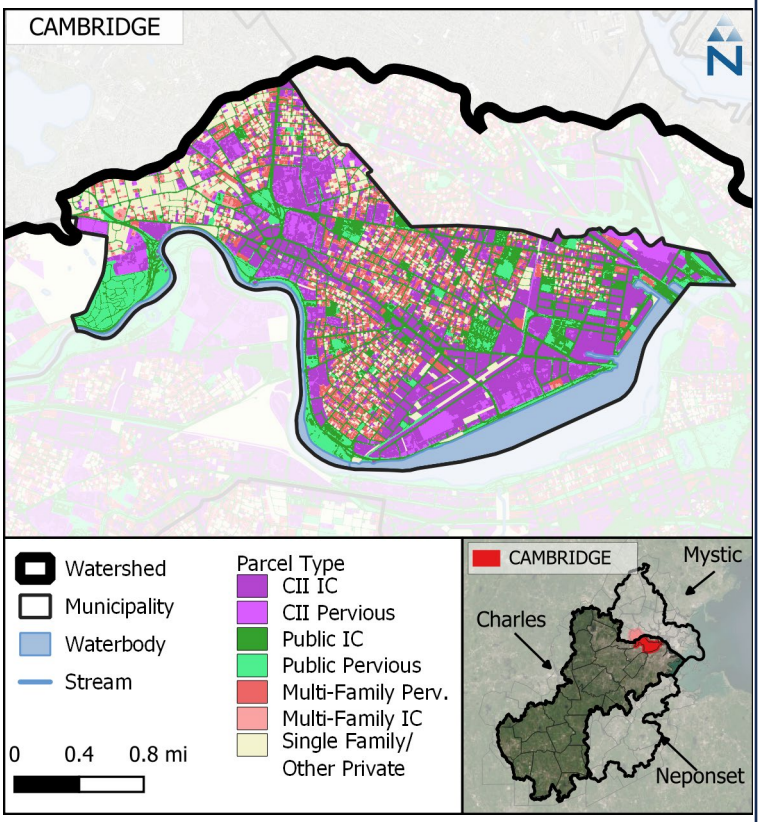
Improving Water Quality in the Charles River Watershed by Controlling Private Sources of Stormwater Pollution in Cambridge

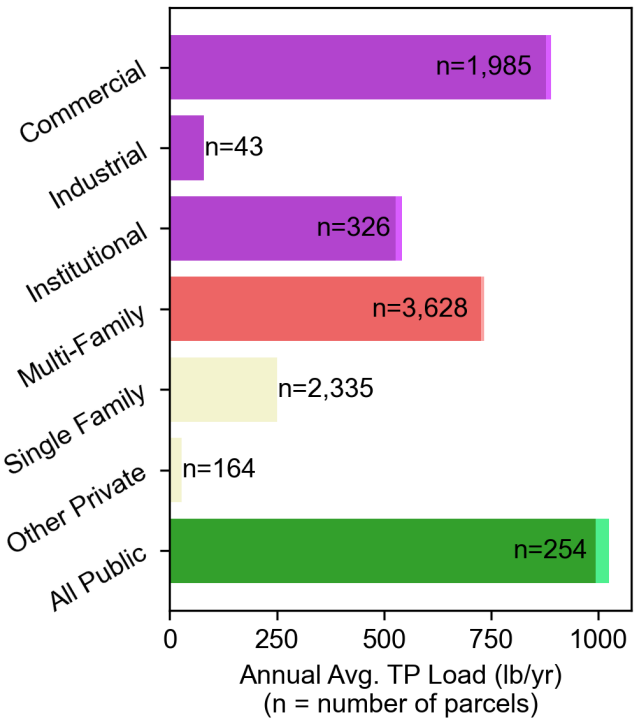
U.S. Environmental Protection Agency Region 1 September, 2024

Cambridge is part of the Charles River Watershed, where pollution from untreated stormwater runoff has degraded water quality. Runoff can originate from impervious cover (IC) like roofs and parking areas and pervious areas like lawns and open space. However, runoff from impervious surfaces generates higher pollutant loads if left untreated. The map to the right shows IC and pervious areas on different land uses, including private commercial, industrial, institutional, and multi-family residential (collectively CIIM), single-family residential, and public lands that make up Cambridge's stormwater load.

Cambridge already manages its stormwater runoff from public areas through a municipal stormwater permit program (MS4). However, as a step towards meeting water quality goals in the Charles River Watershed, EPA plans to begin a Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) permitting effort to address stormwater runoff on currently unregulated private parcels in Cambridge and other municipalities in the watershed. This permitting effort will be implemented using EPA's CWA Residual Designation Authority (RDA).



More information on RDA in Massachusetts and the preliminary designation related to this effort can be found at https://www.epa.gov/npdes-permits/watershed-based-residual-designation-actions-new-England.



What are the major sources of stormwater nutrient pollution?

- Stormwater pollution can contain nitrogen and phosphorus (collectively nutrients) from fertilizers and yard waste, oil and grease from roadways and driveways, pathogens from pet and wildlife waste, and other toxic pollutants. In this fact sheet, examples are presented using total phosphorus (TP) as a surrogate for all stormwater pollutants.
- Overall, runoff from Cambridge contributes 3,551 pounds of phosphorus per year, which is about 4% of the phosphorus load of the Charles River Watershed.
- Private CIIM parcels contribute 63% of all TP in Cambridge, including 62% from impervious areas.
- The contributions of TP from public lands, CIIM parcels, and other private sources (including single family residences) within Cambridge are detailed in the chart to the left.

RDA in Cambridge

In September 2022, EPA issued a preliminary residual designation for certain CII properties (those with ≥ 1 acre IC) in the Charles River Watershed. The table to the right provides an example of how NPDES permits based on a residual designation could address the amount of total phosphorous contributed by privately owned parcels, including the number and types of parcels in Cambridge.

- Looking at CII parcels in this example, 163 parcels, out of the 2,354 total CII parcels, contribute 43% of the municipality's total load (3,551 pounds per year of TP) to the watershed. The map below shows the location of these properties.
- While RDA may address stormwater pollution from certain areas in Cambridge, the primary regulatory mechanism to control stormwater is still the MS4 permit.

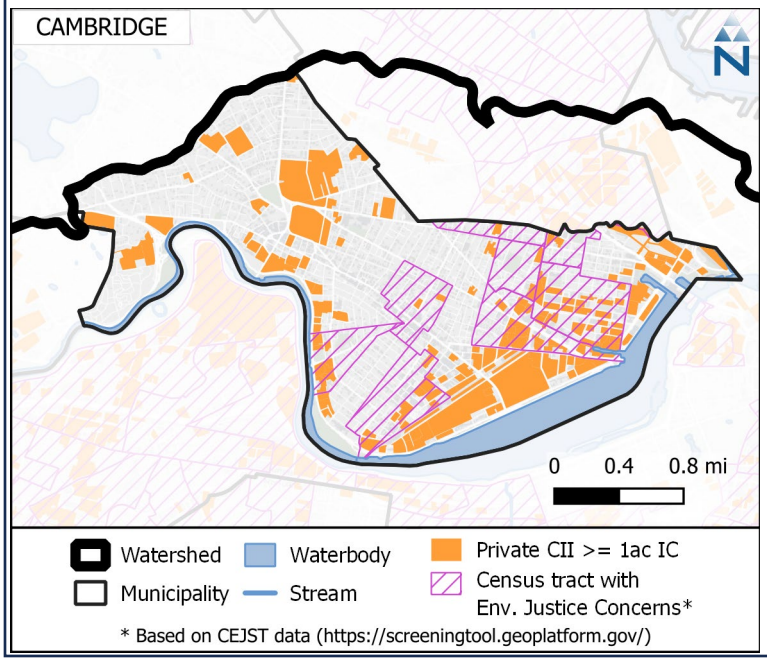
Attribute		Commercial	Industrial	Institutional
Count	All Parcels	1985	43	326
	Parcels ≥ 1 acre IC	91	17	55
TP Load (pounds per year)	All Parcels	889	80	542
	Parcels ≥ 1 acre IC	337	59	415

How Will the RDA Permitting Program Impact Cambridge?

- The amount of runoff from Cambridge will be reduced since certain private sources of stormwater will now be responsible for addressing their share of polluted stormwater runoff.
- CII entities will implement small-scale green infrastructure and other infiltration practices on their properties which will lead to less flooding and other positive impacts in Cambridge. Some examples of the types of stormwater management practices that could be implemented by permittees are shown below.
- Cambridge and all municipalities will have an opportunity to consider how the RDA and the MS4 permitting programs can work together to incentivize positive environmental impacts in their communities. Examples include developing stormwater funding mechanisms that credit stormwater controls on private property, developing tracking and accounting systems that quantify pollution reductions on both public and private properties, and ensuring that potential impacts to areas of your community with environmental justice concerns (see map below) are addressed.

What to Expect Next?

- In the first half of 2024, EPA conducted outreach to municipalities and other stakeholders, including communities with environmental justice concerns. Updates from these outreach sessions are available on EPA's website: https://www.epa.gov/npdes-permits/watershed-based-residual-designation-actions-new-England.
- EPA is still evaluating its permitting approaches and implementation timeframes. Once a draft permit is issued, Cambridge and all members of the public will have a chance to provide EPA with written comments.



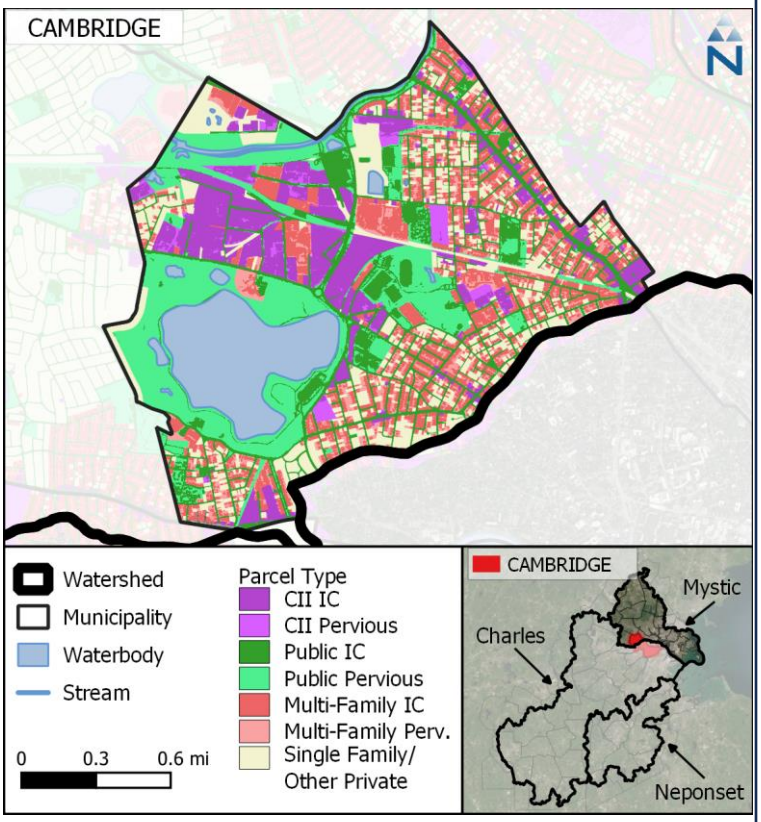
The numbers, graphics, and technical calculations and conclusions set forth in this technical information fact sheet are pre-decisional, subject to change, and may be different than the final calculations relied upon in the draft and final permits. EPA will publish its draft RDA permit and RDA determination in the Federal Register for public comment and will consider all significant public comments.

Improving Water Quality in the Mystic River Watershed by Controlling Private Sources of Stormwater Pollution in Cambridge

U.S. Environmental Protection Agency Region 1 December, 2023

Cambridge is part of the Mystic River Watershed, where pollution from untreated stormwater runoff has degraded water quality. Runoff can originate from impervious cover (IC) like roofs and parking areas and pervious areas like lawns and open space. However, runoff from impervious surfaces generates higher pollutant loads if left untreated. The map to the right shows IC and pervious areas on different land uses, including private commercial, industrial, institutional, and multi-family residential (collectively CIIM), single-family residential, and public lands that make up Cambridge's stormwater load.

Cambridge already manages its stormwater runoff from public areas through a municipal stormwater permit program (MS4). However, as a step towards meeting water quality goals in the Mystic River Watershed, EPA plans to begin a Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) permitting effort to address stormwater runoff on currently unregulated private parcels in Cambridge and other municipalities in the watershed. This permitting effort will be implemented using EPA's CWA Residual Designation Authority (RDA).



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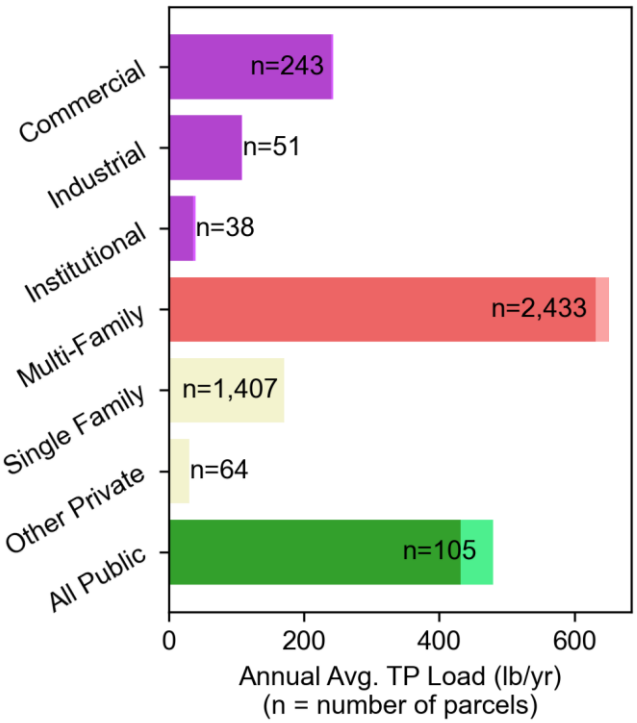

What are the major sources of stormwater nutrient pollution?

- Stormwater pollution can contain nitrogen and phosphorus (collectively nutrients) from fertilizers and yard waste, oil and grease from roadways and driveways, pathogens from pet and wildlife waste, and other toxic pollutants. In this fact sheet, examples are presented using total phosphorus (TP) as a surrogate for all stormwater pollutants.
- Overall, runoff from Cambridge contributes 1,722 pounds of phosphorus per year, which is about 4% of the phosphorus load of the Mystic River Watershed.
- Private CIIM parcels contribute 61% of all TP in Cambridge, including 59% from impervious areas.
- The contributions of TP from public lands, CIIM parcels, and other private sources (including single family residences) within Cambridge are detailed in the chart to the left (private properties that are in combined sewer areas will not be subject to a RD permit).

RDA in Cambridge

In September 2022, EPA issued a preliminary residual designation for certain CII properties (those with ≥ 1 acre IC) in the Mystic River Watershed. The table to the right provides an example of how NPDES permits based on a residual designation could address the amount of total phosphorous contributed by privately owned parcels, including the number and types of parcels in Cambridge.

- Looking at CII parcels in this example, 60 parcels, out of the 332 total CII parcels, contribute 23% of the municipality's total load (1,722 pounds per year of TP) to the watershed. The map below shows the location of these properties.
- While RDA may address stormwater pollution from certain areas in Cambridge, the primary regulatory mechanism to control stormwater is still the MS4 permit.

Attribute		Commercial	Industrial	Institutional
Count	All Parcels	243	51	38
	Parcels ≥ 1 acre IC	34	20	6
TP Load (pounds per year)	All Parcels	242	108	39
	Parcels ≥ 1 acre IC	152	82	26

How Will the RDA Permitting Program Impact Cambridge?

- The amount of runoff from Cambridge will be reduced since certain private sources of stormwater will now be responsible for addressing their share of polluted stormwater runoff.
- CII entities will implement small-scale green infrastructure and other infiltration practices on their properties which will lead to less flooding and other positive impacts in Cambridge. Some examples of the types of stormwater management practices that could be implemented by permittees are shown below.
- Cambridge and all municipalities will have an opportunity to consider how the RDA and the MS4 permitting programs can work together to incentivize positive environmental impacts in their communities. Examples include developing stormwater funding mechanisms that credit stormwater controls on private property, developing tracking and accounting systems that quantify pollution reductions on both public and private properties, and ensuring that potential impacts to areas of your community with environmental justice concerns (see map below) are addressed.

What to Expect Next?

- In the first half of 2024, EPA plans to conduct outreach to municipalities and other stakeholders, including communities with environmental justice concerns, and will be providing updates on its website: https://www.epa.gov/npdes-permits/watershed-based-residual-designation-actions-new-England.
- EPA is still evaluating its permitting approaches and implementation timeframes. Once a draft permit is issued, Cambridge and all members of the public will have a chance to provide EPA with written comments.