

**TOWN OF NEWBURY  
MUNICIPAL SEPARATE STORM SEWER SYSTEMS  
ILLCIT DISCHARGE DETECTION AND ELIMINATION  
  
CATCHMENT INVESTIGATION PRODEDURE  
APPENDIX B**

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## **REQUIRED CONTENTS CATCHMENT INVESTIGATION PROCEDURE**

The permit requires that investigation of catchments associated with problem outfalls be started within two (2) years of the permit effective date, and be completed within seven (7) years. There is a further requirement that high and low priority outfalls be investigated in sequence determined by the follow-up ranking spelled out in Section 2.3.4.c of the permit.

Since all of the outfalls other than those designated “problem” discharge into water bodies impaired by pathogens, they must be classified as “high priority”. Beyond this there is little to distinguish one “high priority” catchment from another, other than the results of dry weather screening. Therefore, dry-weather screening results shall be one of the criteria for priority ranking of “high priority” outfalls.

The manhole inspection methodology is included in Appendix A of the Town of Newbury IDDE Program, SOP’s Nos. 8, 13, and 14.

The permit outlines “system vulnerability factors (SVF’s), Section 2.3.4.8.c, the presence of which requires catchment investigations. The permit distinguishes between those “required”, and those “recommended”. The Town of Newbury has none of the “required” of the SVF’s, however, it does have significant storm sewer infrastructure over 40 years old and a significant number of required septic system upgrades or replacement, both of which are “recommended” by the permit.

In light of the above, it seemed prudent to perform catchment investigations on all of the outfalls in the MS4 areas, although not strictly required, thus following the spirit but exceeding the letter of the permit. (See “maps and historic records” below)

## **BACKGROUND INFORMATION**

The Town of Newbury was settled in 1635. Its three principle thoroughfares are state highways, with stormwater collection systems that were largely designed, constructed, and maintained by the Massachusetts Department of Transportation. These roads are covered by separate permits, handled by MassDOT.

The majority of the Town-owned roads use “country drainage” discharging either to roadside ditches or directly to abutting properties. Many roads that are serviced by catch basins discharge each catch basin to a nearby ditch or wetland. Others employ catch basins in series, with no (or very few) manholes. This practice has not been followed for many decades, but these older systems are still in use.

Only a handful of subdivisions, built within the last 50 years, have the currently preferred systems where drainage manholes are connected in series, each collecting stormwater from one (1) catch basin on each side of the road.

The Town of Newbury has had professional Board of Health employees to deal with septic system design and construction for only a relatively short period of time. Unfortunately, there is little in the way of records regarding septic systems that go back beyond this point. However, there is a considerable amount of experience available regarding soil types and ground-water tables, and the current health professionals and others are award of problem areas. It is based upon this institutional knowledge that the list of “problem outfalls” was constructed.

## **MAPS AND HISTORIC RECORDS**

Newbury has no industry in its MS4 area, and commercial land use is very limited in the MS4. Consequently, it would appear that the most likely source of illicit discharge is sewage from septic systems. Records are available for recent septic system complaints and malfunctions, and these served as the basis for the list of “problem outfalls”. Of the twenty-nine (29) “problem outfalls” listed in Newbury’s IDDE Program, only sixteen (16) of the associated catchments have the currently conventional “catch basin to manhole” layout. Another three (3) have a “catch-basin to catch-basin” lay-out. The balance and the vast majority of the “high priority outfalls” discharge straight from catch-basins to an adjacent wetland.

## **INVESTIGATION RATIONALE**

The “problem outfalls” were so designated because of system malfunctions, soils, groundwater, housing density and age of the systems. While these all will be sampled before the “high priority” outfalls, there appears to be no other meaningful criteria for sampling sequence. Should a pattern become apparent as sampling proceeds, a sequence may be established at that time.

Sampling and testing is being done by DPW personnel. Manpower is available in the early spring before preparations for paving has begun and in the early-to-mid fall (September through mid-October) after paving has finished.

## **OUTFALL SCREENING & SAMPLING PROCEDURE**

These procedures are contained in the Town of Newbury “Illicit Discharge Detection and Elimination Program”, and it’s Appendix A “Standard Operating Procedures for Stormwater Sampling, Testing & Quality Control, and Quality Assurance Project Plan”.

Since there is a dearth of industrial land use in Newbury and none in the MS-4 areas, it is anticipated that the primary illicit discharge will be associated with domestic waste from on-lot septic systems. The primary indicators will, of course, be e-coli and fecal coliform (the impairment source of Newbury’s receiving rivers). Since there are a number of potential natural sources of pathogens besides domestic sewage, the following criteria shall be used to qualify a high pathogen count as resulting from domestic sewage: Olfactory or visual evidence of sewage or ammonia greater than 0.5 mg/l, surfactants greater than 0.25 gm/l and higher than allowable pathogen counts or ammonia greater that 0.5 mg/l, surfactants greater than 0.25 mg/l, and detectable levels of chlorine.