

Hopewell Borough (1105)

Introduction

This municipal chapter is an element of the Mercer County Wastewater Management Plan prepared by the Mercer County Planning Division in accordance with N.J.A.C. 7:15.

Hopewell Borough, an established, self-governing municipality, is located entirely within Hopewell Township in the northern portion of Mercer County. The Borough, like most of the other Boroughs in Mercer County, has a varied, built landscape with very little vacant land remaining and is identified under the New Jersey State Development and Redevelopment Plan as a Village Center. One stream runs through developed lands in the center of the Borough before turning south where it intersects a large municipal park located on the Borough's southern border. The Borough is comprised of a mix of land uses including a variety of housing, educational campuses, and commercial uses including those redeveloped from former industrial sites. The character of the Borough is defined by its historic structures and cultural resources. County Route 518, the east-west major transportation corridor defines the Borough's main street.

The 2005 DVRPC (Delaware Valley Regional Planning Commission) population projection estimates Hopewell Borough's population in 2010 to be 2,040 remaining constant with the 2005 population. The 2007 DVRPC population projection estimates a slight increase in the Borough's 2010 population to be 2,071.

Following are some important considerations for this municipality with respect to wastewater management planning:

- Hopewell Borough is considered a non-urban municipality.

In this document the following terms may be used:

EDUs - Equivalent Dwelling Units - a measure where one unit is equivalent to wastewater effluent from one dwelling unit. NJDEP defines a dwelling unit to mean any building or portion of a building, permanent or temporary, used or proposed to be used as a residence either seasonally or throughout the year. Most often, EDU is used in reference to a single family home.

gpd – gallons per day, a unit of flow measurement.

GW – groundwater

HUC11 - Hydrologic Unit Code consisting of 11 digits – a United States Geological Survey (USGS) standard designation for subwatersheds delineated based on topography.

Individual Subsurface Disposal System (ISSDS) – means a system for the disposal of sanitary sewage into the ground, which is designed and constructed to treat sanitary sewage in a manner that will retain most of the settleable solids in a septic tank and discharge the liquid effluent to a disposal field.

mgd – million gallons per day, a unit of flow measurement.

Nitrate Dilution Model (NDM) –The NDM is required by NJDEP and follows the calculations methodology developed by the New Jersey Geological Service (NJGS). The NDM uses the soils type (SSURGO (NRCS) digital soils GIS layer revised by DEP) to estimate the minimum lot size needed to provide enough recharge to dilute nitrate to a specified target. This method is intended to be a guide for estimating the impact of

nitrate from septic tanks on groundwater quality. The NDM uses the minimum lot size to calculate the number of EDUs possible for a given area.

Non-discharge areas - areas where additional wastewater generation and/or discharge are prohibited.

Non-urban municipality – any municipality not officially designated as an urban municipality

Septic Area – means an area to be served by systems for the disposal of sanitary sewage into the ground, which is designed and constructed to treat sanitary sewage in a manner that will retain most of the settleable solids in a septic tank and discharge the liquid effluent to a disposal field. Planning flows for septic areas are 2,000 gpd or less.

Service Areas – areas designated as wastewater discharge to permitted surface water facilities, groundwater facilities, ISSDS, or septic

Sewer Service Area (SSA) – represents the area to be served by a centralized treatment facility.

STP – Sewage Treatment Plant

SW – surface water

Undeveloped/under developed – areas within the existing or future sewer service area that could be developed

WMP – Wastewater Management Plan

WPCF – Water Pollution Control Facility

WPCP – Water Pollution Control Plant

WTF – Water Treatment Facility

WWTP – Wastewater Treatment Plant

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System – The majority of Hopewell Borough is developed. The collection system conveys flow to the SBRSA Hopewell STP.
- Pumping Stations – There are currently no pumping stations located within the Borough. The Princeton Farms Pump Station flows into the Hopewell Borough Plant.

The existing major wastewater treatment facilities located within the municipality include:

- There currently is no existing wastewater treatment facility located within the Borough.

Tables 1a and 1b include additional minor facilities in Hopewell Borough regulated through NJDEP that have individual New Jersey Pollutant Discharge Elimination System (NJPDES) discharge permits. Table 1a shows facilities which are indicated as discharge to groundwater (DGW). Table 1b shows facilities which are indicated as discharge to surface water.

The NJDEP, Division of Land Use Management, provided the data for Tables 1a and 1b.

The existing treatment facilities, if any, are illustrated on Map 2M.

Table 1a: NJPDES (DGW) Permitted Facilities within Hopewell Borough

NJPDES Permit Number	Facility Name	Permit Program Code	Receiving Stream or Aquifer	Classification	Permittee	Contact Organization Name	Block	Lot	Permitted Flow (MGD)	Existing Flow (MGD)	Future Flow (MGD)	Discharge Category
NONE												

Table 1b: NJPDES (DSW) Permitted Facilities within Hopewell Borough

NJPDES Permit Number	Facility Name	Permit Program Code	Receiving Stream or Aquifer	Classification	Permittee	Contact Organization Name	Block	Lot	Permitted Flow (MGD)	Existing Flow (MGD)	Future Flow (MGD)	Discharge Category
NJG01679160	Kooltronics Inc. (Somerset Street Groundwater Treatment)	No data	Beden Brook	Groundwater Remediation Treatment System	No Data	Rockwell (aka Kooltronics)	18	4	No data	No data	No data	Treated Groundwater

Environmental Features

Hopewell Borough is surrounded by Hopewell Township and is bisected by CR518. The Borough contains public open space and a large municipal park:

- Hopewell Borough Park

Beden Brook is the only stream that runs through the Borough and transects the Hopewell Borough Park.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

Following are the sewer service areas within Hopewell Borough. Existing areas served and future SSAs are shown on Maps 2M and 3M, respectively. The facilities providing treatment to these service areas have an associated facilities table in the Appendix.

- SBRSA Hopewell STP (NJPDES NJ0035301) – This SSA encompasses the entire Borough.

An explanation of the mapping method used to delineate the SSA is included in Appendix A to this chapter.

Septic Areas (ISSDS)

Individual subsurface sewage disposal systems (ISSDSs) consist of those areas with planning flows 2,000 gallons per day or less (i.e. residential septic systems) that are neither designated for sewer service nor as non-discharge areas. These areas can be seen in Maps 2M and 3M.

Future Wastewater Demand and Facilities

For the purposes of evaluating capacity and future sanitary flow rates, the full build-out of undeveloped or underdeveloped land in the Borough was derived from existing zoning and the development potential of land parcels within the Borough. The results of the build-out were compared to the permitted treatment capacity of major wastewater treatment facilities. This analysis is not required for the minor facilities.

The County used CommunityViz, a land use planning software package offered through Placeways, LLC. CommunityViz is an extension for ESRI's ArcGIS platform that uses existing zoning information to estimate future development. CommunityViz uses zoning data such as minimum lot size and set back requirements to evaluate potential number of future residential units or square feet of commercial space on individual parcels or within the municipality.

The County has identified a category of service indicated as "open with facilities". This category was created in response to a number of comments received from municipalities to include recreational lands, many purchased through public funding, in the Future SSA. The requests pertain to open space properties that currently have support facilities or may have them in the future. The intent of this service type category is to account for up to 2,000 gpd of wastewater generation from these parcels, while recognizing they will continue to function as municipal open space and recreational facilities. The estimated flow has been included in the capacity analysis for the facility serving the closest sewer service area. This category gives municipalities flexibility in planning for essential facilities that support existing and future recreational programming at the local level.

Sewer Service Area Wastewater Capacity Analysis

Table 2a presents the results of the Build-out Analysis within the SSA indicated above.

Table 2a: Hopewell Borough Build-out Table (SSAs)

NJPDES Permit Number	Major Public Wastewater Treatment Facility	Capacity Allocation/ Permitted Capacity (mgd)	Total Existing Flow (mgd)**	Total Flow Attributed to TWAs Approved But Unconnected (mgd)	Residential Build-out Flow (mgd)	Non-Residential Build-out Flow (mgd)	Existing Septic Systems Flow (mgd)	Total Projected Build-out Flow (mgd)	Remaining Capacity (mgd)
NJ0035301	SBRSA – Hopewell STP	0.300/FCFS*	0.215	0.000	0.228	0.025	N/A	0.253	See facility table

*FCFS=first come first served

**Total Existing Flow is taken from DMR data February 2011 through January 2012.

Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within Hopewell Borough consist of the following:

Table 2b – Treatment Works Approvals

TWA	Facility	Unconnected Flow (mgd)
(None)		
Total		0.0000

The capacity of SBRSA Hopewell STP is shown in the Facility Table. The facility has no formal agreements with regard to allocation of treatment capacity. Flow to the facility comes almost entirely from Hopewell Borough and the Princeton Farms area of Hopewell Township.

With regard to the SBRSA facility, flows are accepted on a first-come-first-served basis from the participant member communities. Hopewell Borough is a participant member of the SBRSA.

Undeveloped and underdeveloped parcels are shown on Map 3M.

Septic Area Wastewater Capacity Analysis

Table 3 presents the results of the Build-out Analysis within the ISSDS. The ISSDS is shown on Map 3M.

The breakdown by HUC11 subwatershed is shown below.

Table 3 –Hopewell Borough Build-out by HUC11

HUC11	Build-out Potential (Equivalent Dwelling Units)		Surplus/Deficit
	Using Nitrate Dilution Model	Under Municipal Zoning	
02030105110	5.0	0	5.0

Table 3 shows the variation in build-out results based on existing zoning as compared to the potential EDUs predicted by the Nitrate Dilution Model. The zoning based build-out and the NDM should be run on a HUC11 basis to determine if the entire HUC11 has sufficient nitrate dilution capacity to accommodate full zoning build-out.

For Table 3, equivalent dwelling units were calculated using the following formula: [potential residential flow (gpd) + potential non-residential flow (gpd)]/500 gpd/EDU. Potential non-residential flow in septic areas was estimated using existing zoning criteria (e.g. FAR) and a flow factor of 0.125 gpd/square foot.

The Septic Area (i.e., septic) build-out capacity analysis for Hopewell Borough was based on the 2.0 mg/L statewide standard for the target concentration of nitrate in groundwater.

Following are the results of this analysis shown in table 3 for the Hopewell Borough’s portion of the HUC11:

- No ISSDS parcels were present in the HUC11 listed above. So, the Build-out Potential Under Municipal Zoning was zero. However, the Nitrate Dilution Model (NDM) was used to calculate the surplus dilutive capacity of parcels such as open space and environmentally sensitive areas that were not hydric. The calculated surplus can be used to offset deficits within the municipality and within this HUC11 on a regional basis.

A list of zoning codes and descriptions are included on Map 4M.

Appendix A – Basis for Service Area Delineations

SSA (Sewer Service Area)

The SSA designation is for areas from which wastewater is designated to flow to a permitted wastewater treatment facility.

In assigning the SSA designations shown, several data sources were considered:

- Cross-Acceptance proceedings (2004)
- NJDEP's adopted SSA map for Mercer County (2006)
- NJDEP's draft SSA map for Mercer County (2008) including revised editions based on public comments received from 1/2009 through 12/2009; two editions of the original 2008 map resulted from County/DEP review in 7/2009 and 10/2009. The 10/2009 edition is reflected on this Draft SSA map prepared by CDM on 12/2009.
- Data (such as collection system extent) obtained from municipalities or private entities.
- Existing TWA permits
- Sewer service areas provided by existing sewerage authorities and wastewater treatment facilities

Parcels that were within previous draft or adopted sewer service areas, or existing sewer service areas provided by sewerage authorities or wastewater facilities, were given the SSA designation, unless specific guidance was provided to remove them.

Proximity to existing collection system was considered if service for a given parcel was indeterminate based on other criteria.

Parcels with valid NJDEP Treatment Works Approvals (TWA) were automatically given an SSA designation.

Septic Areas (ISSDS)

The ISSDS designation represents those areas served by septic systems. For the purpose of mapping, the ISSDS designation also represents those areas that are not designated as any of the other categories (SSA or Open/Utility as described below).

Open & Utility (Open Space, Utility)

The Open & Utility designation identifies the following:

- Open Space – Mercer County Planning Division maintains an open space layer. The county boundary is the layer's geographic extent. The open space layer is developed from several sources including a county-owned land inventory, Green Acres ROSI, preserved farmland inventory, municipal open space inventories, and state and non-profit open space inventories. The open space layer served as the basis for identifying undevelopable land designated through the Plan as Municipal, County, or State Land, Deed Restricted properties, Conservation Easements, and certain lands overseen by non-profit entities.
- Utility - tax assessment data was used to identify lands owned by public utilities.

This designation indicates that these parcels are undevelopable, except for instances where public programs require the construction of public facilities. Such instances will require that the public facilities be designated as SSA or septic areas, but that the remainder of the parcel be undeveloped.

Environmentally Sensitive Areas

The Environmentally Sensitive Areas (ESAs) designation applies to those areas that have been mapped as such by NJDEP. They consist of the following:

- Wetlands – areas based on NJDEP’s Land Use/Land Cover feature class (2002)
- Stream corridors – areas which incorporate the appropriate buffer along surface waters based on NJDEP’s stream classification (2008)
- Natural Heritage Priority Sites – areas of critical importance due to the presence of rare plant species and ecological communities (2007)
- Landscape Project Areas (Rank 3, 4, and 5) – areas representing wildlife habitat mapping for community planning and endangered species conservation. Rank 3 is associated with NJ State threatened species. Rank 4 is associated with NJ State endangered species. Rank 5 is associated with Federal threatened or endangered species (2007)

Methodology

The following methodology was employed to designate all parcels within Mercer County as either SSA or ISSDS, except for parcels designated as Open/Utility as described above. The following is the general methodology used for preparing the Draft SSA Map.

1. Parcels were evaluated to determine if:
 - a. It was designated under the Mercer County’s open space inventory.
 - b. It was owned by a public utility.Any parcels falling within the above categories were designated as Open/Utility.
2. The remaining parcels were evaluated to determine if they were part of previous SSA. If so, these parcels were designated SSA, unless directed otherwise by NJDEP, Mercer County, or the Municipality.
3. The remaining parcels not designated as previously part of an SSA were also evaluated to determine if any existing wastewater generating structures were present onsite using Mercer County’s building footprint (January 2009) layer and aerial photography (2007). County staff further reviewed these parcels with more current aerial photography (2009). COAH and local approvals were also considered in this evaluation. If sewage generating potential was identified, the parcel was further evaluated to determine if it was readily sewerable by an existing collection system without extending it. If this was the case, the parcel was designated as SSA unless:
 - a. A significant portion of the parcel is undeveloped and falls within the constrained boundary AND
 - b. Comments were received from NJDEP indicating the constrained portion of the parcel was to be excluded from the SSA.

In cases where a) and b) above apply, the parcel was split along the Constrained boundary. In this case, the portion of the parcel within the Constrained boundary was designated ISSDS and the remaining unconstrained portion was designated SSA.

4. For parcels not addressed under 1, 2, or 3 above, any vacant lands were evaluated to determine if it was readily sewerable by an existing collection system without extending it. If this was the case, the parcel was designated as SSA unless:
 - a. Comments were received from NJDEP, Mercer County, or the Municipality indicating the subject parcel should be excluded from SSA category. If such was the case, the parcel was designated ISSDS.
 - b. The parcel was constrained in whole or in part by Environmentally Sensitive Areas (ESA). If this was the case, the portion of the parcel within the Constrained boundary was designated as ISSDS and the remaining unconstrained portion was designated as SSA.
5. Parcels that were not designated under 1, 2, 3, or 4 above were designated as ISSDS.