

Scene 1 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17005, -86.26825 · Generated October 23, 2026

OVERALL SCORE

5.6

Marginal



Front: Looking downstream, a small headwater stream flows through a narrow wooded corridor with exposed bedrock/limestone substrate visible in the channel. Beyond the thin riparian buffer, open agricultural fields are visible in the background with what appears to be a red barn or structure on the far left. The stream channel is shallow with scattered flat rock in and along the bed.

Right: The right bank (left bank when facing downstream) shows a low bank with herbaceous ground cover and bare deciduous trees. The bank rises gently with a mix of grass, scattered shrubs, and dormant deciduous trees. Beyond the thin riparian strip, what appears to be agricultural land or open fields is faintly visible through the trees. Some bank erosion is evident with exposed soil near the waterline.

Back: Looking upstream, the stream channel extends with shallow water flowing over a mixed substrate. The left bank (right when facing upstream) has exposed soil and roots with some erosion evident. Eastern red cedar and other deciduous trees line both banks with exposed root systems visible at the waterline. The channel appears slightly incised with moderate bank heights.

Left: The left bank (right bank when facing downstream) shows a narrow stream channel with a large eastern red cedar tree at the bank edge and various dormant deciduous trees. Agricultural fields are visible beyond the thin riparian buffer on this side. The bank shows some root exposure and minor erosion. The stream is narrow, maybe 4-6 feet wide at this point, with low banks and a thin riparian corridor separating the channel from open fields.

Assessment Scores

Component	Score	Visual	Rating
Channel Condition	7		fair
Hydrologic Alteration	6		Fair
Sediment Deposition	5		Fair
Left Bank Stability	6		Fair
Right Bank Stability	5		Fair
Left Vegetative Protection	6		Fair
Right Vegetative Protection	5		Fair
Riparian Canopy Cover	5		Fair
Floodplain Vegetation	3		Poor
Water Appearance	6		Fair
Nutrient Enrichment	7		Good
Epifaunal Substrate	-		-

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 1

Black Branch 21 at this headwater location is a small (5-8 ft wide), low-gradient perennial stream flowing through a narrow riparian corridor bordered by agricultural fields. The stream shows moderate impairment primarily from agricultural sediment loading, with fine silt/mud dominating the substrate and burying what would naturally be a limestone bedrock/gravel bed. The riparian buffer is inadequate, particularly on the right bank where it may not meet TDEC's 30-foot minimum standard. Instream habitat is limited with sparse woody debris, few pools, and low habitat diversity. No stormwater infrastructure or outfalls were observed at this rural location; the primary water quality concern is non-point source agricultural runoff.

Primary Stressors

sedimentation, riparian loss, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	7	Channel appears natural with no visible structural alterations, straightening, or armoring. Some evidence of minor lateral erosion but no active downcutting. The channel maintains a natural form though substrate is dominated by fine sediment suggesting possible aggradation. The stream appears to access its floodplain.
Hydrologic Alteration	6	The channel shows slight incision but appears to maintain some floodplain connectivity. Low banks suggest the stream can access its floodplain during moderate events. Adjacent agricultural land use may have altered the hydrologic regime through increased runoff and reduced infiltration.
Sediment Deposition	5	Significant fine sediment (silt/mud) dominates the substrate, suggesting excess sediment loading likely from agricultural runoff. Approximately 30-50% of the bed appears affected by fine sediment deposition. The natural bedrock visible in the front view is partially buried by sediment in other areas.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	6	6	1_25_percent	Left bank is low and moderately stable. Agricultural fields are visible beyond the thin riparian buffer suggesting potential for runoff impacts. Minor erosion present but not severe.
Right	5	5	26_50_percent	Right bank shows more active erosion than left bank. Root exposure on eastern red cedar trees indicates ongoing bank retreat. Thin riparian buffer with agricultural fields visible beyond the tree line.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	5	Winter dormancy significantly reduces canopy cover. The UP face shows mostly bare deciduous branches with some evergreen cover from eastern red cedars. During growing season, coverage would increase substantially. Current shade estimated at 25-50% but would be higher in summer. Scoring reflects year-round average.
Left Buffer Width	25 50ft	Score: 5/10
Right Buffer Width	10 25ft	Score: 4/10
TDEC 30ft Buffer Met?	L: Yes / R: No	Right bank riparian buffer appears insufficient per TDEC 30ft standard in some areas. Agricultural land directly adjacent to narrow riparian corridor contributes to sediment loading and reduces buffering capacity. Buffer restoration on both banks, particularly the right bank, would improve water quality and habitat.

Water Quality & Infrastructure · Scene 1

Water Quality Indicators

Metric	Score	Notes
Water Appearance	6	Water is slightly turbid with a brown/tea coloration, likely from tannins and suspended sediment. Objects on the bed are visible in the shallow water. No oil sheen, film, or foam observed. Visibility estimated at 1-3 feet. The brown color may be partly natural for this type of headwater stream in a limestone/agricultural setting.
Nutrient Enrichment	7	Algae: minor
Manure/Waste	8	No direct evidence of manure or livestock waste visible. No livestock access points, fencing, or waste visible. Agricultural fields appear to be crop-based rather than pasture. However, the agricultural setting warrants some caution.
Surface Contamination	-	Sheen: No · Foam: No · Odor: none

Stormwater Infrastructure

No outfall detected at this location.

Instream Habitat

Metric	Score	Notes
Epifaunal Substrate	-	

Stream Characteristics

Field	Value
Stream Type	perennial
Gradient	low_flat

Management Recommendations

Action	Priority	Timeline
Document this reach as part of visual stream survey inventory. Note absence of MS4 outfalls at this rural headwater location.	low	annual
Coordinate with agricultural extension services regarding riparian buffer restoration and agricultural BMP implementation in the contributing watershed.	medium	90_days

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