

Scene 8 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17007, -86.26864 · Generated October 23, 2026

OVERALL SCORE

5.5

Marginal



Front: Looking downstream along a narrow, shallow creek channel bordered by bare deciduous trees and dense shrubby undergrowth. The channel has flat rock/slab substrate visible along the left bank edge with shallow water flowing over a mud/silt bed. Agricultural fields are visible in the background through the bare trees on the left side.

Right: Dense thicket of bare deciduous shrubs and small trees forming the right bank riparian zone. The vegetation is dormant but provides dense structural cover. Behind the riparian strip, agricultural pasture/field land is faintly visible through the vegetation. No water or channel features are directly visible in this direction.

Back: Looking upstream, the view shows dense riparian vegetation including what appears to be eastern red cedar (evergreen) and bare deciduous trees forming a tight canopy. Below, the narrow channel is partially visible with flat rock slabs along the bank edge and shallow water. The dense cedar/evergreen vegetation provides year-round cover on this bank.

Left: Looking toward the left bank (facing downstream), the view opens to a broad, flat agricultural field/pasture. A narrow strip of riparian trees and shrubs borders the stream, with open grassland extending several hundred feet to a distant red agricultural building/barn. The riparian buffer on this side appears quite narrow, transitioning quickly to mowed or grazed pasture.

Assessment Scores

Component	Score	Visual	Rating
Channel Condition	6		marginal
Hydrologic Alteration	5		Fair
Sediment Deposition	4		Fair
Left Bank Stability	5		Fair
Right Bank Stability	6		Fair
Left Vegetative Protection	4		Fair
Right Vegetative Protection	6		Fair
Riparian Canopy Cover	5		Fair
Floodplain Vegetation	2		Poor
Water Appearance	5		Fair
Nutrient Enrichment	7		Good
Epifaunal Substrate	-		-

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 8

Black Branch at this location is a small, low-gradient headwater stream flowing through an agricultural landscape near Lebanon, Tennessee. The stream shows marginal overall condition with primary impairments from excessive fine sediment deposition, a critically narrow left bank riparian buffer, and moderate channel incision disconnecting the stream from its floodplain. The right bank has a wider, denser riparian buffer that provides some stream corridor functions, while the left bank transitions abruptly from a thin tree line to open agricultural pasture. No stormwater infrastructure or outfalls were observed at this rural location, and no illicit discharge indicators were detected. Habitat for aquatic life is significantly limited by the silt-dominated substrate and lack of pool-riffle structure.

Primary Stressors

sedimentation, riparian loss, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	6	Channel appears natural with no direct engineering modifications, but shows evidence of moderate incision likely resulting from land use changes in the watershed. The channel is cut below the floodplain level with moderate bank heights (3-6ft), suggesting some downcutting has occurred. No riprap, concrete, or channelization present.
Hydrologic Alteration	5	Moderate channel incision visible with banks 3-6ft high relative to the small channel width. The stream appears disconnected from its floodplain, with the agricultural field surface well above the bankfull stage. This incision is likely related to increased runoff from agricultural land use changes. Flooding of the adjacent fields appears infrequent.
Sediment Deposition	4	The channel bed is predominantly silt/mud, indicating significant fine sediment deposition. The original gravel/cobble substrate appears largely buried. Estimated 30-50% of bottom affected by fine sediment deposition. This is consistent with agricultural runoff from adjacent fields contributing sediment load. Some natural limestone fragments remain exposed but much of the bed is embedded.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	5	4	26_50_percent	Left bank has a critically narrow riparian buffer between the stream and active agricultural fields. The transition from streambank vegetation to open pasture is abrupt, indicating potential for agricultural runoff to reach the stream with minimal filtering. No fencing visible to restrict livestock access, though no direct evidence of livestock in the stream was observed.
Right	6	6	1_25_percent	Right bank benefits from wider and denser riparian vegetation including eastern red cedar which provides year-round cover. Agricultural fields are visible beyond the riparian strip but the buffer appears wider than on the left bank. The dense shrub thicket provides good bank stability.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	5	During winter leaf-off, canopy cover is reduced. The bare deciduous trees and scattered eastern red cedars provide approximately 25-50% shade. During summer with full leaf-out, coverage would likely increase to 50-75%. The sycamore and other deciduous trees provide the primary shade but the narrow buffer limits canopy closure, especially on the left bank. Scoring reflects year-round average condition.
Left Buffer Width	10 25ft	Score: 3/10
Right Buffer Width	25 50ft	Score: 5/10
TDEC 30ft Buffer Met?	L: No / R: Yes	The left bank buffer is critically narrow with agricultural pasture encroaching close to the stream bank. Buffer restoration through planting and fencing to exclude livestock/mowing from the riparian zone would significantly improve conditions. The right bank buffer is adequate but could benefit from enhancement to 60ft width. No fencing observed to delineate or protect riparian buffers on either bank.

Water Quality & Infrastructure · Scene 8

Water Quality Indicators

Metric	Score	Notes
Water Appearance	5	Water has a brown tint consistent with tannic/organic coloration and some suspended fine sediment. Clarity appears moderate — the bed is visible through the shallow water but color limits deeper visibility. No oil sheen, foam, or algal mats visible. The brown color is likely a combination of natural organic inputs and fine sediment suspension from the silt bed. No obvious surface contamination.
Nutrient Enrichment	7	Algae: minor
Manure/Waste	7	No direct evidence of manure or waste in the stream or on banks. No livestock visible. However, the adjacent agricultural fields could be pasture (no fencing visible to prevent livestock access), and the lack of fencing is a concern. No waste pipes or odors detected. Score reflects no visible manure but acknowledges the agricultural land use risk and absence of livestock exclusion fencing.
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
Conduct outfall mapping survey of the broader reach to identify any agricultural drainage inputs or tile drains entering the stream	medium	90_days
Complete visual stream survey documentation for this reach as part of MS4 comprehensive stream assessment program	medium	annual

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