

# Scene 34 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.16975, -86.27069 · Generated October 23, 2026

OVERALL SCORE

5.2

Marginal



**Front:** Looking downstream, a narrow, shallow channel flows through a rural/suburban setting. The channel is narrow (approximately 3-6 feet wide) with exposed flat rock/limestone substrate visible in the bed. Water is very shallow and flows gently downstream. The right bank transitions quickly to a mowed grass field with scattered bare deciduous trees. The left bank has dense shrubby vegetation and small trees. A structure or building is faintly visible in the distance on the right side.

**Right:** The right bank (left bank when facing downstream) shows a mowed grass field extending back from the stream channel with scattered bare deciduous trees. The bank edge has leaf litter and woody debris. A broken tree stump is prominent near the bank edge. The grass is green and appears maintained. Beyond the field, a tree line is visible along what appears to be a property boundary or road.

**Back:** Looking upstream, the view shows a mowed grass area to the left with scattered bare deciduous trees. The channel edge is visible on the right side with exposed rock/limestone substrate at the bank. A red building or barn is visible in the background through the bare trees. The riparian zone transitions quickly from channel edge to mowed grass, with some shrubby vegetation and small trees along the bank. Some flat rock fragments are visible at the bank edge.

**Left:** The left bank (right bank when facing downstream) shows dense shrubby vegetation and small trees, most of which are bare/dormant. The vegetation is tangled with vines and brush creating a thick but low-quality riparian buffer. Beyond the immediate riparian vegetation, structures or buildings appear to be present in the background. Some litter is visible on the ground. The vegetation is primarily composed of what appears to be invasive shrubs (possibly bush honeysuckle or multiflora rose) given the dense tangled growth pattern.

## Assessment Scores

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

Urgency: MEDIUM TERM 6 12 MONTHS

## Detailed Observations · Scene 34

Black Branch at this location is a small, low-gradient limestone-bedrock headwater stream that is marginally impaired due to severely deficient riparian buffers and limited instream habitat diversity. The right bank (facing downstream) has essentially no functional riparian buffer with mowed grass extending to the channel edge, while the left bank is dominated by invasive shrubs (likely bush honeysuckle). Channel condition is fair with moderate incision, and water quality appears acceptable during this dry weather observation. The primary management needs are riparian buffer establishment on the right bank, invasive species management on the left bank, and potential LWD augmentation to improve instream habitat.

### Primary Stressors

riparian loss, sedimentation, bank erosion

### Channel Assessment

| Metric                | Score | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Channel Condition     | 6     | Channel appears relatively natural with no direct engineering modifications visible. However, the channel shows signs of mild incision with moderate bank heights relative to channel width. The exposed bedrock substrate and moderate bank angles suggest some downcutting has occurred, likely exacerbated by land use changes in the watershed. The channel maintains connection to its floodplain but is showing early signs of entrenchment. |
| Hydrologic Alteration | 5     | Stream shows moderate incision with banks approximately 3-6 feet high for a channel that is only about 3-6 feet wide. The adjacent mowed areas suggest some hydrologic alteration from land use change. Floodplain access appears partially maintained but the incision ratio indicates reduced flood frequency. Agricultural/residential land use in the watershed likely contributes to altered hydrology.                                       |
| Sediment Deposition   | 5     | Fine sediment (silt and mud) visible overlying bedrock substrate, particularly in the down view where turbid muddy water covers portions of the bed. Approximately 20-40% of the visible bed appears affected by fine sediment deposition. The bedrock substrate is partially obscured. Not severe enough to cause braiding but pool habitat is likely compromised by sedimentation.                                                               |

### Bank Assessment

| Side  | Stability | Veg. Protection | Erosion      | Notes                                                                                                                                                                                                                                           |
|-------|-----------|-----------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Left  | 5         | 6               | 1_25_percent | Left bank has dense invasive shrub coverage that provides some bank protection. Structures and possible fencing visible behind the riparian zone. Some litter present. Bank is steep with moderate height.                                      |
| Right | 4         | 4               | 1_25_percent | Right bank is significantly compromised by mowing/grass management extending to the channel edge. Very minimal woody riparian buffer. Scattered mature trees provide limited bank protection but most of the bank face lacks deep root systems. |

### Riparian Assessment

| Metric                | Score/Value   | Notes                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Canopy Cover          | 3             | Currently in winter with bare deciduous trees, canopy shade is under 25%. Even in full leaf, the right bank's scattered trees and the left bank's short shrubby vegetation would provide perhaps 25-40% shade. The open mowed area on the right bank ensures significant solar exposure. For a warmwater stream, this level of shade is below optimal.                                                              |
| Left Buffer Width     | 10 25ft       | Score: 5/10                                                                                                                                                                                                                                                                                                                                                                                                         |
| Right Buffer Width    | under 10ft    | Score: 2/10                                                                                                                                                                                                                                                                                                                                                                                                         |
| TDEC 30ft Buffer Met? | L: No / R: No | The right bank represents the most critical buffer deficiency. The mowed grass field provides essentially zero riparian buffering function. Establishing a native riparian buffer of at least 30 feet on the right bank should be a high priority. The left bank would benefit from invasive species management and replanting with native trees and shrubs to improve buffer quality even if width is constrained. |

## Water Quality & Infrastructure · Scene 34

### Water Quality Indicators

| Metric                | Score | Notes                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water Appearance      | 5     | Water appears slightly turbid to turbid with a brownish color. In the front view, the substrate is partially visible through shallow water suggesting moderate clarity. In the down view, the water is more turbid with reduced visibility. No oil sheen, foam, or unusual odor indicators visible. The brown color may be partly from tannins and partly from suspended sediment. Visibility estimated at 0.5-1 foot. |
| Nutrient Enrichment   | 7     | Algae: minor                                                                                                                                                                                                                                                                                                                                                                                                           |
| Manure/Waste          | 8     | No evidence of manure, livestock access, or waste discharge visible. The mowed grass area on the right bank could be pasture but no livestock, fencing (except possibly on the left), or manure deposits are visible. No waste discharge pipes detected. Score slightly reduced from maximum due to the agricultural land use context.                                                                                 |
| 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 |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|
| Continue outfall mapping along this reach — no outfalls observed at this location but upstream and downstream sections should be surveyed | medium   | annual   |
| Document this reach in visual stream survey database with riparian buffer deficiency flagged                                              | medium   | 90_days  |
| Conduct dry weather screening of any outfalls identified in adjacent reaches of this stream                                               | medium   | 90_days  |

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