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Sent: Wednesday, February 8, 2023 10:31 AM
To: Maureen Fitzgerald; Mark K. Branse; arlene sherman
Subject: Att. A -Carya Review App.Review, Part 2, Impacts Assmt: App. # C22-15; 141 Clark Lane.
Attachments: AttA. Rept 2. Excerpt, 2015 CTDEEP Fenger Brook Watershed Recommendations.pdf

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To the Waterford Conservation Commission:

The file below is Attachment A to the Carya Report2, dated 2-7-23, which I submitted to the town electronically last night, an excerpt from the 2015 CTDEEP document, also referenced in the 1-26-23 Carya Report. The map shows the distribution of impervious surface in the Fenger Brook watershed more clearly than the photocopy attached to our first Report. The text excerpt uses disconnection of stormwater runoff with high pollutant loads from the watercourse, consistent with Carya recommendations and begins with a link to the EPA grant source for monitoring and implementing LID.

Respectfully,
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C-22-14
109R & 131 CLARK LANE
PUBLIC HEARING
EXHIBIT # 33

C-22-14
Ex 33



Southeast Shoreline (CT2000) Summary

Fenger Brook (CT2000-30_01)

WATERSHED DESCRIPTION

The Southeast Shoreline sub-regional basin is located in the southeastern portion of Connecticut (Figure 1). There are two towns located in the Fenger Brook watershed, including the municipalities of New London and Waterford, CT (Figure 2).

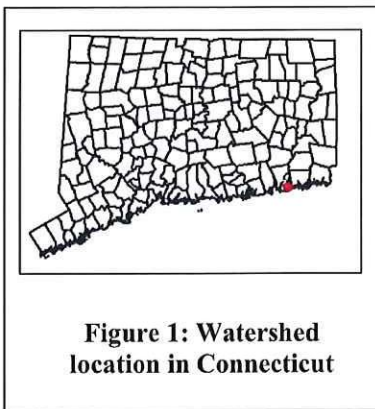


Figure 1: Watershed location in Connecticut

The Southeast Shoreline sub-regional basin includes one segment, consisting of the entire length of Fenger Brook, impaired for aquatic life use assessed by aquatic invertebrates. This segment was assessed by Connecticut

Department of Energy and Environmental Protection (CT DEEP) and included in the CT 2012 303(d) list of impaired waterbodies. Some segments in the watershed were currently unassessed as of the writing of this document. This does not signify that no concerns exist with those segments, rather it is an indication that there are not current data to evaluate the segments as part of an assessment process. An excerpt of the 2012 Integrated Water Quality Report is included in Table 1.

Fenger Brook is 3.47 miles in length and the entire length of the brook (CT2000-30_01) is considered impaired. The Fenger Brook begins southeast of the Clark Lane and Chester Street intersection in Waterford, CT. The brook continues southerly through a large forested area along the Waterford-New London town line and passes under Route 1, adjacent to an auto body shop and several paved retail parking lots in Waterford before entering into another forested tract. A tributary enters the brook from the west as it passes under railroad tracks. It ends at Alewife Cove (tidal) just downstream of Niles Hill Road on the Waterford-New London town line (Figure 2).

Impaired Segment Facts

Impaired Segment:

Fenger Brook (CT2000-30_01)

Municipalities: New London and Waterford

Impaired Segment Length (miles): 3.47

Watershed Area (square miles): 3.1

Watershed Impervious Cover: 20%

Water Quality Classification: Class A

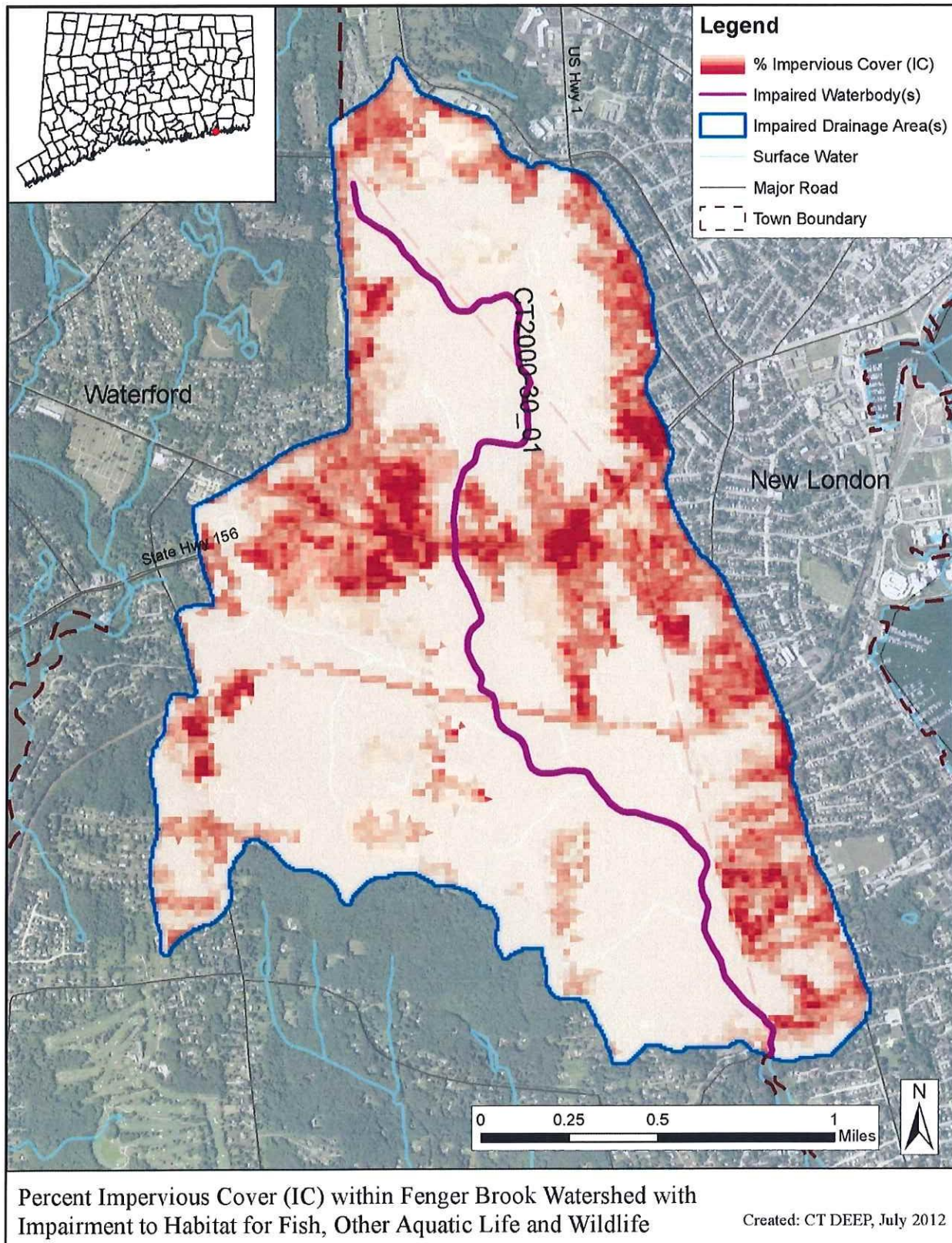
Designated Use Impairments: Habitat for Fish, Other Aquatic Life, and Wildlife

Sub-regional Basin Name and Code: Southeast Shoreline, 2000

Regional Basin: Southeast Shoreline

Major Basin: Southeast Coast

Figure 4: Impervious cover (%) for the Fenger Brook Watershed



RECOMMENDED NEXT STEPS

CT DEEP can assist with reducing the effect of IC by providing technical and financial assistance to the watershed towns and local citizen watershed advocacy groups, effectively administering stormwater permitting programs, and monitoring aquatic life in the surface waters. Under Section 319 of the Clean Water Act (§319 C.W.A.), the U.S. Environmental Protection Agency awards a grant annually to the CT DEEP to fund eligible projects that control and/or abate nonpoint source pollution through a competitive bid process. More information on grant programs can be found on the Department's website (http://www.ct.gov/deep/cwp/view.asp?a=2719&q=325594&deepNav_GID=1654).

1) Reduce the effect of impervious cover in the Fenger Brook watershed through the implementation of Best Management Practices (BMPs) to control stormwater runoff.

As noted previously, 38% of the Southeast Shoreline sub-regional basin is considered developed and the municipalities within the watershed are MS4 communities regulated by the MS4 program. The amount of impervious cover in the Fenger Brook watershed is 20%.

Reducing the effect of IC in the watershed is an important step to decrease the impacts of stormwater runoff on water quality. For new development, LID principles (<http://www.ct.gov/deep/watershed>) should be utilized to retain and infiltrate stormwater runoff and/or reduce the amount of runoff from IC. In developed areas, IC should be disconnected from surface waterbodies, where practicable. Disconnection of impervious surface runoff should be pursued to the degree feasible when reconstruction of a site and/or its infrastructure occurs. For example, stormwater outfalls could be redirected to vegetated areas to encourage natural filtration before reaching nearby waterbodies.

An excellent guide on how to implement a reduction in IC is found in Appendix 3 of the core document and on the web (<http://clear.uconn.edu/projects/tmdl/>). A retrofit assessment of the watershed would identify areas where BMPs such as gravel wetlands, porous pavement, and vegetated buffers could be implemented to most effectively treat stormwater runoff throughout the watershed. This type of assessment could be linked to existing Municipal Comprehensive or Master Plans, MS4-required SMPs or watershed management plans.

2) Prevent future degradation of Fenger Brook and its tributaries through the development and/or strengthening of local stormwater control ordinances.

As the amount of IC in the Fenger Brook watershed is greater than 12%, the adoption of a municipal stormwater ordinance can be an effective method to protect the water quality in the watershed. Stormwater ordinances can focus on different aspects of stormwater management to reduce the quantity and quality of the stormwater that reaches nearby waterbodies. Effective stormwater ordinances prohibit non-stormwater discharges (to the storm sewer or surface waterbodies) such as sanitary sewage and wastewater discharges, require the use of adequate controls to prevent erosion and sedimentation, and specify enforcement mechanisms to address non-compliance. In addition to local ordinances, the establishment of a stormwater utility (i.e. a user fee) can be an effective way to address the impact of stormwater runoff from impervious surfaces while also providing the fiscal means of addressing municipal stormwater infrastructure needs. Utility fees are usually based on the size of effective impervious area and so, strongly encourage the reduction of impervious area.

3) Protect existing buffers along the riparian corridor and other conservation lands throughout the watershed.

Riparian buffers and other natural landscapes can protect the water quality of waterbodies within a watershed. The riparian buffer zone is the area of land located immediately adjacent to streams, lakes, or other surface waters. The incorporation of buffer requirements in the municipal land use approval process will help protect these areas near Fenger Brook from the effect of IC, and these streams can be protected from further degradation due to stormwater runoff.

Riparian zones differ from the uplands because of high levels of soil moisture, frequent flooding, and the unique assemblage of plant and animal communities found there. These areas can reduce the impacts of IC by filtering pollutants and slowing runoff. Through the interaction of their unique soils, hydrology, and vegetation, natural riparian areas influence water quality as contaminants are taken up into plant tissues, adsorbed onto soil particles, or modified by soil organisms. They also can protect the shoreline from erosion, aid in flood control, provide habitat for wildlife, shade waters for fish, and offer scenic value. Any change to the natural riparian buffer zone can reduce the effectiveness of the natural buffer and has the potential to contribute to water quality impairment (USEPA, 2011a).

The riparian zones for the impaired segments in the Fenger Brook Watershed are characterized by a mix of land uses including developed, forested, and consisting of wetlands (Figure 6). Development is focused along the Route 1 corridor near the middle reaches of the brook as well as near the mouth of the brook as it empties into the tidal Alewife Cove. A tributary entering Fenger Brook from the west has a concentrated developed area near its headwaters and passes underneath Rope Ferry Road and between a residential development and Waterford High School. The IC within all developed areas is typically transporting stormwater via structured drainage systems that often discharge within the riparian areas or directly to surface waters.