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## Appendix C – Significant Problem Area Modeling and Recommendations

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The following is a more detailed overview for each high priority problem area and/or obstruction. A conceptual solution is presented with the understanding that assumptions had to be made in order to theoretically guarantee that the conceptual solution is possible.

*Figure C.1* illustrates the location of the reported problem areas and obstructions throughout the county.



DRAFT

## Butler County Act 167 Plan

**Municipality:** Harmony Borough

**ID:** P90

**Problem Description:** The Borough indicates that the problem is Stormwater issues. The elliptical CMP may not have adequate capacity to convey the full stream flow beneath Spring Street.

**Photos:**



**Photo Description:**

Upstream end of elliptical CMP crosspipe beneath Spring Street. The small stream may flow over the street during storms.



**Photo Description:**

Looking upstream from the elliptical CMP. The stream is the outflow from a farm pond.

**Conceptual Solution:**

The capacity of the elliptical CMP should be analyzed to determine if the pipe is large enough. Upstream development may have increased the discharge in the stream. Possibly the farm pond could be modified to store floodwaters during the highest flood peaks to reduce flooding at this location and downstream where the creek flows through the town of Harmony. This solution would require the cooperation of the private landowner, the Borough, and DEP.

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## Butler County Act 167 Plan

**Municipality:** Marion Township

**ID:** P205 / P207

**Problem Description:** There are two sites along Boyers Road and DeMatteis Road that have always flooded frequently. Homes were possibly built in the floodplain.

**Photos:**



**Photo Description:**

Looking upstream from  
Dematteis Road bridge.



**Photo Description:**

Looking downstream from  
Boyers Road bridge.

**Conceptual Solution:**

The bridges may be undersized and act as obstructions during storms, but no debris or sedimentation was reported at either bridge. The problem may be that buildings were constructed in the streams' floodplains. One solution to the problem is for the Township or the County to purchase the properties for public use. A regional flood control facility may not be justified to protect a small number of residents, and it may not be effective since the streams are small and are near the top of the watershed.

Draft

*Butler County Act 167 Plan*

**Municipality:** Clay Township

**ID:** O64

**Problem Description:** Beaver Dam Road - Dams are causing the roadway to flood, and even at dry time, water is almost to roadway level.

**Photos:**



**Photo Description:**

Ponded water caused by a beaver dam. The adjacent road floods during storms.

**Conceptual Solution:**

Contact the Pennsylvania Game Commission to determine the best way to relocate the beaver population. For public safety, the roadway may need to be raised above flood stage.

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## Butler County Act 167 Plan

**Municipality:** Evans City Borough

**ID:** O40, O41, P102, P105, P106

**Problem Description:** Flooding and Obstructions along stream through the town. Siltation, bank erosion, bridge scour.

**Photos:**



**Photo Description:**

Looking upstream at Breakneck Creek. Note the railroad on the right and the buildings along the stream on the left.



**Photo Description:**

The far bank of Breakneck Creek shows signs of streambank erosion.

**Conceptual Solution:**

Breakneck Creek is highly channelized through the borough. A rail line runs along one bank. The railbed is supported by a concrete and cut stone retaining wall along the stream channel. The wall appears to be failing in places and causing obstructions. The opposite bank is an eroded slope, with structures constructed in the floodplain.

Sediment and debris have built up in the stream channel. The historic solution to flooding problems was likely to dredge the creek, but dredging causes channelization, increased flow velocities, erosion, and debris issues. Certainly, any obstructions should be removed from the channel, but a regional flood control facility may be warranted upstream to reduce the flood peak in the borough.

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*Butler County Act 167 Plan*

**Municipality:** Summit Township

**ID:** P107

**Problem Description:** Frequent flooding of roadway - Connoquenessing Creek is close to SR 38.

**Photos:**



**Photo Description:**

The creek floods this low portion of Route 38.

**Conceptual Solution:**

There is heavy vegetation in the Connoquenessing Creek floodplain. Typically, this is a desirable situation, because healthy riparian foliage increases water quality and decreases overall flooding by slowing flood waters. However, for public safety reasons, the vegetation could be removed at this problem area and downstream to reduce local flooding of the highway. The streambanks and floodplain may need to be armored due to increased flow velocity. Alternatively, the road could be raised, or a regional detention facility could be installed upstream in the creek to store floodwaters.

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## Butler County Act 167 Plan

**Municipality:** Valencia Borough

**ID:** P19 / P20

**Problem Description:** The Borough indicates that the problems are increased flow in the creek and flow restriction at the Three Degree Road bridge. The structures upstream of the bridge have been constructed adjacent to the stream channel, and they occasionally get flooded.

**Photos:**



**Photo Description:**

Looking upstream from the Three Degree Road bridge. Note the house built along the streambank on the left. There is also a concrete block commercial building located across the stream from the house.



**Photo Description:**

Looking upstream at the Three Degree Road Bridge. The bridge appears to be relatively clear of obstructions.

**Conceptual Solution:**

Development in the upstream watershed may cause increased flow in the creek. An upstream regional flood control facility may reduce the highest flood peaks. Alternatively, the Borough may choose to acquire any properties in the stream's floodplain as part of a comprehensive floodplain management project. That way, the Borough could protect and restore the stream's riparian zone while providing a natural public area for its residents to enjoy.

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## Butler County Act 167 Plan

**Municipality:** Washington Township

**ID:** P293

**Problem Description:** Hilliards - The Township re-routed the stream to a new location with a culvert in the roadway. The stream now forms two "L's" and will soon undercut the road. The old County bridge is now underlain with dirt.

**Photos:**



**Photo Description:**

View toward the low area of the roadway.

**Conceptual Solution:**

The stream's historic route should be restored. The county's bridge may need to be replaced if it is deficient or undersized. Alternatively, the culvert could be analyzed to determine if it is adequately sized, and the stream's new route could be stabilized with riprap and a healthy riparian zone to prevent erosion and downstream sedimentation .

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## Butler County Act 167 Plan

**Municipality:** Washington Township

**ID:** P230 / P229

**Problem Description:** Calico Road - Beaver dams have water at road level, and the roadway is being washed out.

**Photos:**



**Photo Description:**

Manmade pond adjacent to Calico Road



**Photo Description:**

Outfall from the manmade pond has been dammed by beavers. Overflow is causing erosion of the unimproved roadway.

**Conceptual Solution:**

Contact the Pennsylvania Game Commission to determine the best way to relocate the beaver population. For public safety, the roadway may need to be raised above flood stage.

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*Butler County Act 167 Plan*

**Municipality:** Penn Township

**ID:** P21 & P23

**Problem Description:**

Village of Renfrew and Renfrew Road. Low area next to Thorn Creek.

**Photos:**



**Photo Description:**

Looking downstream at Thorn Creek.

**Photo Description:**

**Conceptual Solution:**

Structures and properties along Thorn Creek flood during storm events. If possible, the Township could consider acquiring flood-prone properties and designating them for public use. Alternately, constructing a regional flood control facility upstream would mitigate some of the frequent flooding.

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*Butler County Act 167 Plan*

**Municipality:** Center Township **ID:** P200

**Problem Description:** Flooding of Connoquenessing Creek at various locations along State Route 38.

**Photos:**



**Photo Description:**

A portion of the Connoquenessing Creek floodplain.

**Conceptual Solution:**

For public safety reasons, SR 38 may need to be raised at various locations to prevent dangerous flooding. Or a regional detention facility could be constructed upstream in the creek to store floodwaters.

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