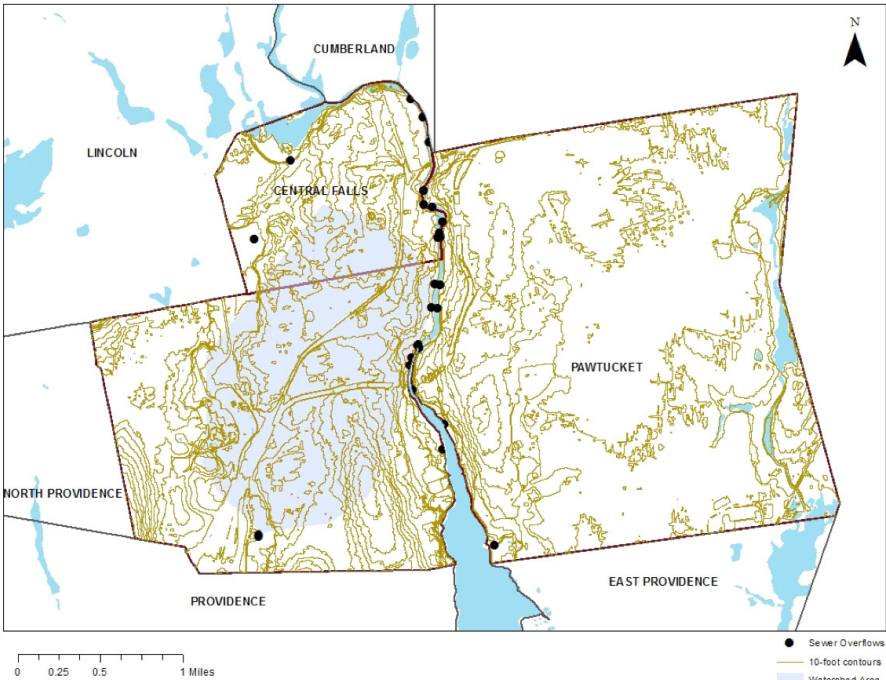


STORMWATER AND LAND USE ANALYSIS, CENTRAL FALLS, RI

The objective of this project is to focus on the water quantity impact that will be brought by existing and potential urban development in the Mill Building Reuse District (MBRD) in downtown Pawtucket. The City was also interested in exploring areas to develop green infrastructures.

First, I have used ArcGIS to delineate the geography of the watershed and apply land use analysis in the area. The light-blue shaded area on the map on the top right shows the watershed area and the black dots represent the sewer overflows. Then I downloaded a land use layer from Rhode Island GIS and displayed it on ArcMap, with the watershed area on top. According to the land use map on the bottom right, it can be seen that most of the land uses near the MBRD district are commercial and high density residential. These two land uses along with the mill buildings contributed to the high level of impervious cover.

Second, a TMDL is conducted to calculate how much impervious cover has to be reduced in order to avoid impairment of streams. The table on the bottom left shows the reduction of impervious cover needed in order to avoid impairment of nearby streams. The city has to reduce 58% of impervious cover in order to avoid impairment of streams in the watershed.



Calculating a TMDL for Impervious Cover (IC)

Runoff:	27,549 MCF/yr		
Total Net Inflow:	27,549 MCF/yr	or	27549434880 CF/yr
Watershed Area	1220 acres		

To calculate the % impervious cover reductions required to achieve the WLA and LA target (Source: STATE OF CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION, A Total Maximum Daily Load Analysis for Eagleville Brook, Mansfield, CT (2007))

Percent IC reduction = ((IC Current Condition – IC Target)/IC Current Condition) x 100 where IC Target = 11%

Watershed Area	
Current IC percentage	75%
Current IC condition	915 acres
IC target	11%
Percent IC reduction	85%
Targeted IC reduction in acre	781 acres

City of Pawtucket	
Current IC percentage (average)	26%
IC target	11%
Targeted Percent IC reduction	58%

Table 1 Acreage by land uses in the Watershed Area (Source: RIGIS, Land Use 2011)

Land use in Watershed Area	Acres
Industrial Land Area	327
High Density Residential	1984
Medium High Density Residential	29
Commercial	244

