



Lebanon County Clean Water Alliance Prioritized BMP Site Summary

LandStudies conducted a site visit and assessment of the proposed BMP areas listed in the Quittapahilla Creek Watershed Assessment Vol. 2, Restoration and Management Plan Report prepared by Clear Creek Consulting with association with Skelly & Loy. The following sites are listed in order as the top priorities as a result of the assessment conducted by LandStudies. Each site could greatly benefit from a restoration or rehabilitation to help with the County's regulatory compliance requirements. The sites chosen below are considered priorities for rehabilitation and restoration from which the county would receive the most benefit.

Site 5

Location: This site is located on the Lebanon Co-Tech School property immediately downstream of Metro Drive. The site is currently developed as a wetland with the Main Stem Quittapahilla running through the site. The site is bounded on the north by industrial, on the west by a prison and by the Vo-Tech school on the south. The wetland is directly adjacent to Route 422.

Description: The site is currently developed as a large functioning wetland-wildlife area. There is a pond, boardwalks, educational signs and wetlands. The site is handling stormwater inflows from the Vo-Tech school as well as from a rock-lined channel inputting stormwater from the industrial area. The wetland vegetation is dominated by cattails and lacks diversity. There are few trees. The Quittapahilla enters the wetland site under Metro Drive, from the southeast.

Potential: Wetland enhancements would greatly benefit this existing BMP. The wetland is well positioned to handle stormwater and improve water quality of the Quittapahilla prior to it flowing through the lined channel through the City of Lebanon. Wetland enhancement could include invasive species management, planting of more trees and upper-canopy species, expansion of the wetland and stream incorporation. The wetland could be expanded to the east towards Metro Drive. Native no-mow areas or meadows could be implemented to replace the mowed lawn on the southwest corner of the site near the pavilion. The currently stone-lined channel could be converted to a bioswale to convey the stormwater from the industrial areas to the wetland. A restoration could better incorporate the Quittapahilla into the wetland, creating greater sinuosity of the channel, increasing the number of wetland pockets and improving the riparian buffer along the stream.

Site 3

Location: This site is located along the main stem Quittapahilla Creek immediately downstream of Chestnut Street. The bridge at Chestnut Street is out and the road is closed, due to bridge damage. The site is bounded by agricultural properties to the south and residential and commercial properties along Route 422 to the north.

Description: The site is currently mowed floodplain with scattered trees. There is not a significant mature canopy along most of the reach. It is adjacent to a sloping agricultural field under cultivation. The Quittapahilla Creek is unstable throughout the entire reach, with steep, raw eroding banks. The banks are undercut and contributing significant amounts of sediment to the stream. Large debris is accumulating along the stream banks. The Chestnut Street Bridge is closed, with visible storm damage to the concrete bridge. There is debris accumulating on the

wire fence that has been put in place to close the road, evidence of storm events that cause the stream to flow overtop the bridge. The streambed substrate is sediment-laden and lacking aquatic habitat.

Potential:

The site would be very well suited for a complete floodplain restoration. A restoration would remove significant amounts of sediment that is being contributed to the Quittapahilla. Improvements could include restoration of the banks to their historic elevation through removal of legacy sediment and implementation of riparian buffers, wetland pockets, & in-stream habitat structures. A restoration would increase the flood storage on-site as well as potentially provide regional storage. Unlike site 2, this site does not already have a mature riparian buffer and canopy, which would make it a more qualified candidate for a restoration. The site is in a prime location, directly downhill of an agricultural field. Improvements could help to filter nutrient runoff from the field before entering the Quittapahilla. The site has demonstrated its need for restoration, evident from the road closure and bridge failure due to flooding.

Site 2

Location: Site 2 is located on the main stem Quittapahilla Creek immediately downstream of the concrete flume and upstream of the 22nd Street Bridge. It is bounded by commercial properties along Route 422 to the north, including a mini golf course, and Chestnut Street to the south. The site is currently forest that has some impact from dirt bikes.

Description: The Quittapahilla Creek is very unstable throughout this reach. The reach is approximately 1,700' in length, flowing with minor sinuosity through mature canopy. The banks are steeply eroded, undercut and unvegetated, approximately 5' in height in most places. The sediment-laden floodplain is highly disconnected and the stream over widened through the entire reach. There are a few large debris jams as well as large gravel bars. One outfall empties into the Quittapahilla from Chestnut Street, and an identified stream enters from the north. The floodplains on both sides of the stream show signs of recent flooding.

Potential: The site would be very well suited for a complete floodplain restoration. The site is receiving multiple stormwater inflows which could be better managed and treated. The site has potential for a future trail system along this reach. A restoration would remove significant amounts of sediment that is being contributed to the Quittapahilla. A restoration would increase the flood storage on-site as well as potentially provide regional storage. Improvements could include restoration of the banks to their historic elevation through removal of legacy sediment and implementation of riparian buffers, wetland pockets, & in-stream habitat structures. A potential downside is that a mature, dense canopy already exists along the Quittapahilla throughout this reach which would have to be removed through a complete restoration.

Site 6A

Location: The site is located on a farm north of Wilhelm Avenue. It is bounded on the west by an old railroad bed and Lebanon High School. It is bounded on the east by residential subdivisions along Foxchase Lane, South 3rd Street and Sun Circle.

Description: The site is currently cultivated land with a large drainage swale through the property. The swale is approximately 2000' long by 100' wide. The swale continues northwest

and enters a detention pond where runoff is conveyed through an outlet structure before entering an underground storm sewer system which then enters a concrete walled channel.

Potential: The existing grass-lined channel/swale could be converted to a bio-swale to convey the stormwater into a proposed wet pond or wetland area. This could potentially reduce the amount of runoff volume that enters the UNT to the Quittapahilla while improving water quality. Additional “pockets” or check dams could be located throughout the reach of the existing swale providing additional storage on this site.

Site 10

Location: This site is located on the main stem Brandywine Creek immediately downstream of Lehman Street. It is bounded on the east, west and south by industrial land and a railroad. At the downstream end of the site, the Brandywine Creek enters a piped system that conveys it approximately 1,500 feet to its confluence with the Quittapahilla Creek.

Description: The site is currently a gabion lined channel with a wooden floodplain along the right side. The gabion baskets have begun to fail and large rock bars are present in the channel. The streambanks are steep and eroding.

Potential: Although constricted along the left bank due to a recycling center, this site would be very well suited for a complete floodplain restoration. A restoration would remove significant amounts of sediment that is being contributed to the Quittapahilla. Improvements could include restoration of the banks to their historic elevation through removal of legacy sediment and implementation of riparian buffers, wetland pockets, & creating sinuosity in this reach of the stream. A restoration would increase the flood storage on-site as well as potentially provide regional storage.

Site 4

Location: This site is located along the Main Stem of the Quittapahilla Creek immediately upstream of North Lincoln Ave. It is bounded on the north by industrial properties and on the south by a public parking lot and taxi operation.

Description: The site is currently mowed grass, a disconnected floodplain with steep eroding banks along a short stretch of the Quittapahilla. The stream is constricted between high banks, immediately upstream of where the stream becomes channelized in a concrete channel. There appears to be buried utility lines under the mowed grass floodplain which could hinder restoration of this area. Utility poles are also present in the grass which would have to be moved.

Potential: There is significant potential to capture stormwater runoff from the streets, parking lots and buildings uphill of the site. The adjacent taxi lot is contributing runoff, as is an alley, which has roof gutters draining to it. The runoff currently drains directly into the Quittapahilla. A raingarden or bioswale would be a possible BMP for implementation in the currently mowed lawn. This would help to capture and treat runoff before it enters to stream. A complete restoration would be a possibility but might be difficult due to the limited space and utility lines underground on the site. A new facility would encroach on the parking lot, which would have to be considered by the parcel owner. A riparian buffer could also be implemented along the stream through this short reach. This would help to shade the stream, slow stormwater flows into the stream, filter sediment and pollutants and provide habitat and protect the banks.

Site 9

Location: This site is located on the Main Stem Brandywine Creek immediately upstream of North 8th Street. It is bounded on the north by a steep wooded slope and field at the top of the slope with an electric substation and gravel parking lot. Residential houses are located on the top of the slopes.

Description: The stream is highly degraded throughout this reach. It flows through a very deep valley channel with steep banks, which are eroded and degraded. Stormwater flows rush through the channel and enter down the steep banks. Numerous debris jams and gravel bars are present, trapping large quantities of trash. The stream flows into a channelized system under 8th street. Large filter bars are part of the culvert at the 8th Street Bridge which is creating a constriction to the channel and catching debris. High levels of sediment are contributed to the channel through this unstable and degraded reach. Approximately 500' upstream of 8th Street, there are two sharp bends in the stream channel with steep banks. These bends in the stream could possibly be contributing to localize flooding.

Potential: The site would be very well suited for a complete floodplain restoration. A restoration would remove significant amounts of sediment that is being contributed to the Quittapahilla. Improvements could include restoration of the banks to their historic elevation through removal of legacy sediment and implementation of riparian buffers. A restoration would increase much needed flood storage on-site as well as potentially provide regional storage. Although a full restoration would be beneficial, the constraints of the steep slopes and existing dwellings could be potentially difficult to restore this reach of the stream. One other alternative would be to restore the floodplain immediately upstream of North 7th Street. There is an existing grass lot that is maintained located north of North 7th street and west of a carwash lot. There is also a grass area located northeast of the carwash lot that could potentially be used in this restoration. The site would be very well suited for a complete floodplain restoration. The site is receiving multiple stormwater inflows which could be better managed and treated. A restoration would remove significant amounts of sediment that is being contributed to the Quittapahilla. A restoration would increase the flood storage on-site as well as potentially provide regional storage. Improvements could include restoration of the banks to their historic elevation through removal of legacy sediment and implementation of riparian buffers, wetland pockets.

Site 8

Location: This site is located in the lower Brandywine Creek watershed immediately north of Maple Street. It is bounded on the north and west by residential subdivisions along Steckbeck and North 10th Streets and Coleman Circle. It is bounded on the east by a forested step slope along Hill Street.

Description: The site is currently a mowed field beneath which the Brandywine Creek is conveyed in a piped system that conveys it approximately 2,000 feet before daylighting at 12th Street.

Potential: The potential restoration would involve daylighting the stream through this reach. The open field would be well suited as a floodplain however this would depend on the location of the stream underground. Daylighting the stream would allow for increased flood storage by creating

active floodplains for flood storage. If daylighted, a riparian buffer and adjacent wetlands could be implemented to benefit the stream and improve function of the floodplains. This project, however, could involve significant cost and engineering which may or not be feasible.