

Table 12. Comparative Impact and Cost Summary – RIVER CROSSING SUBAREA

Features/Considerations	Preliminary Alternative Corridor Segment			
	Alternative C	Alternative D	Alternative E	Alternative F
General				
Centerline Length	1.5 miles	1.4 miles	1.5 miles	1.9 miles
Total Area in Alignment Corridor	70 acres	69 acres	75 acres	90 acres
Community and Land Use				
Potential Residential Displacements	0	0	0	0
Potential Commercial Displacements	1	1 (vacant)	0	0
Greenspaces - Private Public (additional study required to determine Section 4(f) applicability)	1 (Horseshoe Bend; 13 acres) 0	1 (Horseshoe Bend; 13 acres) 0	0 0	0 0
Schools	0	0	0	0
Churches	0	0	0	0
Cemeteries	0	0	0	0
Hospitals/Emergency Service	0	0	0	0
Community Buildings/Facilities	0	0	0	0
Potential Job Displacements	20-49	0	0	0
EJ Communities	None	None	None	None
Agricultural Land	13 acres	0	15 acres	24 acres
Visual Resources	Little Miami River (national and state scenic river); floodplain and surrounding bluffs	Little Miami River (national and state scenic river); floodplain and surrounding bluffs	Little Miami River (national and state scenic river); floodplain and surrounding bluffs	Little Miami River (national and state scenic river); floodplain and surrounding bluffs
Public Involvement Considerations	Village of Mariemont concerned about noise	No specific issues noted	No specific issues noted	No specific issues noted
Little Miami River Crossing				
Channel Stability	Historically a stable channel location; expected to remain stable over the next 80 years	Historically an unstable channel location; expected to remain unstable over the next 80 years (anticipated Horseshoe Bend avulsion)	Historically an unstable channel location; expected to remain unstable over the next 80 years (anticipated Horseshoe Bend avulsion)	Historically a moderately stable channel location; may be impacted in by future Horseshoe Bend avulsion
Crossing Suitability	High suitability	Low suitability	Low suitability	Moderate suitability
Floodplains and Groundwater				
100 Year FEMA Floodway/Floodplain	<u>Floodway Length Bridged:</u> Little Miami River (1,800 feet), Duck Creek Tributary (100 feet). <u>Floodplain:</u> Little Miami River (40 acres), Duck Creek Tributary (< 1 acre)	<u>Floodway Length Bridged:</u> Little Miami River (4,275 feet), Duck Creek Tributary (200 feet), Clear Creek (400 feet) <u>Floodplain:</u> Little Miami River (8 acres), Duck Creek Tributary (1 acre)	<u>Floodway Length Bridged:</u> Little Miami River (3,750 feet), Duck Creek Tributary (200 feet), Clear Creek (400 feet) <u>Floodplain:</u> Little Miami River (29 acres), Duck Creek Tributary (1 acre)	<u>Floodway Length Bridged:</u> Little Miami River (3,000 feet), Duck Creek Tributary (200 feet) <u>Floodplain:</u> Little Miami River (52 acres), Duck Creek Tributary (1 acre)
Sole-Source Aquifer	68 acres	68 acres	75 acres	90 acres
Drinking Water Source Protection Area	0	0	0	0
Public Water Supplies	0	0	0	0
Ecological Resources				
Federal-listed Species	Potential Indiana bat habitat (28 acres); limited potential running buffalo clover habitat; potential habitat for five mussels and bald eagle (Little Miami River)	Potential Indiana bat habitat (28 acres); limited potential running buffalo clover habitat; potential habitat for five mussels and bald eagle (Little Miami River)	Potential Indiana bat habitat (28 acres); limited potential running buffalo clover habitat; potential habitat for five mussels and bald eagle (Little Miami River)	Potential Indiana bat habitat (28 acres); limited potential running buffalo clover habitat; potential habitat for five mussels and bald eagle (Little Miami River)
Wetlands [total number (acres)]	0	0	1 (0.02 acre)	1 (0.02 acre)
Surface Streams Culvert Crossings (number/linear feet filled) Bridge Crossings (number)	1 (195 feet) 3	0 (0 feet) 4	2 (0 feet) 2	2 (0 feet) 2
High Quality WWH/Class III PHWH Crossings	Little Miami River (bridge crossing); Little Miami River Tributary #5 (culvert and bridge crossing)	Little Miami River and Little Miami River Tributary #5 (bridge crossings)	Little Miami River (bridge crossing)	Little Miami River (bridge crossing)
Ponds	0	0	0	0
Woodlands	28 acres	28 acres	17 acres	14 acres
Other Notable Ecological Features	0	0	0	0
Cultural Resources				
Section 4(f) History/Architecture NRHP District? Previously-Determined NRHP-Eligible Sites? Sites Warranting Further Study?	No No No	Yes (Mariemont; 1.7 ac/1 building) No Yes (1 site)	No No Yes (1 site)	No No Yes (1 site)
Section 4(f) Archaeology NRHP District? High-Sensitivity Areas? (Gray & Pape, 2009) Recorded/Unrecorded Sites? (Gray & Pape, 2010) Site Complexity (Gray & Pape, 2010) Site Disturbance Level (Gray & Pape, 2010) Sites with Human Burials Confirmed or Suspected? (Gray & Pape, 2010)	Yes (clips Hahn) No No NA NA NA	Yes (Hahn) Yes (1 site) Yes (1 site) Unknown Minimal No	Yes (Hahn) Yes (1 site) Yes (2 sites) Simple (1), Unknown (1) Minimal (2) No	Yes (Hahn) Yes (1 site) Yes (2 sites) Simple (1), Unknown (1) Minimal (2) No
Public Parks and Recreation Areas				
Section 4(f) Public Parks/Recreation Areas	1 Mariemont Community Gardens (22 acres)	0	0	0
Section 6(f) Public Parks/Recreation Areas	0	0	0	0
Noise and Air Quality				
Adjacent Noise Sensitive Areas	3	2	3	2
Preliminary Estimated Cost of Noise Mitigation	\$1,702,000	\$2,330,800	\$1,848,000	\$1,290,800
Potential Air Quality Issues	Located in non-attainment area for eight-hour ozone and PM _{2.5} ; project-level hot-spot analyses not anticipated; MSAT analysis required	Located in non-attainment area for eight-hour ozone and PM _{2.5} ; project-level hot-spot analyses not anticipated; MSAT analysis required	Located in non-attainment area for eight-hour ozone and PM _{2.5} ; project-level hot-spot analyses not anticipated; MSAT analysis required	Located in non-attainment area for eight-hour ozone and PM _{2.5} ; project-level hot-spot analyses not anticipated; MSAT analysis required
Potential Hazardous Materials Sites				
Suspect Sites Requiring Phase I Studies	2 (0 landfills)	5 (0 landfills)	3 (including Hafner Landfill)	3 (including Hafner Landfill)
Rail Freight Considerations				
Rail Freight Considerations	Continue freight access to Clare Yard	No issues identified	No issues identified	No issues identified
Engineering and Design Considerations				
Geotechnical Issues	Landslide potential along bluffs over Little Miami River	Landslide potential along bluffs over the Little Miami River	Landslide potential along bluffs over the Little Miami River; Hafner Landfill	Landslide potential along bluffs over the Little Miami River; Hafner Landfill
Major Utilities	2 electric, 4 sewer	2 electric, 4 sewer	1 electric, 4 sewer	2 electric, 4 sewer
Earthwork and Drainage	Little Miami River floodway and floodplain	Little Miami River floodway and floodplain	Little Miami River floodway and floodplain; Hafner Landfill	Little Miami River floodway and floodplain; Hafner Landfill
Horizontal and Vertical Geometry	Possible grade issues at US 50/Red Bank Road interchange	Possible grade issues at US 50/Red Bank Road interchange; potential geometry issues with bridge structure over the Little Miami River	Possible grade issues at US 50/Red Bank Road interchange; potential geometry issues with bridge structure over the Little Miami River	Possible grade issues at US 50/Red Bank Road interchange; potential geometry issues with bridge structure over the Little Miami River

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Eastern Corridor Considerations				
Fit with Eastern Corridor Improvements/Plans LUVP = Land Use Vision Plan GIP = Green Infrastructure Master Plan	Minimizes encroachment on sensitive Little Miami River corridor resources and floodway/floodplain (supports identified LUVP and GIP goals for protection/preservation) by following existing transportation corridor (an existing rail line)	Substantial encroachment on sensitive Little Miami River corridor resources and floodway/floodplain (does not support identified LUVP and GIP for protection/preservation)	Moderate encroachment on sensitive Little Miami River corridor resources and floodway/floodplain (identified by LUVP and GIP for protection/preservation)	Moderate encroachment on sensitive Little Miami River corridor resources and floodway/floodplain (identified by LUVP and GIP for protection/preservation)
Preliminary Cost Estimates (current \$\$)				
Multi-modal Construction Cost Estimate (Highway and Rail Transit)	\$110.9 Million	\$616.9 Million	\$371.3 Million	\$296.5 Million
Right-of-Way Cost Estimate	\$2.6 Million	\$1.2 Million	\$840,000	\$960,000
SEGMENT RECOMMENDATION:	EXPAND AND ADVANCE	ELIMINATE	ELIMINATE	ELIMINATE