

Scene 48 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.16890, -86.27197 · Generated October 23, 2026

OVERALL SCORE

4.6

Marginal



Front: Looking downstream toward a concrete box culvert that passes under a road embankment. The stream is pooled with brown, turbid water reflecting bare tree branches. A debris jam of woody material sits on the left bank just upstream of the culvert entrance. Yellow utility markers are visible on the road embankment above the culvert.

Right: Looking to the right bank (when facing downstream), the view shows a gently sloping grassy area with scattered deciduous trees, all leafless. The ground is a mix of green grass and leaf litter. A structure or building is visible in the background through the bare trees. The bank rises gradually from the stream channel. There appears to be some litter scattered in the area.

Back: Looking upstream, the channel narrows significantly and appears to have exposed bedrock or possibly concrete substrate. The stream is very shallow with water barely covering the bed surface. The left bank shows bare soil and erosion with exposed rocky/gravelly material. A vehicle is visible in the background on the left, suggesting proximity to a road or parking area. The right bank has dormant herbaceous vegetation and small trees.

Left: Looking to the left bank (when facing downstream), dense herbaceous vegetation and vine growth are visible, with scattered small deciduous trees in bare winter condition. Beyond the vegetation, an agricultural field or pasture is visible with a red barn structure in the distance. The riparian buffer here is narrow with a mix of dormant grass, vines, and weedy growth. Some green vine growth suggests possible invasive species (Japanese honeysuckle or similar evergreen vine).

Assessment Scores

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

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 48

Black Branch at this location (scene 48 of 53, near end of reach) is a small, incised perennial stream in marginal condition approaching a concrete box culvert road crossing. The channel is entrenched with moderate bank erosion, inadequate riparian buffers on both banks, and heavy fine sediment deposition. Agricultural land use on the left bank and maintained grass on the right bank encroach within the riparian zone, failing to meet TDEC 30ft minimum buffer requirements. The primary stressors are sedimentation from agricultural runoff, riparian buffer loss, and channel incision that disconnects the stream from its floodplain. The culvert creates a pooled backwater with limited habitat diversity. Restoration priorities should focus on riparian buffer establishment, particularly native tree and shrub planting, and addressing upstream sediment sources.

Primary Stressors

sedimentation, riparian loss, channelization, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	5	Channel shows evidence of incision and is approaching a concrete box culvert road crossing. The culvert represents a significant channel alteration point. Upstream the channel appears relatively natural but incised. Some bank erosion and downcutting evident. The channel is not extensively armored but the culvert influence is notable.
Hydrologic Alteration	4	Channel appears moderately incised with banks 3-6ft high. The culvert road crossing and incision limit floodplain connectivity. The stream is unlikely to access its floodplain during typical annual flood events. Agricultural land use in the watershed likely contributes to flashy hydrology and increased peak flows.
Sediment Deposition	4	The pool upstream of the culvert appears to have significant fine sediment deposition. The brown turbid water prevents assessment of bottom conditions, but the uniform flat pool bottom and turbidity suggest substantial silt/mud accumulation. Estimated 30-50% of visible channel bottom affected by sediment deposition.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	5	5	26_50_percent	Left bank has narrow riparian buffer with agricultural field beyond. Vine growth (possibly invasive Japanese honeysuckle) provides some bank cover. Moderate erosion upstream. The culvert wingwall provides localized bank stability at the road crossing.
Right	5	5	26_50_percent	Right bank is more accessible and open with grass and scattered trees. Moderate erosion near waterline. Concrete culvert wingwall provides stability at the road crossing. Some debris accumulation near the culvert entrance.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	4	Currently in winter with bare deciduous trees, shade is minimal (<25%). Even in full leaf conditions, the scattered tree coverage and thin buffer would likely provide only 25-50% shade. The right bank is very open with few trees. The left bank has somewhat denser tree coverage but still inadequate for full canopy closure over the channel.
Left Buffer Width	10 25ft	Score: 3/10
Right Buffer Width	10 25ft	Score: 3/10
TDEC 30ft Buffer Met?	L: No / R: No	Both banks fail to meet TDEC MS4 permit section 4.2.5.4 buffer requirements. Agricultural use encroaches within the buffer zone on the left bank. Mowed grass/lawn maintenance encroaches on the right bank. High potential for buffer restoration through native tree and shrub planting on both sides, particularly the right bank which has open ground available.

Water Quality & Infrastructure · Scene 48

Water Quality Indicators

Metric	Score	Notes
Water Appearance	4	Water is brown and turbid with visibility estimated at 0.5-1ft based on the inability to see the bottom in the pool. This could be influenced by recent precipitation. No algal mats, sheens, or scum visible. The turbidity appears to be primarily from suspended sediment rather than algal growth. Score of 4 reflects considerable cloudiness that may be partly storm-related but suggests chronic sediment issues.
Nutrient Enrichment	7	Algae: minor
Manure/Waste	7	No direct evidence of manure or livestock waste in the stream. However, agricultural fields are immediately adjacent on the left bank with a minimal buffer. No livestock are currently visible but the potential for agricultural runoff (including fertilizer) exists. Score of 7 reflects no direct evidence but proximity to agriculture.
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 culvert crossing in outfall/infrastructure inventory including condition, dimensions, and debris accumulation	high	90_days
Assess culvert for fish passage adequacy and hydraulic capacity with debris present	medium	90_days
Monitor riparian buffer adequacy along both banks for compliance with TDEC MS4 permit section 4.2.5.4	medium	annual

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