(l)(1))

The term "historic property" represents a subset of the larger range of cultural resources that can be included and considered under NEPA.

A historic property is determined eligible for inclusion in the National Register of Historic Places (National Register) based on one or more of the following criteria (36 C.F.R. § 60.4(a-d)):

- Criterion A – Are associated with events that have made a significant contribution to the broad patterns of American history
- Criterion B – Are associated with the lives of past significant persons
- Criterion C – Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D – Have yielded or may be likely to yield information important in history or prehistory

In addition, historic properties must retain several or most of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association (National Park Service [NPS] 2002). Finally, historic properties are usually at least 50 years old.

One type of historic property is a traditional cultural property (TCP). A TCP is eligible for listing on "the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (NPS 1998).

Impacts on cultural resources occur when the qualities that contribute to the significance of historic properties are affected. For the purposes of Section 106 compliance, historic properties may be adversely affected or not adversely affected depending on whether the qualities that contribute to their significance are diminished. These impacts may accrue from occurrences such as physical destruction or damage, alteration, or visual, audible, or atmospheric intrusions.

3.10.1 Affected Environment

As part of compliance with Section 106, OEA coordinated with interested parties, including state agencies and Native American tribes, to obtain information on previously documented cultural resources in the project area. Copies of this correspondence are provided in Appendix I, Attachments I-1 through I-4.

The coordination process began during preparation of the Draft EA. On OEA's behalf, CSXT coordinated with the Indiana DNR Division of Historic Preservation & Archaeology (DHPA) (that is, Indiana State Historic Preservation Office [SHPO]) and the Kentucky Heritage Council (that is, Kentucky SHPO) (see Appendix I, Attachments I-1 and I-2, respectively). CSXT also coordinated with the following Native American tribes (see Appendix I, Attachment I-3):

- Miami Tribe of Oklahoma
- Ottawa Tribe of Oklahoma
- Peoria Tribe of Indians of Oklahoma
- Wyandotte Nation
- Shawnee Tribe
- Eastern Band of Cherokee Indians
- Forest County Potawatomi Community
- Hannahville Indian Community
- Pokagon Band of Potawatomi Indians
- Citizen Potawatomi Nation
- Delaware Nation
- Kickapoo Tribe of Indians of the Kickapoo Reservation in Kansas
- Kickapoo Tribe of Oklahoma
- Prairie Band of Potawatomi Nation

During preparation of this Supplemental EA, scoping letters were sent to the same 14 tribes listed above.[24] None responded to this particular scoping letter. Although none responded, all tribes contacted to date for the Proposed Transaction received this Supplemental EA and will receive the Final EA.

[24] OEA confirmed that the original list of 14 tribes encompassed all tribes listed in the National Park Service's NAGPRA [Native American Graves Protection and Repatriation Act] Online Database for the Indiana, Ohio, and Kentucky counties in which the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, Louisville Connection, and L&I Line are located.

During preparation of the Draft EA, data on previously documented cultural properties were retrieved from Indiana Survey of Historic Sites and Structures reports, the Indiana State Historic Architectural and Archaeological Research Database (SHAARD), and the National Register. During preparation of this Supplemental EA, data on previously documented cultural properties were retrieved from SHAARD, the Ohio Historic Preservation Office Online Mapping System, and direct coordination with the Kentucky Office of the State Archaeologist and Kentucky SHPO.

As reported in the Draft EA, along the L&I Line, approximately 245 historic properties are listed on the National Register in Marion County, 14 in Johnson County, 29 in Bartholomew County, 13 in Jackson County, 3 in Scott County, 12 in Clark County, and 482 in Jefferson County. In addition, many properties determined eligible for listing on the National Register are assumed to exist in these counties and could be adjacent to the L&I Line.

Through coordination with Indiana SHPO, the Flatrock River Bridge was determined eligible for listing on the National Register. Coordination related to the Flatrock River Bridge is discussed in Section 3.10.3.1, below, and is provided in Appendix I, Attachment I-4.

For this Supplemental EA, previously documented cultural resources in the project area were identified along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection. The background research encompassed previously documented cultural resource sites and previously conducted surveys within 1 mile of the railroad centerline. A 2-mile-wide area (that is, 1 mile on either side of the centerline) was used to obtain a sufficient sample size to allow for the assessment of the types of historic properties that have been documented and the estimation of their frequency in the vicinity of the Proposed Transaction.

From the 2-mile-wide area, the study area for cultural resources was narrowed to a 100-foot boundary (that is, 30-foot ROW with a 70-foot buffer) from the railroad centerline. This 200-foot-wide area (that is, 100 feet on either side of the centerline) does not represent or constitute an official Area of Potential Effect (APE) as determined by the lead federal agency in conjunction with any of the appropriate reviewing state agencies. Instead, the 200-foot-wide area was selected to allow for identification of sites that are located in proximity to the tracks and the consideration of potential impacts on these historic properties.

Locational data from Indiana and Ohio were provided as Universal Transverse Mercator (UTM) point data. Hence, the boundaries of properties in these states may extend closer to the railroad centerline than 100 feet because the UTM point locations designate only the center of the properties. Locational data from Kentucky were provided as Esri shapefiles, which show the boundaries of the cultural resource in GIS. [25]

No TCPs were identified in the information gathered from databases of previous reports or sites in Indiana, Ohio, and Kentucky. In addition, no tribes identified TCPs during the scoping periods for the Draft and Supplemental EAs, or during the Draft EA comment period.

[25] A shapefile is an Esri software file format used in GIS for storing the geometric location of a geographic feature and attributes that describe it. In this case, such geographical features may be an archaeological or architectural site or artifact.

3.10.1.1 Indiana

A total of 425 cultural resources surveys have been completed within 1 mile of the Indianapolis Terminal Subdivision – Louisville Secondary Branch and the Indianapolis Line Subdivision in Indiana. These reports correspond to surveys conducted for road, telecommunication tower, land management, sewer, water, and a multitude of other types of projects. It is unknown exactly how many of these surveys correspond to or contain data concerning these rail lines as there are no shapefiles for the surveys available through SHAARD. However, a brief examination of the titles of the survey reports identified one report (Manuscript # 20071286, *An Archaeological Assessment for a Proposed Small Structure Replacement Carrying Rozell-Lefter Ditch Under SR 32 and the CSX Railroad in Daleville, Delaware County, Indiana, INDOT Des. No. 0101418*) that reviews an area that most likely partially crosses or is adjacent to the Indianapolis Line Subdivision.

A total of 265 archaeological sites, 665 architectural sites, and 56 cemetery locations have been recorded within 1 mile of the Indianapolis Terminal Subdivision – Louisville Secondary Branch and the Indianapolis Line Subdivision in Indiana. Of these sites, 4 archaeological sites, 11 architectural sites, and 1 cemetery are within approximately 100 feet of the railroad centerline, as shown in Table 3.10-1.

Table 3.10-1. Cultural Resources Within Approximately 100 Feet of the Railroad Centerline in Indiana

Site Number	Resource Type	National Register Eligibility Status
Archaeological Sites		
M-0184	Small archaeological lithic scatter	Unknown
M-0688	Small archaeological lithic scatter	Unknown
M-0689	Small archaeological lithic scatter	Unknown
Ma-310	Unknown	Unknown
Architectural Sites		
135-636-38126	Union City Depot	Unknown
135-685-35014	Knights of the Golden Eagle Lodge	Unknown
135-685-35015	Hamsville Grain Elevator	Unknown
135-685-33103	Unnamed railroad bridge	Unknown
135-685-33085	Winchester CCC-St. Louis Passenger Depot	Unknown
135-390-30048	Unnamed railroad bridge	Unknown
135-390-30051	Unnamed railroad bridge	Unknown
135-204-21028	Retter Hotel	Unknown
135-204-24048	Unnamed house	Unknown
095-015-46022	Dillon Street Railroad Station	Unknown
097-392-85243	Perry Township Concrete Double Span Bridge	Unknown
Cemeteries		
CR-18-53	Cemetery	NA

3.10.1.2 Ohio

A total of 32 cultural resources surveys have been completed within 1 mile of the Indianapolis Line Subdivision in Ohio. There are no shapefiles for the surveys available through an online mapping system. However, a brief visual review of snapshots of the online mapping system shows one report (Manuscript # 12856, *Literature Review and Reconnaissance Survey for the Proposed Dayton Power and Light Pipeline in Darke and Shelby Counties, Ohio*) that reviews an area that at least partially crosses or is adjacent to the Indianapolis Line Subdivision.

A total of 74 archaeological sites, 15 architectural sites, 2 bridges, and 22 cemetery locations have been recorded within 1 mile of the Indianapolis Line Subdivision in Ohio. Of these sites, two archaeological sites and one cemetery are within approximately 100 feet, or closer, of the railroad centerline.

Table 3.10-2. Cultural Resources Within Approximately 100 Feet of the Railroad Centerline in Ohio

Site Number	Resource Type	National Register Eligibility Status
Archaeological Sites		
DA0134	Late archaic lithic scatter that contains flakes and projectile points	Unknown
SH0058	Single lithic flake recovered from a shovel probe	Unknown
Cemetery		
2733	Union City Cemetery	NA

A total of one National Historic Landmark, two national historic districts, and nine sites listed on the National Register have been recorded within 1 mile of the Indianapolis Line Subdivision in Ohio. Of these sites, one site listed on the National Register (80002987, the Lambert-Parent House) is within approximately 100 feet of the railroad centerline. The Lambert-Parent House is located at 631 East Elm Street in Union City, Ohio. Its significance is recognized on two basic points: the first is the house's significance for its architectural characteristics, and the second is the owner's, George A. Lambert's, contribution to the invention of the first American gasoline automobile.

3.10.1.3 Kentucky

A total of 13 cultural resources surveys have been completed within 1 mile of the Louisville Connection in Kentucky. The Office of the State Archaeologist and Kentucky SHPO provided shapefiles for the requested area. From a brief examination of these shapefiles, two reports (Manuscript # 584275, *An Archaeological Survey of the Industry Road Project Area, Jefferson County, Kentucky,* and manuscript # 579699, *A Phase I Archaeological Investigation of the Central Avenue Extension, Jefferson County, Kentucky*) review an area that partially crosses or is adjacent to the Louisville Connection.

A total of 27 archaeological sites and 2,896 architectural sites have been recorded within 1 mile of the Louisville Connection in Kentucky. None of the archaeological sites are within 100 feet of the railroad centerline, but one architectural site (JFSB 124) is within approximately 100 feet of the railroad centerline. Architectural site JFSB 124 is the Commonwealth Printing Commercial Building located at 2901 South Second Street in Louisville, Kentucky, and its National Register eligibility status is unknown. No cemetery locations were identified by the Office of the State Archaeologist and Kentucky SHPO within 1 mile of the rail line.

A total of 2 National Historic Landmarks, 12 national historic districts, and 115 sites listed on the National Register have been recorded within 1 mile of the Louisville Connection in Kentucky. Of these sites, one National Historic Landmark and one site listed on the National Register (JFSS 10, the Kentucky Wagon Works, and JFSW 401, Union Station, respectively) are within approximately 100 feet of the railroad centerline. The Kentucky Wagon Works is located at 2601 South 3rd Street in Louisville, Kentucky, and the Kentucky SHPO lists the property as a National Historic Landmark. Union Station is located at 1000 West Broadway in Louisville, Kentucky, and the brief narrative supplied by the Kentucky SHPO indicates that the property is listed on the National Register.

3.10.2 Environmental Impacts of Proposed Operational Changes

Potential impacts of proposed operational changes on the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection on cultural resources are discussed below.

3.10.2.1 Proposed Transaction

Under the Proposed Transaction, the number of trains operating per day is anticipated to increase from 23 to 34 trains per day along Indianapolis Line Subdivision, from 4 to 17 trains per day along the Indianapolis Terminal Subdivision – Louisville Secondary Branch, and from 6 to 18 trains per day along the Louisville Connection. The greatest potential for impacts on cultural resources would be from grade crossing delay and from noise and vibration from the increased train traffic.

As discussed in Section 3.1, Transportation, nine public at-grade crossings would have a vehicle delay of over 40 vehicle hours per day. At these nine crossings, the queue length would remain the same under the Proposed Transaction because train length and train speed would not change. However, queues would form more frequently under the Proposed Transaction because of the proposed increase in train numbers. No historic properties listed on the National Register are located within 100 feet of the nine at-grade crossings projected to have a vehicle delay of over 40 vehicle hours per day (NPS 2014). Therefore, grade crossing delay caused by Transaction-related increases in train traffic are not anticipated to adversely affect documented historic properties located within 100 feet of the centerline of the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection.

As discussed in Section 3.8, Noise and Vibration, only the Indianapolis Terminal Subdivision – Louisville Secondary Branch in Indianapolis would be subject to increased noise levels that could be potentially adverse due to an increase in the number of trains per day under the Proposed Transaction. Vibration levels are not projected to change because the speed of trains and the jointed rail would not change. Although the frequency with which train-induced ground-borne vibration levels occur is projected to increase due to an increase in the number of trains per

day, the maximum level of train-induced ground-borne vibration is not projected to increase. No historic properties listed on the National Register are located within the area along the Indianapolis Terminal Subdivision – Louisville Secondary Branch that is projected to be exposed to 70 dBA L_{dn} or greater and an increase of 5 dBA or greater, as discussed in Section 3.8 (NPS 2014). Therefore, noise and vibration caused by Transaction-related increases in train traffic are not anticipated to adversely affect documented historic properties located within 100 feet of the centerline of the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection within Indiana, Ohio, and Kentucky.

Because potential noise and vibration impacts from proposed operational changes on the Indianapolis Line Subdivision would not be adverse (see Section 3.8), OEA also concludes that the operational changes under the Proposed Transaction would have no adverse effect on historic properties in the state of Ohio. There would be no Transaction-related construction activities in the state of Ohio.

Kentucky SHPO has stated, and OEA concurs, that the Proposed Transaction would have no adverse effect on historic properties. Section 3.10.3.1 contains an expanded discussion of consultation with Kentucky SHPO.

3.10.2.2 No-Action Alternative

Because operational changes associated with the Proposed Transaction would not occur under the No-Action Alternative, adverse effects on historic properties are not anticipated as a result of the No-Action Alternative.

3.10.3 Environmental Impacts of Proposed Construction on L&I Line

The Draft EA discusses the cultural resources review completed for the portion of the Proposed Transaction along the L&I Line. However, additional coordination has occurred since the Draft EA was issued in August 2013, as discussed in Section 3.10.3.1.

3.10.3.1 Proposed Transaction

Coordination efforts with Indiana SHPO and Kentucky SHPO regarding cultural resources along the L&I Line are discussed in the subsections below.

Coordination with 14 Native American tribes that began during preparation of the Draft EA, as discussed in Section 3.10.1, continued after the Draft EA was distributed for review. Of the 14 tribes, the Peoria Tribe of Indians of Oklahoma and the Kickapoo Tribe of Oklahoma submitted comments to OEA. The Peoria Tribe of Indians of Oklahoma commented on September 4, 2013, that the tribe is unaware of any documentation directly linking Indian Religious Sites to the location of the Proposed Transaction, objects of cultural significance or artifacts linked to the tribe located near the Proposed Transaction, and items covered under the Native American Graves Protection and Repatriation Act (NAGPRA) to be associated with the Proposed Transaction. The tribe also noted that it has no objections to the Proposed Transaction at this time. However, the tribe states that if any items are discovered that fall under the protection of NAGPRA, it requests immediate notification and consultation. In addition, the Kickapoo Tribe of Oklahoma commented on September 18, 2013, that it has no objections to the Proposed Transaction; however, the tribe requested immediate notification in the event that burial remains or artifacts are discovered during construction of the Proposed Transaction.

These letters are included in Appendix I, Attachment I-3. OEA recommends a mitigation measure (see Chapter 4.0, MM 12) to address the concerns of the two tribes regarding unanticipated discoveries.

On March 21, 2014, OEA sent a scoping letter to all 14 tribes to inform them of OEA's intent to prepare a Supplemental EA and to solicit scoping comments (OEA 2014a). No comment letters were received from the tribes. All 14 tribes received this Supplemental EA and will receive the Final EA when issued.

Indiana

Archaeological Sites and Cemeteries

During preparation of the Draft EA, Indiana SHPO, in a letter dated August 9, 2011, provided a list of eight archaeological sites and six cemeteries that have been recorded adjacent to the L&I Line (Indiana SHPO 2011a). The Draft EA notes that any improvements to the L&I Line under the Proposed Transaction would be contained with the existing ROW and concludes that the archaeological sites and cemeteries would not be directly impacted.

In a letter dated November 19, 2013 (see Appendix I, Attachment I-1), Indiana SHPO concludes that no archaeological investigations appear necessary if proposed improvements to the L&I Line are limited to areas within the disturbed L&I ROW (Indiana SHPO 2013a). Indiana SHPO adds that if any proposed improvements to the L&I Line are to occur within 100 feet of the six identified cemeteries, a development plan would be to be submitted to and approved by Indiana SHPO (Indiana SHPO 2013a). OEA concludes that no adverse effects would occur on archaeological sites if proposed improvements to the L&I Line are limited to the disturbed ROW, and the improvements would also be located at least 100 feet from the six identified cemeteries. OEA recommends mitigation measures (see Chapter 4.0, MM 11 and MM 13) to restrict Transaction-related siding construction to the disturbed ROW and to require compliance with Indiana SHPO's requirements for cemetery development plans, as applicable.

On March 21, 2014, OEA sent a scoping letter to Indiana SHPO stating its intent to prepare a Supplemental EA and to solicit scoping comments (OEA 2014a). Indiana SHPO replied on April 23, 2014, stating that the two potential siding extensions appear to be outside of the existing railroad ROW. If that is the case, then an archaeological investigation of these areas may be necessary (Indiana SHPO 2014a). OEA notes, however, that construction of the siding extensions (if built) would be contained with the existing railroad ROW (see Section 2.1.1, Rail Infrastructure). OEA also recommends a mitigation measure (see Chapter 4.0, MM 11) to restrict Transaction-related siding construction activities to the disturbed ROW.

During preparation of this Supplemental EA, updated information has become available regarding the proposed replacement of the Flatrock River Bridge. The bridge would be replaced with a new bridge with longer spans and fewer piers. Additional information on the Flatrock River Bridge is provided below.

Flatrock River Bridge

During preparation of the Draft EA, CSXT initiated coordination with Indiana SHPO to determine if the Flatrock River Bridge is a historic property. In a letter dated September 9, 2011 (see Appendix I, Attachment I-4), CSXT requested Indiana SHPO's opinion regarding National

Register eligibility of the Flatrock River Bridge (HDR 2011). CSXT noted that no information on the bridge is available in SHAARD. Attachments to the CSXT letter included a topographic map showing the location of the bridge and nine photographs of the bridge. To accommodate heavier and faster-moving rail cars, CSXT noted that it plans to replace the Flatrock River Bridge with a similar steel-girder type structure (HDR 2011).

Indiana SHPO replied to CSXT's eligibility determination request in a letter dated October 11, 2011, stating its belief that the bridge meets the criteria for eligibility for inclusion in the National Register (Indiana SHPO 2011b). Indiana SHPO noted that the bridge appears to be significant under Criteria A and C for its association with transportation and as a good example of a heavily built Pratt through-truss bridge. Indiana SHPO noted that it would resume identification and evaluation procedures for the proposed joint use upon receipt of the Draft EA (Indiana SHPO 2011b). The Draft EA concludes that replacement of the Flatrock River Bridge would constitute an adverse effect on a potentially eligible historic property.

Following publication of the Draft EA, additional correspondence occurred regarding the Flatrock River Bridge. This correspondence is provided in Appendix I, Attachment I-4, and is summarized in the paragraphs below.

As explained in Chapter 1.0, the purpose of the Proposed Transaction is to enable CSXT to improve the efficiency, consistency, and reliability of its operations in the Midwest region. A key component of these proposed operations is the ability of the Flatrock River Bridge to accommodate modern rail cars and trains that are heavier and moving at faster speeds. The Flatrock River Bridge, believed to have been built in the late 1800s to early 1900s, is currently under weight and speed restrictions, and is not capable of accommodating the rail traffic that would operate on the L&I Line under the Proposed Transaction. In a September 13, 2013, letter to Indiana SHPO, Mr. Garry Shook, P.E., an independent railroad bridge engineer retained by CSXT and L&I, explained why the bridge (1) is not suitable under the Proposed Transaction, (2) cannot be modified, and (3) must be replaced (Civilstar, Inc. 2013). Several of the engineer's key points about the bridge include the following:

- The two main-span piers were encased in concrete in approximately 1970 due to differential settlement.
- While the bridge's design, which was commonly used between 1890 and 1920, provided efficiency in steel weight, it proved not to be strong enough for modern railroad loadings, and has many non-redundant "fracture-critical" members that can lead to sudden and complete bridge collapse in the event of failure of a single member or connection.
- Bridge components are subject to hairline cracks due to material flaws in the manufacturing process used at the end of the 19th century.
- Clearance under the bridge is approximately 2.5 feet short of accommodating the 100-year flood elevation and results in significant upstream flooding, including substantial impacts on residential properties.
- If bridge rehabilitation were pursued, numerous temporary supports required during rehabilitation would further restrict flood waters, increase flood elevations, and worsen flooding impacts.
- Rehabilitation of the bridge to accommodate 100-year flood elevations as well as modern railroad operations would require the replacement of most components of the

> bridge, thereby compromising the bridge's historical integrity and, in essence, creating a new bridge.

Following Mr. Shook's letter to Indiana SHPO, CSXT wrote to Indiana SHPO on September 18, 2013, offering to prepare a presentation package for the Flatrock River Bridge that complies with Indiana DNR DHPA's Minimum Architectural Documentation Standards, including: (1) black and white photographs providing an overall view of the Flatrock River Bridge in its environment and views of it significant components; (2) a written description of the Flatrock River Bridge; (3) a statement of significance; and (4) any available architectural drawings or sketch plan of the site. CSXT noted that the subject documentation would be prepared prior to removal of the Flatrock River Bridge and to mitigate the adverse effect caused by removal of the bridge (CSXT 2013).

In a letter to CSXT on October 3, 2013, Indiana SHPO agreed that the Flatrock River Bridge has been modified from its original design (see Appendix I for details) and would require substantial additional modifications for continued use (Indiana SHPO 2013b). Based on the bridge engineer's opinion (summarized above), Indiana SHPO noted that it also understands that the bridge may not be feasibly repaired or strengthened to current railroad standards, including the expected speed and load requirements under the Proposed Transaction. Nevertheless, Indiana SHPO stated that it believes that the bridge likely retains sufficient integrity to be considered eligible for listing on the National Register. Indiana SPHO also acknowledged that rehabilitation of the existing bridge does not appear to be feasible, and agreed with CSXT's recommendation that the bridge be documented prior to its removal, according to DHPA's Minimum Architectural Documentation Standards, as mitigation for the loss of this historic resource (Indiana SHPO 2013b).

After Indiana SHPO agreed to documentation as mitigation, CSXT and L&I retained the firm Butler, Fairman & Seufert to prepare the documentation. On November 13, 2013, the documentation, titled *Minimum Architectural Documentation Standards for Flatrock River Bridge MP 40.19 over Flatrock River, Bartholomew County, Indiana*,[26] was submitted to Indiana SHPO (see Appendix I, Attachment I-4, for a copy of this report) (Butler, Fairman & Seufert, Inc. 2013). In a letter dated November 19, 2013, Indiana SHPO acknowledged receipt of the documentation, stated that it has reviewed the material, and concluded that the documentation is consistent with DHPA's Minimum Architectural Documentation Standards (Indiana SHPO 2013a).

On July 25, 2014, OEA sent a letter to ACHP to notify ACHP of the adverse effect on the Flatrock River Bridge resulting from the Proposed Transaction and to invite ACHP to participate in consultation regarding the adverse effect (OEA 2014b). A copy of this letter was also sent to Indiana SHPO. In the letter, OEA stated that it concurs that replacement of the Flatrock River Bridge would constitute an adverse effect on a historic property considered eligible for inclusion on the National Register and that avoidance of the adverse effect is not feasible if the L&I Line is to safely accommodate the modern rail traffic under the Proposed Transaction. OEA also concurred that the bridge documentation submitted to Indiana SHPO on November 13, 2013,

[26] The report is provided in Appendix I, Attachment I-4, and is also available on the Board's website at http://www.stb.dot.gov/ect1/ecorrespondence.nsf/PublicIncomingByDocketNumber/B60BDBF5EF5E234985257CF900510EE1/$File/EI_20463.pdf?OpenElement.

mitigates the adverse effect. OEA noted that it is preparing a draft Memorandum of Agreement (MOA) to document the Section 106 consultation process, state a finding of adverse effect, and express acceptance of the documentation as mitigation for the adverse effect. OEA stated that the MOA would be submitted to Indiana SHPO, CSXT, L&I, and any other signatory and concurring parties, for review and comment (OEA 2014b).

ACHP replied to OEA on August 6, 2014, stating that its participation in the consultation to resolve the adverse effects on the Flatrock River Bridge is not needed. However, ACHP noted that OEA will need to file the final MOA and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA and supporting documentation is required to complete the requirements of Section 106 of the NHPA.

In an August 21, 2014, letter, Indiana SHPO noted receipt of OEA's July 25, 2014, letter to ACHP, and acknowledged OEA's finding of adverse effect from the replacement of the Flatrock River Bridge (Indiana SHPO 2014b). Indiana SHPO also restated its concurrence that there appeared to be no feasible alternative to bridge replacement and that documentation prior to removal, according to DHPA's Minimum Architectural Documentation Standards, would be an appropriate mitigation measure. Indiana SHPO also stated that it would be willing to enter into an MOA to memorialize the mitigation measures and resolve adverse effects of the undertaking (Indiana SHPO 2014b).

On September 23, 2014, OEA submitted a draft MOA to Indiana SHPO, CSXT, and L&I (that is, the Signatories) for review and comment (OEA 2014c). To enable other interested parties and potential concurring parties to participate in the process, a copy of the draft MOA has been posted on the Board's website and is also provided in Appendix I, Attachment I-4, of this Supplemental EA.

Construction plans for the replacement of the Flatrock River Bridge have yet to be prepared. However, OEA recommends a mitigation measure (see Chapter 4.0, MM 12) that addresses the discovery of unanticipated archaeological sites, human remains, funerary items, or associated artifacts during Transaction-related construction activities.

Kentucky

During preparation of the Draft EA, Kentucky SHPO noted in an August 1, 2011, letter that although the Proposed Transaction would be limited to existing ROW, there is potential for direct and indirect effects on cultural resources along the L&I Line. Kentucky SHPO also stated that an APE for the portion of the Proposed Transaction in Kentucky must be determined, with its concurrence, and that a survey of above-ground resources over 50 years of age needs to be submitted for its review. Finally, Kentucky SHPO stated that any ground-disturbing activities associated with the Proposed Transaction may require an archaeological survey (Kentucky SHPO 2011). However, the Proposed Transaction would not entail ground-disturbing activities in the state of Kentucky. Pending the outcome of further Section 106 consultation with Kentucky SHPO, OEA recommended a mitigation measure to address Kentucky SHPO's concerns (see Chapter 4.0, MM 12).

Following publication of the Draft EA, additional correspondence occurred between OEA and Kentucky SHPO. This correspondence is provided in Appendix I, Attachment I-2, and is summarized in the paragraphs below.

On August 23, 2013, OEA contacted Kentucky SHPO, formally reinitiating consultation with that office and providing background information on the Proposed Transaction (OEA 2013a). Then, on September 11, 2013, OEA recommended to Kentucky SHPO that the 70 dBA noise contour (as calculated for the Proposed Transaction) be used as the limits of the APE and provided to Kentucky SHPO the executive summary of the Draft EA (OEA 2013b).

On November 5, 2013, Kentucky SHPO formally accepted the limits of the APE as being the 70 dBA contour, which is approximately 75 feet from the centerline of the rail line, and agreed that because no ground disturbance is planned for this segment of the rail line that an archaeological investigation is not warranted at this time (Kentucky SHPO 2013a). On December 17, 2013, a letter from Kentucky SHPO to OEA indicated that Kentucky SHPO has yet to receive a report regarding the required survey of above-ground resources over 50 years of age within the defined APE (Kentucky SHPO 2013b).

On March 21, 2014, OEA sent a scoping letter to Kentucky SHPO stating its intent to prepare a Supplemental EA and to solicit scoping comments (OEA 2014a). Kentucky SHPO replied on April 18, 2014, acknowledging that it understands the undertaking, that it received the Draft EA in August 2013, and that it understands that the Proposed Transaction would not include any construction or ground-disturbing activities on any of CSXT's rail lines (Kentucky SHPO 2014a).

On June 26, 2014, Cultural Resource Analysts, Inc. provided Kentucky SHPO with a report that details the investigation of above-ground resources 50 years of age or older within the defined APE. The report is titled *Cultural Historic Resource Survey for the Joint Use of the Louisville and Indiana Railroad in Louisville, Jefferson County, Kentucky*,[27] and is provided in Appendix I, Attachment I-2. In its report, Cultural Resource Analysts, Inc. concludes that the Proposed Transaction would result in no adverse effect on the 5 sites currently listed on the National Register and the 16 sites recommended eligible for listing on the National Register (Cultural Resource Analysts, Inc. 2014).

On August 4, 2014, Kentucky SHPO concurred with the assessment of Cultural Resource Analysts, Inc. that the Proposed Transaction would have no adverse effect on historic properties (Kentucky SHPO 2014b). OEA also concurs that the Proposed Transaction would have no adverse effect on historic properties in the subject APE.

3.10.3.2 No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, adverse effects on historic properties would not be expected under the No-Action Alternative.

3.11 ENVIRONMENTAL JUSTICE

This section discusses the affected environment and potential environmental effects of the Proposed Transaction and the No-Action Alternative on environmental justice populations in the project area.

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[27] The report is provided in Appendix I, Attachment I-2, and is also available on the Board's website at http://www.stb.dot.gov/ect1/ecorrespondence.nsf/PublicIncomingByDocketNumber/AA1E90AE9C9AD50685257D160061D275/$File/EI_20490.pdf?OpenElement.

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" (59 FR 7629). The Board has not developed guidance regarding environmental justice, but relies on guidance developed by the Council on Environmental Quality (CEQ). CEQ, which oversees the federal government's compliance with EO 12898 and NEPA, developed guidelines (CEQ 1997) to assist federal agencies in incorporating the goals of EO 12898 into the NEPA process. The CEQ guidance offers federal agencies general principles for conducting an environmental justice analysis under NEPA, including consideration of the population structure within the affected area to determine whether minority populations, low-income populations, or Indian tribes are present and, if so, whether there may be disproportionately high and adverse human health or environmental effects on any of these groups.

CEQ guidance defines "minority" and "low income" in the context of environmental justice analysis. Minority individuals are members of the following population groups: American Indian or Alaska Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.[28] CEQ identifies these groups as minority populations when either:

- The minority population of the affected area exceeds 50 percent, or
- The minority population percentage in the affected area is meaningfully greater than the minority population percentage in the general population or appropriate unit of geographical analysis (CEQ 1997).

A low-income population is identified using U.S. Census Bureau annual statistical poverty thresholds (that is, the number of people in families and individuals with incomes in the last 12 months below the poverty threshold). The July 2012 poverty threshold, used by the U.S. Census Bureau to develop the latest available poverty data, is $23,068 for a family of four (that is, two adults and two children) (U.S. Census Bureau 2013a).

The Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection traverse eight counties—Marion, Hancock, Madison, Delaware, and Randolph counties in Indiana; Darke and Shelby counties in Ohio; and Jefferson County in Kentucky. The environmental justice analysis was completed by characterizing minority and low-income populations in the area affected by the Proposed Transaction. For the purposes of this analysis, the study area is defined as U.S. Census block groups that are adjacent to, or within approximately 100 feet of, the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection (see Appendix J, Attachment J-1). A total of 133 census block groups are included in the study area.

In accordance with CEQ guidance (1997) that the study area be compared to an "appropriate unit of geographic analysis," the population within the study area was compared to the eight counties in which the study area is located to determine if the minority and low-income populations of the

[28] Subsequent to this CEQ guidance, the Office of Management and Budget refined its Standards for the Classification of Federal Data on Race and Ethnicity (62 FR 58782-58790) to separate the "Asian or Pacific Islander" category into "Asian" and "Native Hawaiian and Other Pacific Islander." To be consistent with current U.S. Census data, the separate categories are used in this analysis.

study area are meaningfully greater than the minority and low-income population percentages, respectively, in the general population. For this analysis, "meaningfully greater" refers to one standard deviation from a standard normal distribution curve; that is, approximately 34 percent. Consequently, if the percentage of minority or low-income populations of a census block group was determined to be 34 percent or higher than the percentage in the eight-county area traversed by the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, it was noted as meaningfully greater than the general population.

The presence of Indian tribes in the study area was determined by the presence of American Indian reservations and off-reservation trust lands (federal) and Tribal Statistical Areas, which are geographic areas identified through U.S. Census Bureau (2013b and 2013c).

To evaluate potential environmental justice impacts, the following sequential, four-step methodology was followed:

1. Identify the potential environmental justice populations located in the study area using the definitions above (see Section 3.11.1).
2. Assess whether any potential human health or environmental impacts identified in the Supplemental EA would be high and adverse (see Section 3.11.2).
3. Assess whether any high and adverse effects would be borne by environmental justice populations (see Section 3.11.2).
4. Determine whether any potentially high and adverse effects would be disproportionately borne by environmental justice populations (see Section 3.11.2).

3.11.1 Affected Environment

During Step 1 of the environmental justice analysis, demographic data were identified for the population in the study area and the general population of the eight-county area traversed by the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection, as shown in Appendix J, Table J-1. The minority population of the eight-county area traversed by the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection is approximately 27.79 percent of the total population. Minority populations in the eight counties in which the study area is located range from 2.10 percent (Darke County, Ohio) to 38.00 percent (Marion County, Indiana), as shown in Appendix J, Table J-1. As discussed in Section 3.11, above, meaningfully greater minority populations were identified where the percentage of minorities in census block groups is at least 34 percent higher than the average percentage of minorities in this eight-county area. Consequently, the threshold for identifying the minority population is 37.25 percent or greater of the total population (that is, 27.79 percent increased by 134 percent equals 37.25 percent).

The minority population in the entire study area (that is, the 133 census block groups) is approximately 23.23 percent of the total population. Of the 133 census block groups in the study area, 32 census block groups (24 percent) were identified as having a meaningfully greater minority population than the general population of the eight-county area, as summarized in Table 3.11-1 and as shown in Appendix J, Table J-1 and Attachment J-1. As shown in Table 3.11-1, 21 of the 32 census block groups with a meaningfully greater population of minorities are located in Marion County, Indiana. Of the nine affected census block groups in

Louisville, Kentucky, five have a meaningfully greater population of minorities (U.S. Census Bureau 2011a).

Table 3.11-1. Census Block Groups With Meaningfully Greater Minority Populations

Rail Line	Block Group and Census Tract	County, State	Total Population	Total Minority Population	Percent of Total Population
Indianapolis Line Subdivision	Block Group 3, Census Tract 330204	Marion, IN	1,516	730	48.15
Indianapolis Line Subdivision	Block Group 1, Census Tract 330209	Marion, IN	3,862	1,830	47.38
Indianapolis Terminal Subdivision – Louisville Secondary Branch & Indianapolis Line Subdivision	Block Group 1, Census Tract 330700	Marion, IN	2,100	1,069	50.90
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 330700	Marion, IN	2,206	1,147	51.99
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 1, Census Tract 330805	Marion, IN	685	510	74.45
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 330805	Marion, IN	671	266	39.64
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 330805	Marion, IN	1,700	1,161	68.29
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 330900	Marion, IN	624	432	69.23
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 330900	Marion, IN	973	826	84.89
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 352100	Marion, IN	877	777	88.60
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 352100	Marion, IN	554	476	85.92
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 1, Census Tract 352300	Marion, IN	824	782	94.90

Rail Line	Block Group and Census Tract	County, State	Total Population	Total Minority Population	Percent of Total Population
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 352300	Marion, IN	653	556	85.15
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 352600	Marion, IN	1,034	688	66.54
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 1, Census Tract 352700	Marion, IN	902	487	53.99
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 354200	Marion, IN	3,679	1,516	41.21
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 356200	Marion, IN	1,316	736	55.93
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 1, Census Tract 360102	Marion, IN	1,506	1,205	80.01
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 360102	Marion, IN	1,208	1,136	94.04
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 360201	Marion, IN	1,307	559	42.77
Indianapolis Terminal Subdivision – Louisville Secondary Branch & Indianapolis Line Subdivision	Block Group 1, Census Tract 390600	Marion, IN	2,485	1,031	41.49
Indianapolis Line Subdivision	Block Group 1, Census Tract 000500	Madison, IN	741	565	76.25
Indianapolis Line Subdivision	Block Group 3, Census Tract 000500	Madison, IN	1,156	905	78.29
Indianapolis Line Subdivision	Block Group 2, Census Tract 001700	Madison, IN	2,306	1,065	46.18
Indianapolis Line Subdivision	Block Group 1, Census Tract 011600	Madison, IN	3,417	1,686	49.34

Rail Line	Block Group and Census Tract	County, State	Total Population	Total Minority Population	Percent of Total Population
Indianapolis Line Subdivision	Block Group 1, Census Tract 012000	Madison, IN	851	464	54.52
Indianapolis Line Subdivision	Block Group 2, Census Tract 000300	Delaware, IN	785	597	76.05
Louisville Connection	Block Group 1, Census Tract 002700	Jefferson, KY	1,011	779	77.05
Louisville Connection	Block Group 1, Census Tract 003500	Jefferson, KY	1,876	983	52.40
Louisville Connection	Block Group 2, Census Tract 003500	Jefferson, KY	1,212	1,032	85.15
Louisville Connection	Block Group 1, Census Tract 003700	Jefferson, KY	859	365	42.49
Louisville Connection	Block Group 1, Census Tract 005100	Jefferson, KY	801	513	64.04

Source: U.S. Census Bureau, 2011a, 2010 Census Summary File 1, Table P5 – Hispanic or Latino by Race, August 25, accessed April 24, 2014, http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

The low-income population of the eight-county area traversed by the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection is approximately 17.44 percent of the total population. Low-income populations in the eight counties in which the study area is located range from 7.73 percent (Hancock County, Indiana) to 20.98 percent (Delaware County, Indiana), as shown in Appendix J, Table J-2. The threshold for identifying meaningfully greater low-income populations was determined in a manner similar to the process used to determine the threshold for meaningfully greater minority populations; that is, the percentage of low-income population in the eight-county area (17.44 percent) was increased by 134 percent, which equals 23.37 percent. Consequently, meaningfully greater low-income populations were identified as census block groups where the low-income population is 23.37 percent or greater of the total population. The low-income population within the 133 census block groups of the study area is approximately 22.07 percent of the total population. Of the 133 census block groups in the study area, 54 census block groups (41 percent) were identified as having a meaningfully greater low-income population than the general population of the eight-county area, as summarized in Table 3.11-2 and as shown in Appendix J, Table J-2 and Attachment J-1. As shown in Table 3.11-2, 25 of the census block

groups with low-income populations are located in Marion County, Indiana. Of the nine affected census block groups in Louisville, Kentucky, seven have a meaningfully greater low-income population (U.S. Census Bureau 2013d).

Table 3.11-2. Census Block Groups With Meaningfully Greater Low-Income Populations

Rail Line	Block Group and Census Tract	County, State	Total Population	Low-Income Population	Percent of Total Population
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 330600	Marion, IN	1,386	421	30.38
Indianapolis Terminal Subdivision – Louisville Secondary Branch & Indianapolis Line Subdivision	Block Group 1, Census Tract 330700	Marion, IN	1,702	665	39.07
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 330700	Marion, IN	2,907	781	26.87
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 1, Census Tract 330805	Marion, IN	612	368	60.13
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 330805	Marion, IN	441	109	24.72
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 330805	Marion, IN	2,199	982	44.66
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 330900	Marion, IN	491	177	36.05
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 352100	Marion, IN	747	291	38.96
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 352100	Marion, IN	924	429	46.43
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 352300	Marion, IN	858	411	47.90
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 352600	Marion, IN	993	585	58.91

Rail Line	Block Group and Census Tract	County, State	Total Population	Low-Income Population	Percent of Total Population
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 1, Census Tract 352700	Marion, IN	1,013	654	64.56
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 354200	Marion, IN	2,396	643	26.84
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 356200	Marion, IN	316	130	41.14
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 1, Census Tract 356900	Marion, IN	541	269	49.72
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 356900	Marion, IN	395	177	44.81
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 356900	Marion, IN	586	209	35.67
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 4, Census Tract 356900	Marion, IN	816	268	32.84
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 357800	Marion, IN	1,378	786	57.04
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 4, Census Tract 357900	Marion, IN	1,207	680	56.34
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 1, Census Tract 360102	Marion, IN	1,354	611	45.13
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 360201	Marion, IN	844	384	45.50
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 5, Census Tract 380300	Marion, IN	594	260	43.77
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 2, Census Tract 380502	Marion, IN	737	267	36.23
Indianapolis Terminal Subdivision – Louisville Secondary Branch	Block Group 3, Census Tract 380600	Marion, IN	1,668	479	28.72

Rail Line	Block Group and Census Tract	County, State	Total Population	Low-Income Population	Percent of Total Population
Indianapolis Line Subdivision	Block Group 1, Census Tract 410200	Hancock, IN	1,033	354	34.27
Indianapolis Line Subdivision	Block Group 1, Census Tract 000500	Madison, IN	772	482	62.44
Indianapolis Line Subdivision	Block Group 2, Census Tract 000500	Madison, IN	1,243	425	34.19
Indianapolis Line Subdivision	Block Group 3, Census Tract 000500	Madison, IN	1,073	526	49.02
Indianapolis Line Subdivision	Block Group 1, Census Tract 000800	Madison, IN	1,038	365	35.16
Indianapolis Line Subdivision	Block Group 1, Census Tract 000900	Madison, IN	1,039	461	44.37
Indianapolis Line Subdivision	Block Group 1, Census Tract 001000	Madison, IN	1,485	560	37.71
Indianapolis Line Subdivision	Block Group 2, Census Tract 001000	Madison, IN	1,629	573	35.17
Indianapolis Line Subdivision	Block Group 2, Census Tract 001700	Madison, IN	2,141	672	31.39
Indianapolis Line Subdivision	Block Group 1, Census Tract 011300	Madison, IN	1,439	348	24.18
Indianapolis Line Subdivision	Block Group 2, Census Tract 000300	Delaware, IN	640	216	33.75
Indianapolis Line Subdivision	Block Group 2, Census Tract 000400	Delaware, IN	712	426	59.83
Indianapolis Line Subdivision	Block Group 1, Census Tract 000500	Delaware, IN	831	386	46.45
Indianapolis Line Subdivision	Block Group 2, Census Tract 000600	Delaware, IN	773	243	31.44

Rail Line	Block Group and Census Tract	County, State	Total Population	Low-Income Population	Percent of Total Population
Indianapolis Line Subdivision	Block Group 3, Census Tract 000600	Delaware, IN	361	114	31.58
Indianapolis Line Subdivision	Block Group 3, Census Tract 001300	Delaware, IN	1,284	362	28.19
Indianapolis Line Subdivision	Block Group 1, Census Tract 002800	Delaware, IN	673	376	55.87
Indianapolis Line Subdivision	Block Group 3, Census Tract 002800	Delaware, IN	835	319	38.20
Indianapolis Line Subdivision	Block Group 3, Census Tract 951600	Randolph, IN	1,251	557	44.52
Indianapolis Line Subdivision	Block Group 2, Census Tract 951700	Randolph, IN	1,162	453	38.98
Indianapolis Line Subdivision	Block Group 1, Census Tract 951800	Randolph, IN	1,064	293	27.54
Indianapolis Line Subdivision	Block Group 2, Census Tract 510100	Darke, OH	927	272	29.34
Louisville Connection	Block Group 1, Census Tract 002700	Jefferson, KY	600	275	45.83
Louisville Connection	Block Group 1, Census Tract 003500	Jefferson, KY	1,726	1,262	73.12
Louisville Connection	Block Group 2, Census Tract 003500	Jefferson, KY	1,115	873	78.30
Louisville Connection	Block Group 1, Census Tract 003700	Jefferson, KY	648	260	40.12
Louisville Connection	Block Group 1, Census Tract 004100	Jefferson, KY	812	244	30.05
Louisville Connection	Block Group 1, Census Tract 005100	Jefferson, KY	1,071	315	29.41

Rail Line	Block Group and Census Tract	County, State	Total Population	Low-Income Population	Percent of Total Population
Louisville Connection	Block Group 1, Census Tract 005300	Jefferson, KY	877	526	59.98

Source: U.S. Census Bureau, 2013d, 2008-2012 American Community Survey 5-Year Estimates, U.S. Census Bureau. American Fact Finder 2, Table C17002 – Ratio of Income to Poverty Level in the Past 12 Months, December 17, accessed April 24, 2014, http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t.

There are no Indian tribes in the study area, as determined by the presence of American Indian, Alaska Native, or Native Hawaiian areas within the eight-county area traversed by the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary Branch, and Louisville Connection (U.S. Census Bureau 2011b). Native Americans constitute approximately 0.3 percent of the population in the study area.

As discussed in the Draft EA, Appendix H, minority and low-income populations in census block groups affected by the potential Elvin and Brook siding extensions and proposed Flatrock River bridge replacement are not meaningfully greater than the percentage of minority and low-income populations in Franklin and Bartholomew counties, Indiana.

3.11.2 Environmental Impacts of Proposed Operational Changes

3.11.2.1 Proposed Transaction

The change in rail operations associated with the Proposed Transaction would result in an increase in average daily train traffic between Indianapolis, Indiana, and Sidney, Ohio, and in Louisville, Kentucky, as shown in Chapter 2.0, Table 2.1-3. The results of Step 1 in the environmental justice evaluation—identifying potential environmental justice populations—were reviewed above. The remaining three steps of the evaluation are discussed below.

Step 2 – Determine Level of Potential Impacts

During Step 2 of the environmental justice analysis, potential impacts were assessed to determine whether high and adverse human health or environmental impacts on human populations would occur as a result of the Proposed Transaction. Step 2 of the analysis was based on the location of adverse impacts on resources in the project area in relation to census block groups with meaningfully greater minority and low-income populations identified in Step 1 of the analysis. The following resources would not be adversely affected by the Proposed Transaction: transportation relative to grade crossing safety, hazardous materials transportation safety, and emergency response; community resources and land use; socioeconomic resources; topography, geology, and soils; water resources, including water quality; biological resources, including forested areas and threatened and endangered species; air quality and climate; energy resources; and cultural resources. However, adverse impacts on transportation relative to grade crossing delay and on environmental noise levels are anticipated as a result of the Proposed Transaction.

Adverse health effects were not identified in this Supplemental EA; the levels of noise exposure anticipated under the Proposed Transaction are below levels associated with hearing loss or other health effects.

As discussed in Section 3.1, Transportation, under existing conditions, three public at-grade crossings experience a delay of more than 40 vehicle hours per day (one of the thresholds for consideration of a grade-separated crossing):

- Michigan Street in Indianapolis, Indiana
- Walnut Street in Muncie, Indiana
- Scatterfield Road in Anderson, Indiana

The delays at the Scatterfield Road crossing affect the mobility of an adjacent major road.

Under the Proposed Transaction, six additional public at-grade crossings would experience a delay of more than 40 vehicle hours per day:

- Troy Avenue, Raymond Street, and New York Street in Indianapolis, Indiana
- Madison Avenue in Anderson, Indiana
- Batavia Avenue in Muncie, Indiana
- Kentucky Street in Louisville, Kentucky

Under the Proposed Transaction, the queues resulting from traffic delays would affect the mobility of adjacent major roads at three additional crossings in Indiana: Troy Avenue in Indianapolis, New York Street in Indianapolis, and Batavia Avenue in Muncie.

As discussed in Section 3.8, Noise and Vibration, the noise analysis determined that an increase in trains per day would generally increase noise levels, particularly locomotive horn noise. In addition, the noise analysis determined that two rail lines—the Indianapolis Terminal Subdivision – Louisville Secondary Branch and Louisville Connection—met the criteria for further noise analysis (that is, these rail lines could experience a noise-level increase of at least 3 dBA on an L_{dn} basis under the Proposed Transaction) (see Section 3.8, Table 3.8-5). To determine the severity of potential noise impacts along these rail lines for this environmental justice analysis, noise impact thresholds were defined based on the Proposed Transaction noise level in the study area. The noise impact criteria considered FTA noise impact criteria for transit projects (FTA 2006) and previous STB projects. The FTA criteria are based on the number of people highly annoyed by noise levels, the type of adjacent land use, and a standard limit for an acceptable living environment defined by numerous federal agencies. OEA used the following criteria in this environmental justice analysis:

- Noise levels below 65 dBA L_{dn} – no impact
- Noise levels between 65 and 69 dBA L_{dn} – potential low impact
- Noise levels above 70 dBA L_{dn} and an increase in L_{dn} greater than or equal to 5 dBA – potential adverse impact[29]

[29] Based on CEQ guidance (CEQ 1997), when determining whether environmental effects are disproportionately high and adverse, agencies should consider whether the potential impact significantly (as employed by NEPA) and adversely affects an environmental justice community. Here, OEA did not identify any potential noise impacts from the Proposed Transaction that could be categorized as significant or high. Therefore, OEA established a threshold of "potential adverse impact" for purposes of the environmental justice evaluation.

Although noise-sensitive receptors along the Indianapolis Terminal Subdivision – Louisville Secondary Branch and Louisville Connection could experience noise levels of 65 dBA L_{dn} or greater under the Proposed Transaction (see Section 3.8, Table 3.8-6), these impacts are considered low and are dismissed from further evaluation in this environmental justice analysis. Along the Louisville Connection, no noise-sensitive receptors would experience noise levels above 70 dBA L_{dn} and an increase in L_{dn} of 5 dBA or greater.

Under existing conditions along the Indianapolis Terminal Subdivision – Louisville Secondary Branch, no noise-sensitive receptors are affected by noise levels above 70 dBA L_{dn}. However, under the Proposed Transaction, 346 noise-sensitive receptors would experience noise levels above 70 dBA L_{dn} (see Table 3.8-7), which is considered a potential adverse impact for this environmental justice analysis. Most of these receptors are residential (including apartments), one is a place of worship, one is a private school, one is a funeral home, two are banks, one is a retail store, and one is athletic facilities at the University of Louisville.

Step 3 – Determine if Environmental Justice Populations Would be Impacted

During Step 3 of the environmental justice analysis, potential adverse impacts were assessed to determine whether they would be borne by minority or low-income populations. Of the three public at-grade crossings that would experience traffic delays over 40 vehicle hours per day (that is, Raymond Street in Indianapolis, Madison Avenue in Anderson, and Kentucky Street in Louisville), two (Madison Avenue and Kentucky Street) are within census block groups with meaningfully greater minority and low-income populations, and one (Raymond Street) is within census block groups with only a meaningfully greater low-income population. Of the three public at-grade crossings with traffic delays that would affect mobility of adjacent major roads, none are within census block groups with meaningfully greater minority or low-income populations.

Of the 346 noise-sensitive receptors along the Indianapolis Terminal Subdivision – Louisville Secondary Branch that would experience noise levels above 70 dBA L_{dn} and an increase in L_{dn} of 5 dBA or greater under the Proposed Transaction, 200 are located in census block groups with meaningfully greater low-income populations. None of these noise-sensitive receptors along the Indianapolis Terminal Subdivision – Louisville Secondary Branch are located within census block groups with meaningfully greater minority populations.

No adverse impacts on minority businesses were identified. No businesses were identified in the vicinity of public at-grade crossings with delays longer than 40 vehicle hours per day. With a few exceptions, such as recording studios, motels, and hotels, businesses are not considered noise-sensitive receptors. None of these businesses were identified within the 70 dBA L_{dn} noise contours provided in Appendix H, Attachment H-1.

Although potential adverse impacts are not subject to evaluation under EO 12898, OEA carried the environmental justice assessment to its conclusion to improve accessibility to the NEPA process and to increase opportunities to participate for the affected communities.

Step 4 – Determine if Potential Adverse Impacts Would be Disproportionately Borne by Environmental Justice Populations

During Step 4 of the environmental justice analysis, potential impacts were evaluated to determine whether minority or low-income populations would disproportionately bear any potentially adverse effects.

As discussed in Step 3 of the analysis, three of the additional six public at-grade crossings that would experience traffic delay impacts under the Proposed Transaction (that is, Raymond Street in Indianapolis, Madison Avenue in Anderson, and Kentucky Street in Louisville) would affect census block groups containing a minority or low-income population. Many of the other census block groups adjacent to these at-grade crossings do not contain minority or low-income populations. All travelers using the affected crossings would experience the traffic delay. Therefore, minority and low-income populations would not disproportionately bear any potentially high and adverse effects associated with traffic delay.

The noise analysis indicates that the majority of the noise-sensitive receptors along the Indianapolis Terminal Subdivision – Louisville Secondary Branch anticipated to be impacted by noise levels greater than 70 dBA L_{dn} and an increase in L_{dn} of 5 dBA or greater are located in census block groups with meaningfully greater low-income populations. Therefore, low-income populations along the Indianapolis Terminal Subdivision – Louisville Secondary Branch would disproportionately bear any potentially adverse effects associated with noise.

Applicants have offered voluntary mitigation regarding noise (see Chapter 4.0, VM 46 through VM 52). Specifically, Applicants would work with affected communities that have noise-sensitive receptors that would experience an increase of 5 dBA or greater and noise levels of at least 70 dBA L_{dn} because of Transaction-related increases in train traffic (VM 46). Applicants would mitigate train noise to levels as low as 70 dBA using cost-effective means that are agreed to by an affected community and Applicants. In the absence of such an agreement, Applicants would implement cost-effective mitigation (VM 46). Additionally, Applicants would cooperate with interested communities along the Indianapolis Terminal Subdivision – Louisville Secondary Branch for the establishment of QZs and assist in identifying supplemental or alternative safety measures, practical operational methods, or technologies that could enable the community to establish QZs (VM 47).

In addition, Applicants have offered voluntary mitigation specific to the potential impacts on the environmental justice community discussed above (see Chapter 4.0, VM 53). Because the residential neighborhoods adjacent to the Indianapolis Terminal Subdivision – Louisville Secondary Branch in Indianapolis, Indiana, would experience potentially adverse noise impacts from increased train activity associated with the Proposed Transaction, CSXT would host two meetings in the subject neighborhoods to explain the increased train activity and solicit community concerns about the increases in train-related noise. CSXT would schedule the meetings within 6 months of Applicants executing the Transaction agreement and would publicize the meetings in advance. Within 60 days after the meetings are held, CSXT would provide a meeting report to OEA and any meeting attendees who request it. The report would specify CSXT's responses to the concerns raised at the meetings (VM 53).

Additionally, to further community outreach, OEA mailed copies of the Supplemental EA to residents of the area identified as an environmental justice community. These residents will also receive the Final EA.

3.11.2.2 No-Action Alternative

Because operational changes associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on environmental justice populations are not anticipated as a result of the No-Action Alternative.

3.11.3 Environmental Impacts of Proposed Construction on L&I Line

3.11.3.1 Proposed Transaction

Under the Proposed Transaction, construction activities on the L&I Line would include potential construction of the Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge. As previously discussed, there are no meaningfully greater minority or low-income populations in the areas that would be affected by proposed construction; consequently, there would be no disproportionately high and adverse impacts on minority or low-income populations.

3.11.3.2 No-Action Alternative

Because construction activities associated with the Proposed Transaction would not occur under the No-Action Alternative, impacts on environmental justice populations are not anticipated as a result of the No-Action Alternative.

3.12 CUMULATIVE EFFECTS

CEQ regulations that implement NEPA define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 C.F.R. § 1508.7). Cumulative effects include both direct and indirect, or induced, effects that would result from the Proposed Transaction. CEQ defines direct effects as those "which are caused by the action and occur at the same time and place" (40 C.F.R. § 1508.8). CEQ defines indirect effects as those "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 C.F.R. § 1508.8). Therefore, based on these definitions, the cumulative effects analysis includes the direct effects and indirect effects of the Proposed Transaction and effects of other past, present, and reasonably foreseeable future actions not related to or caused by the Proposed Transaction. The cumulative effects analysis also evaluates the magnitude of the cumulative effect on resources.

Both direct and indirect cumulative effects were identified using the same methodology:

- In accordance with CEQ guidance (1997), resources that would not be affected or would be only negligibly affected by the Proposed Transaction were not evaluated for cumulative effects because these impacts would not be likely to result in cumulative effects.

- A geographic area of analysis was established for assessing cumulative effects. Similar to the cumulative effects analysis in Draft EA, a buffer of 0.5 mile on each side of the rail line was used to identify direct cumulative effects. This 0.5 mile buffer was also used to assess indirect cumulative effects, with the exception of the regional rail network, which required that a broader geographic area be considered.
- Other past, present, and reasonably foreseeable future actions occurring within the geographic area of analysis were identified.
- Existing conditions related to the Proposed Transaction and other past, present, and reasonably foreseeable future actions were identified. For example, to assess cumulative impacts of grade crossing delay, existing and reasonably foreseeable traffic conditions (that is, roads operating above or below capacity) were identified.
- The potential significance of cumulative effects was assessed by evaluating the additive and synergistic (that is, interactive) effects of the Proposed Transaction and other past, present, and reasonably foreseeable future actions, and the capacity of the existing environment to accommodate the increased effect.

3.12.1 Other Past, Present, and Reasonably Foreseeable Future Actions

Human settlement, farming, and development of cities and infrastructure have been occurring in south-central Indiana, southwest Ohio, and northern Kentucky for approximately 200 years, altering the natural and human environment. Specifically, the existing railroad tracks and related infrastructure for the L&I Line have been in place for approximately 100 years, and impacts from the operation of the railroad have been occurring for approximately 100 years as well. The Proposed Transaction would have a negligible cumulative effect on historic and existing development.

Present and reasonably foreseeable future projects considered for this cumulative effects analysis were identified using available land use, transportation, and comprehensive plans for each county in the project area. Although these plans may identify projects that the given municipality proposes to construct within 0.5-mile of the Proposed Transaction, there is no certainty that these projects, with the exception of the projects discussed in Section 3.12.2.1, would be completed. The following documents and initiatives were reviewed:

- Amtrak's "Midwest Train Routes" (2014a)
- Amtrak's "Cardinal/Hoosier State" (2014b)
- Build Indiana Fund (Indiana State Budget Agency 2014)
- City of Columbus – Bartholomew County Planning Department's *Designing Our Future: A Community Planning Process* (2002)
- City of Columbus – Bartholomew County Planning Department's "Bartholomew County Comprehensive Plan Element II – Land Use Plan" (2003)
- City of Franklin, Indiana's comprehensive plan (2013)
- City of Indianapolis and Marion County's *Indianapolis Insight: The Comprehensive Plan for Marion County, Indiana*, Community Values Component (2002)
- City of Indianapolis and Marion County's "Map Indy" zoning map (2014)
- City of Muncie and Delaware County's comprehensive plan (HNTB 2000)
- Columbus Area Metropolitan Planning Organization's *Transportation Plan 2012 – 2037* (CAMPO 2011)

- Delaware-Muncie Metropolitan Plan Commission's *2013-2040 Delaware-Muncie Transportation Plan Update* (2013)
- Delaware-Muncie Metropolitan Plan Commission's *Delaware-Muncie Transportation Improvement Program, FY 2014-2017* (2014)
- FRA's *Preliminary National Rail Plan* (2009)
- FRA's *National Rail Plan: Moving Forward* (2010)
- Indianapolis MPO's *Indianapolis Metropolitan Planning Area 2035 Long-Range Transportation Plan – Volume 1* (2011)
- INDOT's *Indiana State Rail Plan* (2011)
- INDOT's Industrial Rail Service Fund (2013)
- INDOT's "Passenger Rail Service in Indiana" web page (2014)
- Indy Connect's "The Indy Connect Transit Plan" (2014)
- Johnson County's *Plan the Land 2030* (2011)
- Louisville/Jefferson County Information Consortium's "LOJIC Online Map" (2014)
- Madison County Council of Governments' *Transportation Improvement Program, Fiscal Years 2015 - 2018* (2014)
- Madison County Planning Commission's *Madison County Comprehensive Plan* (2001)
- USDA Rural Development Indiana (2014)

3.12.2 Proposed Operational Changes

Potential direct and indirect cumulative effects of proposed operational changes under the Proposed Transaction and the No-Action Alternative, together with other past, present, and reasonably foreseeable future actions, were assessed.

3.12.2.1 Proposed Transaction

Direct Cumulative Effects

As described previously in this Supplemental EA, the proposed operational changes under the Proposed Transaction would result in no direct impacts or only negligible direct impacts on transportation relative to grade crossing safety, hazardous materials transportation safety, and emergency response; community resources and land use; socioeconomic resources; topography, geology, and soils; water resources; biological resources; air quality and climate; energy resources; and cultural resources. Therefore, these resources were not considered in the cumulative effects analysis.

The operational changes under the Proposed Transaction could result in direct impacts on transportation relative to grade crossing delays, noise, and environmental justice; this section addresses direct cumulative effects on these resources.

Grade Crossing Delay

The following projects are within approximately 0.5 mile of grade crossings that are anticipated to experience the greatest delay under the Proposed Transaction (see Section 3.1, Transportation):

- Indy Connect – Indy Connect is a transportation initiative in central Indiana involving transportation improvements, including roadway and bridge upgrades, a rapid transit system (including bus and light rail routes), and bike and pedestrian pathways to connect the various parts of metropolitan Indianapolis with one another and to reduce traffic congestion by providing alternatives to automobile travel. Three of the planned rapid transit lines are in detailed planning stages and are anticipated to be operational by 2021 (Indy Connect 2014). It has not yet been determined what segments of the rapid transit lines would be serviced by bus or light rail. Where light rail is selected, it is anticipated that separate, dedicated lines would be developed for Indy Connect. All of these proposed rapid transit lines are adjacent to the Indianapolis Line Subdivision in the vicinity of the Michigan Street and New York Street at-grade crossings, where increased CSXT train traffic is anticipated to increase vehicles queues and vehicle delays. Alternative routes operating at less than capacity are available around both of these public at-grade crossings (Indianapolis MPO 2011).
- Bridge 516, Tillotson Over White River – This bridge rehabilitation project in Muncie, Indiana, is funded for construction in 2017 (Delaware-Muncie Metropolitan Plan Commission 2014). The Tillotson Bridge is approximately 0.4 mile west of the Batavia Avenue at-grade crossing. Tillotson Avenue terminates at Indiana State Highway 32, the segment anticipated to be delayed by increased CSXT train traffic at the Batavia Avenue at-grade crossing. However, Tillotson Bypass provides a grade-separated crossing 0.3 mile to the west of Tillotson Avenue, and other crossings are available to the east of Batavia Avenue; the closest one, South Perkins Avenue, is 0.4 mile east of Batavia Avenue. Tillotson Overpass is currently operating at less than 60 percent of capacity and is projected to continue operating at less than 60 percent of capacity through 2040. Alternative routes east of Batavia Avenue are also operating at less than 60 percent of capacity and are forecast to operate at 80 to 90 percent of capacity by 2040 (Delaware-Muncie Metropolitan Plan Commission 2013).

The reasonably foreseeable transportation improvements are intended to maintain existing infrastructure or improve traffic flow. Alternative routes are available around each of these public at-grade crossings and transportation improvement projects. OEA does not anticipate cumulative effects on grade crossing delay beyond the direct effects of the Proposed Transaction.

Noise

The Indiana Railroad Senate Avenue Terminal is within approximately 0.5 mile of noise-sensitive receptors in Indianapolis that are anticipated to experience a potentially adverse increase in noise levels from the Proposed Transaction (see Sections 3.8, Noise and Vibration, and 3.11, Environmental Justice). The Indiana Railroad developed this intermodal terminal in

2013. The Senate Avenue Terminal reuses an existing Illinois Central rail line and yard; consequently, the cumulative analysis focuses on the operational impacts of the terminal.

The Indiana Railroad Senate Avenue Terminal is located approximately 0.5 mile west of a segment of the Indianapolis Terminal Subdivision – Louisville Secondary Branch where the increased rail traffic under the Proposed Transaction would increase noise levels greater than 5 dBA and would result in noise levels above 70 dBA on an L_{dn} basis. Approximately four to six trains per day operate on the Indiana Railroad line (INDOT 2011; FRA 2014). Noise generated from these operations along with the Proposed Transaction would not result in a cumulative impact with the Proposed Transaction because of the distance between these sources.

The L&I Line is a federally designated high-speed rail route (INDOT 2011), but there are no reasonably foreseeable future plans to construct and operate high speed rail on this route. In addition, there are no existing uses of this rail line for passenger train service (INDOT 2014; Amtrak 2014a; Amtrak 2014b).

Noise impacts under the Proposed Transaction would occur south of the areas most affected by the planned Indy Connect routes.

No cumulative noise impacts are anticipated under the Proposed Transaction because of the distance between the sources of adverse noise impacts under the Proposed Transaction and other substantial noise sources.

Environmental Justice

As discussed in Section 3.11, Environmental Justice, low-income populations near the Indianapolis Terminal Subdivision – Louisville Secondary Branch from near Raymond Street to I-70 would experience potentially adverse noise impacts under the Proposed Transaction. This is the only anticipated adverse impact disproportionately borne by minority and low-income populations. No substantial cumulative environmental impacts were identified in the cumulative effects analysis; consequently, minority and low-income populations would not disproportionately bear high and adverse cumulative impacts under the Proposed Transaction.

Indirect Cumulative Effects

The proposed operational changes under the Proposed Transaction could result in indirect impacts on socioeconomics and on community resources and land use. As discussed in Section 3.3, Socioeconomics, the Proposed Transaction would allow CSXT to improve efficiency and provide more reliable, consistent, and recoverable service to customers in the Midwest region. The Proposed Transaction would also benefit L&I Line customers by providing a more competitive route and open new markets throughout southern Indiana. The Columbus, Indiana, land use plan, *Designing Our Future: A Community Planning Process* (City of Columbus – Bartholomew County Planning Department 2002), and the "Bartholomew County Comprehensive Plan Element II – Land Use Plan" (City of Columbus – Bartholomew County Planning Department 2003) both encourage the development of industrial business parks along existing rail lines. Industrial and commercial development along the L&I Line could be induced by the Proposed Transaction in the long-term future, but no reasonably foreseeable effects are known or anticipated.

The Proposed Transaction is not likely to induce industrial and commercial development along the Indianapolis Line Subdivision, Indianapolis Terminal Subdivision – Louisville Secondary

Branch, or Louisville Connection because the increase in rail traffic would consist of overhead traffic (that is, rail traffic with origins and destinations outside of the local area) that would have no effect on local businesses.

The Proposed Transaction would not induce any development or growth that would affect grade crossing delay, the existing noise environment, or existing minority and low-income populations. Consequently, no indirect cumulative impacts on grade crossing delay, noise, or environmental justice are anticipated.

3.12.2.2 No-Action Alternative

Direct Cumulative Effects

Under existing conditions, CSXT's LCL Subdivision operates at or above train capacity, which impacts CSXT's ability to operate a consistent, reliable, and recoverable railroad. CSXT expects the overall demand for freight rail transportation to increase, and expects the LCL Subdivision to continue operating at or above train capacity.

FRA anticipates a 28 percent increase in U.S. freight demand by 2035 (FRA 2010). Much of this freight would move over critical corridors in Indiana and Ohio, with CSXT's Toledo Subdivision and Cincinnati Terminal Subdivision projected to operate above capacity by 2035 (FRA 2009). Other rail routes in Indiana and Ohio, such NSR's rail line from West Lafayette to Fort Wayne in Indiana and CN's rail line from Gary to South Bend in Indiana are also projected to operate above capacity. CSXT's Indianapolis Line Subdivision is projected to operate below capacity (FRA 2009).

Under the No-Action Alternative, the LCL Subdivision, Toledo Subdivision, and Cincinnati Terminal Subdivision would continue to operate at or above capacity, potentially resulting in a significant cumulative impact on rail capacity in Indiana and Ohio.

The L&I Line is not mapped as a major corridor in FRA's *National Rail Plan*, and a future projection of demand is not included in that report (FRA 2010). The L&I Line currently operates with only light traffic; based on information provided by Applicants, it is not anticipated that the L&I Line would operate at or above capacity in the foreseeable future. Consequently, no cumulative impact is anticipated.

No potential adverse effects on any other resources were identified in the Supplemental EA. Consequently, no direct cumulative effects on other resources are likely under the No-Action Alternative.

Indirect Cumulative Effects

No induced growth or development is anticipated under the No-Action Alternative. Consequently, no indirect cumulative effects are likely under the No-Action Alternative.

3.12.3 Proposed Construction on L&I Line

Potential direct and indirect cumulative effects of proposed construction activities on the L&I Line under the Proposed Transaction and the No-Action Alternative, together with other past, present, and reasonably foreseeable future actions, were assessed.

3.12.3.1 Proposed Transaction

Direct Cumulative Effects

As discussed in Section 2.1.1, Rail Infrastructure, proposed construction activities on the L&I Line would include potential construction of the Elvin and Brook siding extensions and proposed replacement of the Flatrock River Bridge. During the potential construction of the Elvin and Brook siding extensions, train traffic would be limited by construction curfews (that is, closure of the rail line to traffic for a specified time frame). During proposed replacement of the Flatrock River Bridge, a full rail line outage (that is, closure of the rail line to traffic for 24 hours per day) for approximately 2 weeks would be required, depending on the construction staging plan developed by the contractor and approved by CSXT and L&I. However, direct cumulative impacts would be minimal because the train traffic volume impacted would be small (that is, two trains per day on LIRC-01). Impacts on rail customers should be minimal because of the brief nature of the shutdown for bridge replacement (that is, approximately 2 weeks), a low volume of existing traffic on this rail line segment, and potentially fewer trains if the bridge replacement coincides with the automobile plant shutdown window, during which train volumes are typically reduced. Temporarily shifting this small number of trains to other rail lines would not appreciably add to existing traffic volumes.

As described previously in this Supplemental EA, the proposed construction activities on the L&I Line under the Proposed Transaction would result in no direct impacts or only negligible direct impacts on transportation relative to grade crossing delays, grade crossing safety, hazardous materials transportation safety, and emergency response; community resources and land use; socioeconomic resources; topography, geology, and soils; water resources; biological resources; air quality and climate; noise and vibration; energy resources; and environmental justice. Therefore, these resources were not considered in the cumulative effects analysis.

No reasonably foreseeable future actions affecting cultural resources in the vicinity of the Proposed Transaction were identified. Consequently, cumulative impacts on cultural resources are not anticipated.

Indirect Cumulative Effects

All resources were evaluated for indirect effects of proposed construction activities on the L&I Line under the Proposed Transaction, but no indirect effects were identified.

3.12.3.2 No-Action Alternative

Direct Cumulative Effects

Under the No-Action Alternative, improvements on the L&I Line would not be made. Therefore, CSXT's ability to move freight on the L&I Line would remain the same, without the potential for additional trains or heavier loads. L&I's capacity to move freight would also remain unchanged. This could affect the ability of industries along the L&I Line to ship potentially greater amounts of freight. As described in this Supplemental EA, the No Action Alternative would result in no direct impacts or only negligible direct impacts on all resources evaluated. Consequently, the No Action Alternative would not likely result in significant cumulative impacts.

Indirect Cumulative Effects

No induced growth or development is anticipated under the No-Action Alternative. No potential adverse effects on any resources were identified under the No-Action Alternative. Consequently, no indirect cumulative effects are likely under the No-Action Alternative.