

Scene 18 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17005, -86.26958 · Generated October 23, 2026

OVERALL SCORE

5.3

Marginal



Front: Looking downstream (direction of travel), the view shows a narrow stream channel flanked by bare deciduous trees and dense shrubby understory. Beyond the immediate riparian corridor on the left, a large open agricultural field (dormant pasture/hay field) is visible extending to distant treeline and structures. The right side has a thicker riparian strip with exposed rocky bank material visible at the lower edge.

Right: Looking toward the right bank (when facing downstream), a dense thicket of bare deciduous shrubs and small trees occupies the bank zone. Rocky/stony material is visible along the lower bank at left edge where it meets the channel. The riparian zone extends with moderate depth of woody vegetation before giving way to what appears to be more open land beyond. Some flat stone slabs are visible at the bank-channel interface.

Back: Looking upstream, the narrow channel is visible with a rocky/cobble bed showing shallow flowing water. The stream appears to be a small first or second order channel with exposed flat stone substrate. Both banks are vegetated with bare deciduous trees and shrubs. The channel is quite narrow, perhaps 3-5 feet wide, with the rocky bed dominating the view. A sycamore tree is visible on the right side with its characteristic white bark.

Left: Looking toward the left bank (when facing downstream), the view opens to a wide, flat agricultural field — dormant pasture or hayfield — extending to distant hills. A red barn/agricultural building is visible in the distance to the right. The riparian buffer on this side is extremely narrow, consisting of only a few scattered trees and sparse shrub cover along the bank edge before transitioning immediately to open pasture. The bank drops steeply from the grassy field to the channel.

Assessment Scores

Component	Score	Visual	Rating
Channel Condition	7		fair
Hydrologic Alteration	5		Fair
Sediment Deposition	7		Good
Left Bank Stability	4		Fair
Right Bank Stability	6		Fair
Left Vegetative Protection	3		Poor
Right Vegetative Protection	6		Fair
Riparian Canopy Cover	5		Fair
Floodplain Vegetation	2		Poor
Water Appearance	7		Good
Nutrient Enrichment	7		Good
Epifaunal Substrate	-		-

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 18

Black Branch Scene 18 depicts a small (3-5 ft wide), bedrock-dominated headwater stream flowing at low baseflow through a narrow riparian corridor bordered by agricultural pasture on the left and moderate woody vegetation on the right. The most critical issue is the severely deficient riparian buffer on the left bank where open pasture extends to within feet of the channel, failing to meet TDEC 30ft minimum buffer standards. Instream habitat quality is marginal, limited by uniform bedrock substrate, absence of pools, and near-total lack of large woody debris. Water quality appears acceptable during current dry weather conditions but the agricultural adjacency presents chronic nutrient and sediment loading risk. Priority actions include riparian buffer establishment on the left bank and LWD additions to improve instream habitat diversity.

Primary Stressors

riparian loss, sedimentation, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	7	Channel appears relatively natural with no direct structural alteration. However, the channel shows evidence of incision with moderate bank heights relative to the small channel width, suggesting some downcutting likely related to changes in watershed hydrology from agricultural land use. The bedrock substrate is controlling further incision.
Hydrologic Alteration	5	The channel shows moderate incision with banks 3-6 feet high relative to the narrow channel width. The adjacent agricultural fields appear to be above the current channel elevation with limited floodplain connection. Agricultural land use in the watershed likely increases flashiness while the incised channel limits floodplain access.
Sediment Deposition	7	The bedrock-dominated substrate shows minimal sediment deposition. The channel is largely self-cleaning with bedrock controlling the bed. Some fine sediment and broken rock fragments are present along margins but do not constitute significant deposition. The bedrock substrate resists aggradation.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	4	3	26_50_percent	Left bank is the most vulnerable bank at this location. The extremely narrow riparian buffer between the channel and agricultural field provides inadequate protection. TDEC minimum buffer requirements are likely not met on this side.
Right	6	6	1_25_percent	Right bank in better condition than left, with denser riparian vegetation and natural rock providing toe protection.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	5	During leaf-on season, the right bank trees and the scattered left bank trees would provide approximately 25-50% shade coverage over this narrow channel. The winter bare condition shows good canopy framework on the right but very limited coverage from the left. The narrow channel width means even sparse canopy can provide some shade.
Left Buffer Width	under 10ft	Score: 2/10
Right Buffer Width	25 50ft	Score: 5/10
TDEC 30ft Buffer Met?	L: No / R: No	The left bank agricultural encroachment within the required buffer zone is a significant compliance concern. The open pasture extends nearly to the channel edge. Buffer restoration on the left bank by establishing native woody vegetation would significantly improve stream function and comply with TDEC MS4 permit section 4.2.5.4 requirements. The right bank buffer, while better, should also be assessed for adequacy.

Water Quality & Infrastructure · Scene 18

Water Quality Indicators

Metric	Score	Notes
Water Appearance	7	Water appears clear in the DOWN face view, with the bedrock substrate easily visible beneath the shallow flow. No sheen, film, or discoloration is evident. Water depth is so shallow that clarity is easily assessed. Under current dry weather conditions, water quality appears good. Score reduced slightly from 10 because the agricultural adjacency suggests periodic turbidity during storm events.
Nutrient Enrichment	7	Algae: minor
Manure/Waste	7	No direct evidence of manure or livestock waste in the stream. However, the adjacent agricultural field appears to be pasture land and a red barn is visible in the distance, suggesting livestock operations in the area. No direct livestock access to the stream is visible at this point, but the narrow buffer on the left side provides limited protection. Score reflects potential concern from nearby agricultural operations.
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	moderate

Management Recommendations

Action	Priority	Timeline
Document deficient riparian buffer on left bank for buffer compliance tracking under TDEC MS4 permit	high	30_days
Conduct dry weather screening of baseflow to characterize water quality and check for agricultural runoff indicators	medium	90_days
Verify potential overhead utility crossing visible in UP face and add to crossing inventory if confirmed	low	annual

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