

# Scene 19 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17006, -86.26962 · Generated October 23, 2026

OVERALL SCORE

6.1

Marginal



**Front:** Looking downstream, a very narrow channel with minimal water flows over exposed flat limestone/shale substrate. A red-roofed structure (likely a barn or outbuilding) is visible through bare deciduous trees on the left bank. The channel is bordered by dense dormant shrubs and small trees, with abundant flat rock pieces scattered along both banks and in the channel bed.

**Right:** The right bank (when facing downstream) shows a steep, heavily vegetated bank rising above the channel. Dense dormant shrubs, vines, and small deciduous trees cover the bank. A large fallen tree is visible spanning across the upper bank area. Flat limestone/shale rock fragments are visible at the base of the bank near the channel edge. Some early green herbaceous growth is emerging on the ground surface.

**Back:** Looking upstream, the narrow channel continues through a wooded corridor. A large eastern red cedar tree is prominent in the center view. Water is visible flowing over flat rock substrate with exposed bedrock ledges. The right bank has flat rock ledges at water level, and a field surveyor in dark clothing is partially visible on the right side. Beyond the riparian corridor, open agricultural/pastoral land and possibly structures are visible in the distance through bare trees.

**Left:** Looking at the left bank (when facing downstream), a field surveyor wearing a Petzl helmet and dark clothing is visible in the foreground. The left bank rises moderately with exposed soil, rock fragments, and dense dormant shrubs and small trees. Beyond the narrow riparian strip, open agricultural/pastoral fields with brown grass are visible in the distance. The bank shows some exposed soil and rock. A small pool or standing water is visible at the channel edge near the surveyor's feet.

## Assessment Scores

| Component                   | Score | Visual      | Rating |
|-----------------------------|-------|-------------|--------|
| Channel Condition           | 8     | <div></div> | fair   |
| Hydrologic Alteration       | 6     | <div></div> | Fair   |
| Sediment Deposition         | 8     | <div></div> | Good   |
| Left Bank Stability         | 6     | <div></div> | Fair   |
| Right Bank Stability        | 6     | <div></div> | Fair   |
| Left Vegetative Protection  | 5     | <div></div> | Fair   |
| Right Vegetative Protection | 6     | <div></div> | Fair   |
| Riparian Canopy Cover       | 6     | <div></div> | Fair   |
| Floodplain Vegetation       | 3     | <div></div> | Poor   |
| Water Appearance            | 7     | <div></div> | Good   |
| Nutrient Enrichment         | 8     | <div></div> | Good   |
| Epifaunal Substrate         | -     |             | -      |

Urgency: MEDIUM TERM 6 12 MONTHS

## Detailed Observations · Scene 19

Black Branch 219 at this location is a small headwater bedrock-controlled stream in marginal condition. The channel itself is natural and unmodified, flowing over exposed limestone bedrock with very low flow at the time of assessment. Key issues include a narrow riparian buffer on the left bank adjacent to agricultural fields that likely does not meet TDEC 30-foot minimum standards, limited instream habitat diversity due to flat bedrock substrate and shallow water depth, and minimal pool development. Water quality indicators are favorable with clear water and no evidence of contamination or nutrient enrichment. No stormwater infrastructure or outfalls were observed at this location. The rural/agricultural setting presents non-point source concerns but no immediate MS4 compliance issues were identified.

### Primary Stressors

riparian loss, sedimentation, bank erosion

### Channel Assessment

| Metric                | Score | Notes                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Channel Condition     | 8     | Channel appears natural with no visible alterations, dikes, or engineered structures. Bedrock-controlled channel with natural sinuosity. No evidence of straightening or channelization. Minor natural erosion at banks but no excessive downcutting. Score of 8 reflects natural condition with very minor lateral erosion.                                               |
| Hydrologic Alteration | 6     | Channel shows slight incision into bedrock with banks 3-6 feet high on the right side. Floodplain appears connected on the left with lower banks. Agricultural land use in the watershed may have altered runoff patterns. The bedrock control limits downcutting. Score of 6 reflects minor hydrologic alteration likely from land use changes in the watershed.          |
| Sediment Deposition   | 8     | Very little sediment deposition visible. Bedrock substrate is predominantly exposed with only minor fine sediment in crevices. No point bars or mid-channel bars observed. The bedrock-controlled channel naturally limits sediment storage. Score of 8 reflects minimal deposition, though this may partly be due to the bedrock control rather than low sediment supply. |

### Bank Assessment

| Side  | Stability | Veg. Protection | Erosion      | Notes                                                                                                                                                                                                                                                                                       |
|-------|-----------|-----------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Left  | 6         | 5               | 1_25_percent | Left bank transitions from the channel edge through a narrow riparian strip of dormant shrubs and small trees to open agricultural fields. The narrow buffer width is a concern for filtering and bank protection. Bedrock at the channel bed provides natural grade control.               |
| Right | 6         | 6               | 1_25_percent | Right bank is taller and steeper than the left, with dense shrub coverage. A large fallen tree may indicate past bank instability. The red-roofed structure visible downstream appears to be on or near the right bank floodplain, suggesting some residential development in the corridor. |

### Riparian Assessment

| Metric                | Score/Value    | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Canopy Cover          | 6              | Currently in early spring with leafless canopy providing minimal shade (under 25%). However, the dense branch network visible in the UP face suggests that when fully leafed out, shade coverage would be approximately 50-75%. Scoring based on the expected growing season condition rather than current dormant state. When trees are in full leaf, moderate shade would be provided. However, the narrow buffer on the left means some of the channel will receive direct sunlight. Score of 6 reflects expected moderate shade conditions during the growing season. |
| Left Buffer Width     | 10 25ft        | Score: 4/10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Right Buffer Width    | 25 50ft        | Score: 6/10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| TDEC 30ft Buffer Met? | L: No / R: Yes | The left bank riparian buffer is likely below the TDEC MS4 permit minimum of 30 feet. Agricultural fields extend close to the channel. Buffer restoration through planting native trees and shrubs along the left bank and expanding the existing buffer would significantly improve filtering capacity and bank stability. The right bank is marginally compliant with a structure visible in the downstream direction.                                                                                                                                                  |

# Water Quality & Infrastructure · Scene 19

## Water Quality Indicators

| Metric                | Score | Notes                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water Appearance      | 7     | Water appears generally clear with slight turbidity. The very shallow depth makes clarity assessment difficult, but the bottom is entirely visible. No discoloration, oil sheen, or film observed. Some minor brown coloration visible in the left bank standing pool area. Score of 7 reflects generally good water clarity with minor turbidity.                                           |
| Nutrient Enrichment   | 8     | Algae: none                                                                                                                                                                                                                                                                                                                                                                                  |
| Manure/Waste          | 8     | No direct evidence of manure, waste, or livestock access visible at this location. However, adjacent agricultural/pastoral fields suggest potential for livestock access elsewhere along the reach. No waste discharge pipes, manure deposits, or related odor indicators observed. Score of 8 reflects no visible evidence at this point but acknowledging agricultural land use proximity. |
| 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 | intermittent |
| Gradient    | moderate     |

## Management Recommendations

| Action                                                                                                      | Priority | Timeline |
|-------------------------------------------------------------------------------------------------------------|----------|----------|
| Verify left bank riparian buffer width against TDEC 30-foot minimum standard and document compliance status | medium   | 90_days  |
| Complete outfall mapping for this reach segment - confirm no outfalls present between adjacent scenes       | low      | annual   |

Terrain360 - [terrain360.com/trail/black-branch-2/scene/19/analysis](https://terrain360.com/trail/black-branch-2/scene/19/analysis)