
Sussex County Wastewater Management Plan



Municipality	Status	Municipality	Status
Andover Borough	Included	Lafayette Township	Included
Andover Township	Included	Montague Township	Included
Branchville Borough	Included	Newton Town	Included
Byram Township	Current	Ogdensburg Borough	Included
Frankford Township	Included	Sandyston Township	Included
Franklin Borough	Included	Sparta Township	Included
Fredon Township	Included	Stanhope Borough	Included
Green Township	Included	Stillwater Township	Included
Hamburg Borough	Included	Sussex Borough	Included
Hampton Township	Included	Vernon Township	Included
Hardyston Township	Included	Walpack Township	Included
Hopatcong Borough	Not Included - Highlands Plan Conformance	Wantage Township	Included

Amending the Sussex County Water Quality Management Plans

Submitted by the Board of Chosen Freeholders of the County of Sussex
Date of Current Submittal: April 2015

Approved by the New Jersey Department of Environmental Protection:
(Insert Date of NJDEP Approval)

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Note: All Maps are posted on County website www.sussex.nj.us

I. Introduction

The purpose of this document is to provide a comprehensive Wastewater Management Plan (WMP) for Sussex County. The WMP is being submitted to the New Jersey Department of Environmental Protection (Department) for approval so that it may be incorporated into the Sussex County Water Quality Management Plan via the plan amendment procedure at N.J.A.C. 7:15-3.

Alternative Assignment of Wastewater Management Planning Responsibility

As of the date of submittal, wastewater management planning responsibility for 24 municipalities in Sussex County remains with the Sussex County Board of Chosen Freeholders and no alternative assignments have occurred pursuant to NJAC 7:15-5.13. The Musconetcong Watershed portion of four municipalities in Morris County is part of the Sussex County Water Quality Management Planning Area. Since the adoption of DEP Water Quality Rules in July 2008, Morris County is now a Wastewater Management Planning (WMP) agency and is responsible for WMP preparation and amendment for those four municipalities (Netcong, Mt. Arlington, Roxbury and Jefferson Twp.

In a Resolution dated December 11, 2013, the Sussex County Board of Chosen Freeholders has recognized Morris County as the county agency charged with WMP preparation and maintenance for those municipalities in the Sussex County Water Quality Management Plan lying in Morris County. The remaining twenty-four municipalities in Sussex County remain the responsibility of the Sussex County Board of Chosen Freeholders. Any proposed revisions or amendments to this wastewater management plan shall be submitted to the appropriate County planning agency.

Status of Previous Approved Local and Regional WMPs Affected by the County WMP

The most recent Sussex County WMP was approved in September 2001. Since that time, there have been numerous WMP amendments and revisions that went through the Plan Amendment Procedure and obtained DEP approval. These are listed in **Appendix B**, and include site-specific amendments. All approved amendments have been incorporated into this current County WMP document.

The County WMP incorporates previously approved WMPs prepared by municipalities, wastewater authorities, or the county itself. The WQMP rule provides that any WMP previously approved by NJDEP may remain in force and effect until six (6) years from that approval date. For Sussex County, the previously approved WMPs listed in **Table 1** are still considered current, until the expiration date as noted.

The County WMP incorporates the wastewater service areas and facility tables from these current WMPs by reference. Local detailed information is not physically part of the County WMP. No modifications were made to the current Byram Township Municipal WMP Chapter, they are incorporated as originally approved by DEP.

Table 1. Current WMPs That Remain In Effect		
WMP Planning Area	Municipality	Expires
Entire Municipality	Byram Township	7-24-2018

In addition, this County WMP includes chapters for each municipality, except where the municipality and any relevant wastewater agency did not provide sufficient information to the County for preparation of its chapter. **Hopatcong Borough has agreed to Highlands Plan Conformance, and their Municipal WMP Chapter with build-out analysis will be developed later with the Highlands Council.**

These chapters will be submitted for NJDEP approval as they become available. Notwithstanding the provisions of the WQMP rules at N.J.A.C. 7:15-8.1, the sewer service areas for any area not currently connected to a wastewater treatment collection system, or fully permitted to do so, are shown on the recently approved County future wastewater service area map. Development that relies on discharges to ground water of 2,000 gpd or less is also permitted, but will be required to comply with relevant NJDEP rules including nitrate dilution analysis where the proposed development exceeds an aggregate greater than 2,000 gpd in projected flow or requires a NJDEP permit or approval subject to N.J.A.C. 7:15-4.

Overview of County

Sussex County has historically been a scenic, rural county with small towns, plenty of open space and agriculture. There are Interstate Highways located outside of Sussex County to the north and south, but within the County, the highways are primarily two-lane roads. Many towns are bedroom communities, where the majority of residents commute outside the County to work. Sussex County is known for its lake communities and offers other types of resort housing near its ski areas and golf courses. There are traditional centers that grew over time at crossroads and near former rail stations. Some communities developed with substantial large-lot subdivisions over recent decades. Currently there has been a significant reduction in development activity due both to the Recession and Highlands restrictions.

The year-round population was 149,265 as reported by the 2010 Census with an overall population density of 287 persons/ square mile The 2013 population estimate for Sussex County is 145,992, a -1.3% decrease since the 2010 Census. This follows a regional trend in New Jersey of population declines in outlying suburban areas and higher demand for cities and mixed-use communities with access to transit.

Overview of Current Wastewater Services and Wastewater Responsibilities

The Sussex County Municipal Utilities Authority (SCMUA) operates the largest sewer treatment plant in Sussex County, located in Hardyston Twp. The “Upper Walkkill Valley Water Pollution Control Plant” is permitted to treat 3.265 MGD and its sewer service area extends into Franklin, Hamburg, Hardyston, Vernon, Sussex, Wantage, and Sparta. There is a DEP Permit for 3.00 million gallons per day (MGD) discharge to the Walkkill River. In 2005, the DEP approved a discharge to ground water in Vernon Twp. of 0.265 MGD, with condition that after treatment at the SCMUA facility in Hardyston, the wastewater is then piped back to Vernon for discharge to maintain ground water quantity in Black Creek watershed. SCMUA also operates other wastewater facilities in the County, including the Hampton Commons facility in Hampton Twp.

The Town of Newton is the owner and operator of its own wastewater treatment plant. It has a permitted wastewater flow of 1.4 million GPD discharge to surface water, Moore’s Brook. The Musconetcong Sewer Authority owns and operates a wastewater treatment plant located in Mount Olive, Morris County, with a permitted discharge of 5.9 million GPD to surface water, Musconetcong River. Its sewer service area extends into Stanhope, Byram and Hopatcong in Sussex County, and portions of Morris County. There are also smaller package treatment plants located throughout Sussex County that serve schools, commercial and industrial sites. There are no combined sewers within Sussex County.

Overview of Current Water Services and Water Supply Responsibilities

The County includes community water supply systems that serve towns and places with higher density development, and some lake communities. Out of 24 municipalities, 21 of them are partially or fully served by public water as listed in **Appendix F**. Lafayette, Sandyston and Walpack Townships do not have public water supply systems.

Overview of Major Environmental, Regional and Local Considerations to Wastewater Services

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, State, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as the movement from large lot subdivision sprawl to regional center-based development or farmland preservation. The extension of public sewers for these purposes has been demonstrated to advance the public health, safety and welfare. Areas properly designated for protection by federal, State, regional or local land use plans should be avoided unless mitigation would provide an equal or greater benefit.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or documented, occupied endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and, unless offset by appropriate mitigation, conflict with the Department of Environmental Protection’s statutory mandate to protect these resources.

It should be noted that environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan amendment process.

Additional regional and local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in the Highlands and Delaware River Basin Section and municipal chapters of this WMP. One of the principal concerns outlined in the Sussex County Strategic Growth Plan, endorsed by NJ State Planning Commission, is that scattered, large- lot development be de-emphasized in favor of compact, mixed- use development. The objectives of reduced habitat fragmentation, increased groundwater recharge and creation of economically viable, walkable neighborhoods are all advanced by this approach.

Overview of Major Water Resource Management Issues

Water quality in Sussex County is generally very good. With the vast majority of the County relying on ground water supplies for drinking water and other potable water uses, land use regulations and methods of detecting pollution must be as advanced as possible.

The Clean Water Act requires that existing and potential water quality problems within the planning area be assessed. This assessment shall include identification of the type and degree of problems and the sources of pollutants contributing to the problems. Sussex County has been very fortunate in benefiting from the research and resource protection efforts of the two largest Watershed Management Area (WMA) agencies in the County: the Upper Delaware and Walkkill WMA's occupy the majority of the geographic area of the County. Portions of two other watersheds in the Passaic Basin (Rockaway, Pequannock) occupy the remainder. Local watershed management efforts have contributed to better management of land use and its associated stormwater and wastewater effects.

Since 2001, construction of new sewers in Sparta and Hopatcong have allowed for abandonment of septic systems, thereby improving the water quality of streams and lakes. Vernon Township also has new sewer connections occurring in their sewer service area and Town Center, and the Vernon Twp. MUA was established. Branchville and SCMUA recently moved forward in the bid process for construction of a new sewer system to serve the town, which will allow for the abandonment of existing septic systems on small lots and improve water quality. Development that was built prior to the environmental regulations of the 1970s is often on small lots, especially in lake communities, and surpasses the capacity of the soils to accept septic effluent. In lake communities such as Lake Hopatcong, many cottages that were originally built for seasonal use have been converted to year-round housing. Protecting and restoring the water quality in these areas is a critical issue in Sussex County

Alternative Septics and Septic Management

Sussex County is host to many areas, particularly lake communities, where individual subsurface disposal systems (ISSDS) have constraints such as shallow depth to bedrock or seasonal high water table. It can be difficult to improve the system when limited to traditional ISSDS (septic) technology. As aerobic, peat, and other alternative ISSDS technology is now accepted by the NJDEP and is available "off-the-shelf", use of these systems is encouraged and will provide higher quality water discharge.

Some lake communities, such as Lake Mohawk and Cranberry Lake, are not sewered but have **septic system management initiatives** to track maintenance and pump-outs done by homeowners, in order to protect water quality and their environments. Homeowners are required to periodically inspect and pump out their septic systems, and a database inventory is kept for monitoring. As part of their Plan Endorsement from the State Planning Commission, the Town of Newton also agreed to establish a septic management program. Future septic management programs may also be required in the Highlands Preservation Areas, according to Plan Conformance by the Highlands Council.

Overview of Future Wastewater Services and Responsibilities

Based on the environmental, regional and local land use planning objectives and the identified areas that are currently built but do not currently have adequate wastewater treatment, the Existing Sewer Service Area Map and Future Sewer Service Area Map identify areas served by central sewers now and in the future. These maps also identify sites that are served by an on-site treatment works that is regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewer service area is keyed to a specific sewage treatment plant authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, and projected build-out flow summarized by municipality.

Based on the build-out analysis of the sewer service areas, the permitted capacity of the sewage treatment plants identified in this plan are compared to the future wastewater generation needs for the 20-year scope of this plan. For the SCMUA facility, the total capacity of 3.265 MGD is controlled by the amount of available allocation for each entity. Those sewer service areas which need additional allocation may obtain same from another sewer service area/entity which does not have growth needs. In this way, build-out is balanced throughout the Walkkill Basin based upon existing and future sewer needs.

Summary of Significant Actions

Since the last approved Sussex County WMP in 2001, the following changes occurred with DEP approval and are included in the current WMP submittal:

Modification of the Wastewater Planning Area Jurisdiction – In accordance with DEP Water Quality Rules, and as indicated above, this wastewater plan now includes only Sussex County municipalities. Four municipalities in Morris County were part of the Sussex County 2001 WMP, but were removed and are now included in the Morris County WMP: Mt. Arlington, Jefferson, Roxbury and Netcong.

Highlands Preservation Area - The Sussex County WMP is revised in accordance with Highlands Regulations, which included removal of Future Sewer Service Areas in the Highlands Preservation Areas where wastewater infrastructure was not constructed as of August 10, 2004. Any future development in the Highlands Preservation Area is subject to DEP regulations

Reduction in General Sewer Service Area Less Than 20,000 GPD – This plan, and the Future Sewer Service Area Map already approved by the NJDEP, deleted certain areas designated as “General Service Area for Wastewater Facilities with Planning Flows of Less Than 20,000 gallons per day Discharge to Ground Water” on the Future Sewer Service Areas map of the 2001 WMP, in accordance with DEP regulations. In the past, this general designation of 2,000 – 20,000 gpd was mostly used for commercial zones designated in municipal ordinances. Areas can remain where a WMP Amendment has been processed or sewer service is existing or has a NJPDES Permit.

Removal of Environmentally Sensitive Areas - Amendments to the DEP Water Quality Management Planning Rules adopted on July 7, 2008 required a modification to certain sewer service areas based on environmental sensitivity. In accordance with the regulatory requirement and DEP review, the previously approved sewer service area was reduced and the revised Future Sewer Service Area Map for Sussex County was approved by DEP in June 2013.

Municipal Plan Endorsement - Overlap between large environmentally sensitive areas and the previously approved sewer service area existed in the Town of Newton. Newton went through the Plan Endorsement process and was approved by the State Planning Commission and the Department of Environmental Protection in May 2013 as a Regional Center with environs protection outside of the designated center. This wastewater management plan and the approved sewer service area are deemed necessary to accomplish the center-based development and environs protection objectives of that plan.

With the NJDEP approval of the Future Sewer Service Area Map in June 2013, there are some wastewater amendments with new or expanded facilities that were deemed Consistent since their sewer areas are shown on the map. Applicants/ owners were notified that they are Consistent and can apply to NJDEP for permits:

New Wastewater Treatment Facility – North Village, Route 15, Sparta (Map #67)

The proposed mixed-use development would be located on Route 15 and White Lake Road (Block 26 Lot 42; Block 31 Lots 1 and 1.01). The new wastewater facility has a proposed Discharge to Ground Water of 120,000 GPD that would serve up to 238 residential units, retail and office space, restaurant, hotel, and athletic club. Affected parties were identified as Sparta Township and Sussex County MUA in a Freeholder Resolution dated September 28, 2011. The DEP Letter of Consistency Determination was issued on February 10, 2014.

Expanded Wastewater Treatment Facility – St. Paul’s Abbey, Route 206, Andover Twp. (Map #87)

To serve up to 80 units of proposed affordable housing, the existing wastewater facility at St. Paul’s Abbey will be upgraded and expanded from 20,000 to 40,000 GPD. This is a Discharge to Ground Water that already serves the abbey and Willow Glen School.

Expanded Wastewater Treatment Facility – Martin Property, Route 206, Hampton Twp. (Map #59)

To serve additional commercial/ retail development on lots along both sides of Route 206, the Martin wastewater facility (NJPDES Permit NJ0135160) would be expanded from 19,980 to 102,552 GPD Discharge to Ground Water. The lots included in the sewer service area are listed in the Freeholder Resolution dated November 7, 2007.

New Wastewater Treatment Facility – Nouvelle Associates, Route 15, Lafayette (Map #69)

For proposed commercial/ retail development on property (Block 9 Lots 21.07 and 21.08) located on Route 15. The new wastewater facility has a proposed Discharge to Ground Water of 14,900 GPD that would serve proposed retail (65,000 sq.ft.) and a restaurant. Since the project proposed to connect with the Sparta Township water supply, Sparta Township was identified as an affected party, along with Lafayette Township and the Sussex County Municipal Utilities Authority in a Freeholder Resolution dated June 9, 2010.

New Wastewater Treatment Facility – Wantage Heights, Route 23, Wantage Twp. (Map #78)

For the proposed residential and commercial project “Wantage Heights”, the applicant is Rachel Manor Properties. The approved sewer service area is a portion of Block 11 Lots 6.02 and 7, located on State Route 23 and Cemetery Road. The new wastewater treatment facility has a proposed Discharge to Ground Water of 19,945 gallons per day (GPD) and would serve 72 residential units, retail use (10,350 square feet), and gas station.

“Significant Actions” also include WMP Amendments and Revisions that were approved by the Sussex County Board of Chosen Freeholders in accordance with the Plan Amendment Procedure. Their sewer service areas are shown on the revised Future Sewer Service Area Map, and are listed as follows:

Abandonment of Wastewater Treatment Facility – Big ‘N’ Plant, Martin Property, Route 206, Hampton Twp.

Subject to agreement between both wastewater treatment facility owners, the expanded Martin facility (described above) could accept the transfer of wastewater flow from the older Big ‘N’ plant (NJPDES Permit NJ0024163) owned by Kere Associates, which has a Discharge to Surface Water permitted to 20,000 GPD. This would allow for the abandonment of the older Big ‘N’ treatment plant, and was granted Preliminary Approval by Freeholder Resolution dated November 7, 2007, and endorsed by Hampton Township Resolution.

Expanded Sewer Service Area for Sussex County MUA – Hampshire Co. property, Route 23, Wantage

To expand the existing SCMUA sewer service area at the A & P shopping center in Wantage to include 2 vacant lots (Block 2 Lots 36.01 and 36.02) for commercial development, using 3,000 GPD wastewater allocation. The designation on the Future Sewer Service Area Map changes from “Proposed Site” to “Sussex County MUA” label. This Plan Amendment was granted Preliminary Approval by Freeholder Resolution dated August 15, 2012.

Expanded Sewer Service Area for Sussex County MUA – “Wantage Plaza” property, Route 23, Wantage

To expand the SCMUA sewer service area and use the existing force main along Route 23 (owned by Sussex Borough) to serve the existing shopping center “Wantage Plaza” (Block 7 Lots 12 and 13.02) located on Route 23 in Wantage. There were failed septic systems at the site, and holding tanks are currently being pumped out regularly. For the shopping center, 19,950 GPD of allocation would serve a restaurant and 119,500 square feet of retail space. The designation on the Future Sewer Service Area Map changes from “Proposed Site” to “Sussex County MUA” label. This Plan Amendment was granted Preliminary Approval by Freeholder Resolution dated June 11, 2014.

Expanded Sewer Service Area for Sussex County MUA – Bicsak Brothers property, Route 23 and Blair Road, Wantage

To expand the SCMUA sewer service area and use the existing force main along Route 23 (owned by Sussex Borough), SCMUA allocation of 49,000 GPD would serve proposed “Quarry Crossroads” mixed-use project with 310,000 square feet of office and retail space and 80 apartments. The designation on the Future Sewer Service Area Map changes from “Proposed Site” to “Sussex County MUA” label. This Plan Amendment was granted Preliminary Approval by Freeholder Resolution dated June 11, 2014.

Revised Sewer Service Area for Maione Property, Route 23, Wantage Twp. (Map #77)

DEP issued a letter dated December 2012 that authorized septic systems on nine subdivided lots located on Boulder Hills Boulevard, and those lots have been removed from the sewer service area. A solar farm was constructed on Lots 1.01 and 1.06 in Block 4, and those lots were also removed from the sewer service area. The Future Sewer Service Area map now includes the following lots: Lot 1.05 in Block 4; Lots 5, 1.07, 1.08, 1.09 and 1.10 in Block 4.01, and Lots 1 and 2 in Block 4.02 that are located on Route 23 and Boulder Hills Boulevard with proposed commercial and residential uses.

Withdrawal of Sewer Service Area, Sussex Properties, Andover Borough

With the purchase of over 230 acres as preserved open space in 2013, the proposed sewer service area in Andover Borough is withdrawn. With the preservation of open space, led by Trust for Public Land, 220 acres will be added to Kittatinny Valley State Park. The County Future Sewer Area Map dated June 2013 showed a proposed Discharge to Surface Water (Permit NJ0134490) which is being removed and the NJPDES permit is being revoked by DEP. The proposed discharge was for 251,000 GPD to Andover Junction Brook, and would have served a proposed mixed-use project by Sussex Properties

Withdrawal of Proposed Wastewater Treatment Facility, High Point Country Club, Montague

The 2001 Sussex County WMP included a proposed wastewater treatment facility to serve High Point Country Club and proposed development with over 3,000 housing units. The facility would have had a proposed discharge to groundwater of 720,000 gallons per day. However, the approved Sussex County Future Sewer Area Map does not show this future sewer service area, as it was removed during DEP review due to environmental constraints. Instead, there is an existing wastewater treatment facility owned by Montague Sewer Company that serves specific lots within High Point Country Club, and their sewer service area is shown on the approved County Future Sewer Area Map.

II. Existing Infrastructure

This section addresses wastewater treatment facilities utilized by development within the County, whether the treatment works itself is located within or outside of the County.

Existing Areas Served by Wastewater Facilities

Map 2 shows the areas actively served by existing wastewater facilities. The Summary Table and detailed Facility Tables in Appendix C provide detailed information on each facility. “Actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected. Future Sewer Service area boundaries are as negotiated between the municipalities, Sussex County staff and NJDEP staff and shown on the approved Future Sewer Service Area Map. Sewer service areas may include industrial businesses that discharge process wastewater to the collection system for treatment by a facility not owned by that business

Existing Public Wastewater Treatment Works

The districts, franchise areas and sewer service area and the associated treatment works, are depicted on **Table 2** below and on **Map 1**. The three private utilities listed, Aqua NJ, Andover Utility Co. and Montague Sewer Company are regulated by the NJ Board of Public Utilities.

Table 2. Wastewater Districts, Franchise Areas and Municipalities	
Wastewater Utility	Municipalities
Sussex County Municipal Utilities Authority (SCMUA) District	Andover Borough, Andover Twp., Branchville, Frankford, Franklin, Green, Hamburg, Hardyston, Lafayette, Montague, Ogdensburg, Sandyston, Sparta, Stillwater, Sussex, Vernon, Walpack, Wantage
Musconetcong Sewer Authority (MSA) District	Byram, Hopatcong, Stanhope
Hardyston Twp. Municipal Utilities Authority District	All of Hardyston Twp., except Aqua NJ area
Town of Newton	Newton
Aqua NJ -Wallkill (owns Wallkill Sewer Company)	Portion of Hardyston Twp.
Andover Utility Co. Inc.	Portion of Andover Twp.
Montague Sewer Company (owned by Utilities Inc.)	Portion of Montague
Vernon Twp. Municipal Utilities Authority	Portion of Vernon Twp.

Table 3 lists the major regional wastewater treatment facilities and the municipality or municipalities they serve. The Musconetcong Sewerage Authority also serves 4 municipalities in Morris County.

**Table 3 – Regional Wastewater Treatment Facilities and Allocations
Sussex County Municipal Utilities Authority (SCMUA)
Upper Walkkill Valley Pollution Control Plant**

Municipality or Utility	SCMUA Allocation (Gallons Per Day, GPD)	Existing Flow 2013 (Monthly Average, GPD)
Franklin Borough	785,000	409,000
Hamburg Borough	420,000	219,000
Hardyston Township MUA (Walkkill Basin)	452,000	220,000
Hardyston Township (Walkkill Sewer Co.)	155,000	74,000
Vernon Township (Vernon Valley Sewer Co.)	380,000	186,000
Sussex Borough	464,000	222,000
Sparta Township	210,000	76,000
SCMUA Landfill Leachate	35,000	29,000
SCMUA Sludge/Septage Recycle	36,000	36,000
Wantage Township	63,000	5,000
Total Flow	3,000,000 GPD	1,421,000
	Discharge to Surface Water (Walkkill River)	
Expansion for Vernon Center and Mountain Creek	265,000 GPD	8,000
	Discharge to Ground Water Vernon Twp.	

**Musconetcong Sewerage Authority
Water Pollution Control Plant
Allocations for Sussex County Municipalities**

Municipality	Allocation (Gallons Per Day)	Average Monthly Flow in 2012 (Gallons Per Day)
Byram	100,000	32,000
Hopatcong	580,000	392,000
Stanhope	541,000	276,000

Musconetcong Sewage Authority's (MSA) NPDES Permit No. NJ0027821 has two different flows upon which its discharge limitations were based. At this time, the 4.31 MGD flow is operative. However, MSA has received NJDEP approval for an increase to 5.79 MGD when the permittee complies with Part IV, E.2.a of the Final Permit issued on December 1, 2011.

Major Transmission Piping and Pumping Stations

Map 2 shows the major interceptors, trunk lines and pumping stations within the various sewer service areas for public wastewater treatment facilities.

There is a 10" force main that extends from Sussex Borough along Route 23 to the Upper Walkkill Sewage Treatment Plant (STP) facility, owned by SCMUA. Due to inflow and infiltration problems in Sussex Borough, the amount of flow spikes upward after heavy rain. The force main is owned by Sussex Borough, and they are working with some property owners on Route 23 in Wantage Township that would like to connect to the force main to be served by SCMUA. However, the available capacity of the force main is a potential limiting factor, and will be studied in the future by an engineer for Sussex Borough, or as part of a future DEP Treatment Works Approval application.

Existing On-site, Non-industrial Wastewater Facilities

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. The **Summary of Wastewater Facilities in Appendix C** lists all existing on-site, non-industrial treatment facilities that discharge to surface water or that discharge more than 2,000 gallons per day to ground water of domestic wastewater and are regulated under a NJPDES permit.

Existing Industrial Treatment Works for Process Wastes and Sanitary Sewage

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. **Appendix C** includes all existing industrial treatment works that discharge to surface water or that discharge more than 2,000 gallons per day to ground water of process or sanitary wastewater and are regulated under a NJPDES permit.

General Wastewater Management Areas for Septic Systems and Other Small Treatment Works Not Discharging to Surface Waters

Remaining areas of the County, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat 2,000 gallons per day or less of wastewater and discharge to ground water.

Existing Septic System Management Programs

With the numerous lake communities in Sussex County, issues of septic system maintenance have been a concern for years. In the 1990s, the Sussex County Planning Division received a DEP grant for a pilot program to initiate septic system maintenance programs in specific lake communities, such as Culver Lake in Frankford Township. There are currently some septic system management programs that are enforced by municipal ordinances: for Lake Mohawk (in Sparta and Byram Townships) and Cranberry Lake and Lake Lackawanna in Byram Township. For Culver Lake residents, there are incentives for residents that follow a regular pump-out schedule.

Existing Public Water Supply Infrastructure

The table in **Appendix F** lists the public community water supply facilities and the municipality or municipalities they serve. The districts and franchise areas are depicted on **Map 8**.

Existing Areas Served by Public Water Supply Facilities

Map 8 shows the areas actively served by existing public water supply facilities. On-site and private facilities are addressed within the municipal chapters. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review. Properties are identified through the current parcel maps maintained by Sussex County.

III. Environmental and Other Land Features

This section includes a description and mapping of environmental features and public open space for the county. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see [Delineation of Sewer Service Areas](#), below).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

Public Open Space and Recreation Areas –Map 5-A shows the land areas currently protected from development as public open space, and also shows other recreational areas that are owned and operated by land trusts, non-profit associations, and for-profit recreational businesses. Such properties are limited to those of 10 acres or more in size for mapping clarity. These areas are not planned to support additional development, and a majority of the land identified on Map 5-A is permanently preserved.

Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Map 5-A shows the land areas currently protected from development as agricultural lands from which the development rights have been purchased, mostly thru the Farmland Preservation Program. Other methods for protecting farmland or conservation easements are lot size averaging, open space or conservation development, or non-contiguous transfer of development credits. These areas are considered off-limits for development and are not included in sewer service areas.

Surface Waters and Classifications—Map 5-B shows the surface waters as mapped by NJDEP based on 1995/97 aerial photography, and within the Highlands Region as modified by the NJ Highlands Council based on NJDEP's 2002 aerial photography. This is the most current mapping of surface waters for which surface water quality standards classifications were available.

Stream Buffers/ Riparian Zones -- Map 5-B shows riparian zones or buffers that are established along all surface waters under the following of regulations: Flood Hazard Area Control Act Regulations, the Highlands Water Protection and Planning Act Regulations, the Stormwater Management Rules, and the Water Quality Management Planning Rules and through municipal ordinances. FW1 waters are nondegradation waters in which no change from natural quality shall be allowed. Category One (C-1) waters, their tributaries and all Highlands waters are afforded a 300-foot buffer. The riparian zone adjacent to trout production waters and all upstream waters, including tributaries, is 150-feet. The riparian zone adjacent to trout maintenance waters and those that contain documented habitat for threatened and endangered species (that are not C-1 waters), which is critically dependent on the water body for survival and upstream tributaries within one mile is 150-feet. The riparian zone of a segment of water flowing through acid producing soils is 150 feet. The riparian zone adjacent to all other surface waters is 50-feet. Most development within these riparian zones is limited by these regulatory programs.

Surface waters that are designated Category One (C-1) are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. [Counties may map out the lesser with buffers also but the 300' buffers are the minimum. The lesser buffers are removed during the build-out analysis.] Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

Freshwater Wetlands -- Freshwater wetlands as mapped by the NJDEP are shown in **Map 5-C**. Freshwater Wetlands are regulated under the Freshwater Wetlands Protection Act Rules, which place stringent limits on development within these areas.

Natural Heritage Priority Sites – **Map 5-D** shows the Natural Heritage Priority Sites mapped by NJDEP as of the date of this WMP. This mapping was primarily used in the delineation of sewer service areas as described in the next section.

Suitable Habitat for Threatened and Endangered Species – **Map 5-E** shows the areas identified by the NJDEP as being suitable habitat for threatened and endangered (T & E) species, Ranks 3, 4 and 5, through the Landscape Project. Four of the five available habitat types were used – forests, forested wetlands, emergent wetlands and grasslands. The coastal beaches and dunes habitat type is not applicable to the County. In addition, the bald eagle foraging the wood turtle habitat mapping were used as a species-specific mapped product under Rank 5 and Rank 3, respectively. Based on guidance from NJDEP, urban peregrine falcon habitat mapping was not used. The County has not verified the mapping of these areas. During DEP review of sewer areas, DEP office produced more detailed maps that identified “critical habitats” of T & E species for Centers, as described in the DEP Water Quality Rules. This mapping was used by DEP in the delineation of sewer service areas as described in the next section.

FEMA Flood Areas – **Map 5-B** shows the 100-year flood zones as mapped by Federal Emergency Management Agency (FEMA) and digitally updated using topographic contours. According to DEP staff, there are no Federal 201 grant limitations in effect for wastewater facilities in Sussex County.

Wild and Scenic Rivers and Corridors, Special Protection Waters –**Map 6** shows the Wild and Scenic River designation for a section of the Delaware River, as mapped by the Delaware River Basin Commission and National Park Service. The Federal designation for the section of Lower Delaware River bordering Sussex County occurred in November 2000. In 2008, the Delaware River Basin Commission designated the Lower Delaware as Special Protection Waters, and anti-degradation regulations apply from Hancock, NY south to Trenton, NJ.

Steep Slopes –**Map 5-F** shows the steep slopes, defined as those slopes with a 20 percent slope or greater. These slopes are mapped using both NJ Highlands Council LiDAR data and the USGS 10-meter Digital Elevation Model. There are limitations to the USGS data due to resolution issues. The steep slopes 20% or greater are regulated by the Water Quality Management Planning Rules.

Coastal Wetlands – There are neither coastal wetlands as defined pursuant to the Wetlands Act of 1970, nor non-coastal estuarine wetlands, in this WMP area.

Watershed Management Areas

The streams listed below all originate or have headwaters in Sussex County. Headwaters are characterized by steep gradients, large cobbles and rocks on the stream bed, and narrow floodways. Waters of this type tend to be clear, cool and swiftly flowing, and often provide habitat for trout and other cold water species. The Walkill River has an unusual characteristic, as it is one of the few rivers that flows North. It flows into New York State and eventually drains into the Hudson River. **Map 7** shows HUC-11 watersheds and municipal boundaries.

WATERSHED MANAGEMENT AREAS (WMA) SUBWATERSHEDS (HUC-11)

UPPER DELAWARE

(WMA #1)

Walpack Bend/ Montague Riverfront
Shimers Brook
Little Flat Brook
Big Flat Brook
Van Campens Brook/ Dunnfield Creek
Trout Brook/ Swartwood Lake
Paulins Kill (above Stillwater Village)
Pequest River (above Bear Swamp)
Bear Creek
Musconetcong River (above Trout Brook)

WALLKILL

(WMA #2)

Walkill River

Papakating Creek
Pochuck Creek
Rutgers Creek tributaries

UPPER PASSAIC /

ROCKAWAY

(WMA #6)

Rockaway River
Pequannock River

IV. Delineation of Sewer Service Areas and Planning Integration

The WQMP rules at NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. This section addresses those requirements. This chapter provides the method that was used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans. The Future Sewer Service Area Map has been already completed and approved by DEP in June 2013.

Environmentally Sensitive Areas Map

Under the DEP Water Quality Management Planning Rules adopted in July 2008, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size, were excluded from sewer service areas. There were some exceptions (described in the next section) for development that had already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. During the DEP review process, this composite "ESA-25" map was created using the following process:

Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this WMP and compliance is required.

Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.

Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.

Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas (referred to as ESA-25 map), which is used to remove sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

Sewer Service Areas in Environmentally Sensitive Areas

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were used where possible for the Future Sewer Service Area Map:

Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.

Where a project has an approved site-specific Wastewater Management Plan Amendment from the Department, the project may be included in the wastewater management plan consistent with that approved site specific amendment. The list of WMP Amendments with DEP approval is in Appendix B.

Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include “critical habitat”, defined by DEP as habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

Where sewer service is necessary to support center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove “critical habitat”, which is habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.

Where necessary to create a linear boundary that related to recognizable geographic features and would not remove “critical habitat”, which is habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

Exceptions to the Use of Geographic or Political Boundaries

The approved Future Sewer Service Area boundaries often do not use readily identifiable geographic or political boundaries to delineate wastewater service areas. During the DEP review process, environmentally sensitive areas were removed and the resulting sewer service area boundary often does not follow a lot line. In some cases, the sewer boundary also may rely on zoning ordinance delineations that are based on parcel boundaries or other features.

Highlands Water Protection and Planning Act (Highlands Act)

The Highlands Act prohibits sewer service area extensions in the Preservation Area, with exceptions only for previously approved projects or for protection of public health and safety. The NJDEP enforces compliance with the Highlands Act through regulations at NJAC 7:38. In addition, the Highlands Regional Master Plan includes recommendations for different zones where sewer service is or is not appropriate within the Highlands Planning Area. These latter requirements are voluntary for adoption by municipalities that wish to “opt in” for conformance with the Regional Master Plan. Previously delineated sewer service areas in the Highlands Preservation Area were removed as part of the 2013 Future Sewer Service Area Map Approval by DEP.

The following rules apply only to areas where the municipality opted in to Highlands Plan Conformance jurisdiction:

New, expanded, or extended public wastewater collection and treatment systems and community on-site treatment facilities within the Protection Zone, the Conservation Zone and the Environmentally-constrained Sub-Zones of the Planning area are prohibited unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding purposes 1, 2 and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of Agricultural Resource Areas (ARAs), steep slopes, Prime Ground Water Recharge Areas and Critical Habitat. For approvals regarding purpose 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes, and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural Lands of ARAs, and Prime Ground Water Recharge Areas. The choice of extension or creation of systems shall follow the requirements in Objective 2K3d (2 and 3). The applicable purposes are:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from a pattern of failing septic systems (where the failing systems cannot reasonably be addressed through rehabilitation or replacement) or highly concentrated septic systems, where the threat is of sufficient scale to justify a public wastewater collection and treatment system or community on-site treatment facility and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety, such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2K3d.

Coordination with the NJ Highlands Council

The Sussex County Future Sewer Service Area (SSA) Map was prepared first, in accordance with legislation adopted in 2012. The Future SSA Map was submitted to the Highlands Council for review, and they consented to its adoption (in a letter dated April 2013) while noting that a Water Use and Conservation Management Plan would be needed for specific areas. The Highlands Regional Master Plan identified specific HUC-14 subwatersheds with “water deficits” for five municipalities in Sussex County, consisting of Franklin, Hamburg, Hardyston, Sparta and Vernon. Both Sparta and Vernon Townships have started working with the Highlands Council on pilot programs to address water conservation.

Byram Twp. has a current approved WMP, and Hopatcong Borough will work with the Highlands Council for its WMP Chapter in the future. For the remaining municipalities in the Highlands region, the Highlands Council will receive a copy of the County WMP for their review and comment.

Delaware River Basin Commission

The Delaware River Basin Commission (DRBC) regulates the discharge of pollutants into, and the withdrawal of water from, the Delaware River Basin located in 4 states, including New Jersey. Wastewater and water supply decisions affecting the Delaware River Basin must be coordinated with the Commission. In Sussex County, the Upper Delaware Watershed is part of the “Special Protection Waters” drainage basin (as shown on **Map 6**) that protects the water quality of the Delaware River. Based on agreements with New Jersey and DEP, DRBC has jurisdiction to review Wastewater Plan Amendments over 10,000 gallons per day, and water withdrawal applications that meet a certain threshold.

According to DRBC regulations, for drainage areas to “Special Protection Waters” the design flows in NJPDES Permits may continue but “Substantial Alterations or Additions” would trigger additional review. The proposed expansion could not be approved by DRBC until the applicant demonstrates that the project will cause no measurable change to existing water quality for the Delaware River.

Relationship to the Other Regional and State Plans

Historically, there was little coordination in New Jersey between sewer service areas and regional land use planning. There was no state-wide plan nor was there any strong effort to coordinate county and municipal planning. The original municipal wastewater plans were based on the individual municipal zoning ordinances and maps.

Today, the planning focus in New Jersey is significantly different. The first State Development and Redevelopment Plan was adopted in 1992 and the second in 2001. Now, the State Strategic Plan is currently proposed for adoption. Additionally, the DEP Water Quality Management Rules (DEP) state that, following adoption of the County wastewater plan, municipal wastewater plans are no longer used by the DEP for consistency determinations.

Sussex County has, in accordance with the procedures of the State Planning Commission (SPC), submitted its County Strategic Growth Plan and received Plan Endorsement in 2007. The Strategic Growth Plan is the result of more than five years of intensive discussion with the entire County community, numerous public hearings and adoption by the Strategic Growth Advisory Committee, the County Planning Board and Board of Chosen Freeholders.

The central tenet of the Strategic Growth Plan is that growth be focused into compact centers and nodes rather than scattered throughout the county, particularly as strip development along highways. The most important change to the entire water quality planning process in Sussex County is the close coordination between the goals, objectives and policies of the Strategic Growth Plan and this plan.

Over the years, a number of municipalities have planned for compact, mixed-use growth in their communities and obtained Center Designations from the State Planning Commission. Under the Permit Extension Act, those approvals are current until December 2014. In Sussex County, Designated Centers with current approvals are shown in Table 4.

Table 4 – Designated Centers Approved by State Planning Commission

Municipality	Name	Type of Center	
Andover Borough	Andover	Town	
Branchville	Branchville	Village	
Byram	Byram Highlands Center	Highlands Center	
Hopatcong	Hopatcong	Town	
Montague	Montague	Town	
Newton	Newton	Regional	
Sandyston	Hainesville	Village	
Sandyston	Layton	Village	
Sparta	Sparta	Town	
Stanhope	Stanhope	Town	
Vernon	Vernon	Town	

Coordination with Municipalities, Sewer Authorities and Water Utilities

Municipalities, wastewater and water utilities that have been consulted during the preparation of the County WMP. The County consulted with them by invitation to public meetings, extensive one-on-one discussions with all who felt the need for greater understanding of the process, requests for formal resolutions of support from all stakeholders, provision of information on the County web-site and in public notices, meetings of the Sussex County Policy Advisory Committee and the Board of Chosen Freeholders..

Future Sewer Service Areas

Map 3 was approved by DEP in June 2013, and shows all existing and proposed wastewater service areas for the County WMP, based on the following:

The municipal chapters included in this WMP;

Existing, current WMP and no changes have been made to the future service areas described in these approved WMPs. For example, this applied to the Byram Twp. WMP;

The existing areas served by sewers, where a municipal chapter has not been included due to lack of information.

All areas not mapped as sewer service areas default to the general service area with discharge to groundwater of 2,000 gallons per day or less.

All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SUI) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent.

Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this WMP and compliance is required.

The 300 foot riparian buffer has been applied to the applicable waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

V. Future County Wastewater Demand and Facilities

This chapter describes the build out methodology used to project future wastewater treatment demand for future sewer service areas and general wastewater management service areas within the County WMP. In general, composite zoning, as described below, was applied to the developable area within the sewer service area after removing those areas where development is not expected to occur: small irregular polygons, open space, wetlands, steep slopes and riparian zones. The build out in the septic area was calculated by applying the composite zoning over all undeveloped land. Polygons were assumed to be too small to support additional development when they were less than the required minimum lot size in the municipal zone. The number of residential units and non-residential floor area were then multiplied by the wastewater planning flow estimates in either N.J.A.C. 7:14A or 7:9A as appropriate. The same build out used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. The results of the analysis are presented in both the municipal chapters and in the facilities tables found in the appendices at the end of this document.

Conformance and Nonconformance with Zoning and Prior Land Use Approvals

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation can be explained in the affected municipal chapter. Deviation from current zoning can be justified through reference to an adopted municipal master plan and the formal introduction of a new or revised zoning ordinance that would implement the master plan. Deviation from prior land use approvals can be justified through expectations of land preservation, a court decision or negotiated settlement, or sunset provisions applying to the approvals. Deviation from prior land use approvals also occurred during DEP review, when lots and portions of lots were removed from sewer areas by DEP.

Due to the removal of potential habitat for Threatened and Endangered Species during DEP review, there are some discrepancies between prior site plan approvals and the sewer service area. This occurred on some lots even where there were negotiated settlements by a court, and committed flow to a wastewater utility. There were letters to DEP requesting those sewer areas to be restored, and for some lots it was restored and the issue was resolved. However, for lots with prior land use and site plan approvals and sewer areas removed, this conflict will need to be resolved in the future, possibly through the WMP Revision process.

Availability of Land Parcel Data

Sussex County has used its extensive parcel mapping in the preparation of the sewer service area mapping. The information is updated monthly and current as of January 2015 for use in preparing the maps.

Municipal Zoning and Composite Zoning

The County has collected all available information on municipal zoning using digital sources. The status of municipal digital zoning information is listed below. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a County Composite Zoning Map has been developed shown on **Map 4** to aid in understanding the patterns of anticipated development in the County. The many municipal zones have been aggregated into 19 composite zones based on their general similarities, as generally described in the **Table 5** below. These composite zones are used for build-out analyses.

Table 5 - Summary of County Composite Zones			
Composite Zone Name	Zone Description And Min. Lot Size		
Mobile Home	3,000 sq.ft.		
Single-family Residential (0 - 10,000 sq.ft.)	10,000 sq.ft.		
Single-family Res. (10,001 - 20,000 sq.ft.)	15,000 sq.ft.		
Single-family Res. (20,001 - 40,000 sq.ft.)	30,000 sq.ft.		
Single-family Res. (40,001 – 65,340 sq.ft.)	50,000 sq.ft.		
Single-family Res. (1.51 to 2.0 acres)	80,000 sq.ft.		
Single-family Res. (2.1 to 4.0 acres)	120,000 sq.ft.		
Single-family Res. (4.1 to 6.0 acres)	200,000 sq.ft.		
Single-family Res. (greater than 6.1 acres)	280,000 sq.ft.		
Multi-family (2-3 units per acre)	13,000 sq.ft.		
Commercial/ Business	80,000 sq.ft.		
Industrial	120,000 sq.ft.		
Parks/ Conservation	n/a		
Recreation/ Tourism	n/a		
Congregate Care	200,000 sq.ft.		
Hospital	n/a		
Public	n/a		
Planned Residential (4-5 units per acre)	8,000 sq.ft.		
Mixed Use (6-8 units per acre)	5,700 sq.ft.		

“Available land” includes both undeveloped and underdeveloped parcels. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. These details are available in the Municipal Chapters as part of the DEP Build-out Model analysis.

Calculating Future Wastewater Needs and Capacity

Using the countywide information provided above regarding existing wastewater facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out, an analysis of wastewater demands was performed to determine whether existing infrastructure capacity or zoning is the constraining factor. Where zoning is more restrictive than wastewater and water supply capacity and does not conflict with the environmentally sensitive areas, no change in zoning is needed. Where the demand projections exceed available wastewater treatment or water supply capacity, either the projections must be reduced or capacity increased.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities and a build- out based on existing zoning for non-urban municipalities.

Municipal Demand Projections in Urban Municipalities

The Water Quality Management Planning rules define “urban” municipalities as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out land already developed, wetlands, and permanently preserved open space. Based on land use data from 2012, there are no municipalities in Sussex County that meet this definition of “urban” municipality. In those municipalities it is assumed that redevelopment of previously developed portions of the municipality will make up the majority of the future wastewater management needs, so a 20-year wastewater projection is based on population and employment projections.

Municipal Demand Projections in Sussex County (Non-urban Municipalities)

For the municipalities in Sussex County, it is anticipated that development of vacant land will be the predominant factor in determining future wastewater treatment needs. Further, external market and economic forces, such as interest rates and demand for housing, are a dominant factor in determining the rate of construction. This analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out depending based on the wastewater service area designation.

Future Wastewater Projections from Sewer Service Areas

In sewer service areas, undeveloped land area is calculated and the following features have been removed because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, and cemeteries. The existing zoning is then applied to the remaining developable land area shown on GIS maps within the sewer service area to project build out and estimate the future wastewater needs of each sewer service area. Local knowledge and municipal input in the process are important, because GIS data cannot capture all the relevant details about future development, such as reuse of existing buildings. Build out data for each municipality is presented in *Section VIII – Municipal Chapters*. The build out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. The projected wastewater data is also aggregated by wastewater treatment plant and presented as the future flow in facilities tables in Appendix C for comparison to the existing permitted capacity of each facility.

Septic System Development Within the Sewer Service Areas

Individual subsurface sewage disposal systems (ISSDS) for individual residences can only be constructed in depicted sewer service areas if legally enforceable guarantees are provided, before such construction, that use of such systems will be discontinued when the depicted sewer service becomes available. This applies to ISSDS that require certification from the Department under the Realty Improvement Sewerage and Facilities Act (N.J.S.A. 58:11-23) or individual Treatment Works Approval or New Jersey Pollutant Discharge Elimination System Permits (under N.J.A.C. 7:14A). According to DEP, it also applies to ISSDS which require only local Health Dept. approvals. Compliance with the connection requirement has been demonstrated through adoption of Municipal Ordinances, where applicable, and these are listed in **Appendix E**.

Collection System Construction Within the Sewer Service Areas

Where an area is designated for sewer service but the required trunk line or collection main has not yet been constructed, dry sewer lines may be required to be constructed within each new development. Then the developments will be connected to the sewer system as line capacity is constructed. Where a municipality has adopted an ordinance regarding dry sewer lines, they are listed in **Appendix E**.

Future Wastewater Outside of Sewer Service Areas

The default wastewater management alternative to support development in areas that are not designated as sewer service area is discharge to groundwater of 2,000 gallons per day or less. This analysis used NJDEP's nitrate-nitrogen target of 2 mg/L, with the assumption that all ammonium and other nitrogen compounds are converted to nitrate within the property, and that the nitrate concentrations dilute evenly across the HUC-11 watershed. These assumptions are implicit in the nitrate dilution model developed by NJDEP. The County ran the analysis using annual average recharge (provided in the GSR-32 model). The County WMP recognizes that in the Highlands Preservation Area the NJDEP's Highlands rules at N.J.A.C. 7:38 will apply, using a much more stringent nitrate target.

Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:(B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Where this requirement has been studied and reviewed as part of the WMP process this classification appears on Map #3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6.

VI. Analysis of Capacity to Meet Future Wastewater Needs

The next step in the wastewater management planning process is to assess whether there is sufficient wastewater treatment capacity to meet the needs of the County based on the projections described above. **For sewer service areas** this requires the aggregation of municipal wastewater projections by sewage treatment plant and a comparison of the projected future demand to the existing permitted capacity of the sewage treatment plant. Where a sewage treatment plant does not have sufficient remaining capacity to meet the future wastewater needs of the service area three possible solutions exist: 1. reduce the proposed sewer service area, 2. reduce the intensity of development within the sewer service area or 3. demonstrate that the sewage treatment plant can be expanded without violating water quality standards.

In areas outside of sewer service areas, the default wastewater management alternative is discharge to groundwater of 2,000 gallons per day or less, commonly referred to as septic systems. The assessment of water quality impacts from development on septic systems relies on nitrate concentration. In this analysis, Nitrate acts as a conservative surrogate for any of a number of constituents that could be discharged from a septic system (e.g. cleaners, solvents, pharmaceuticals, etc.). Nitrate was chosen because it is highly soluble in water, and because it is a stable compound that by itself could render water unsuitable for human consumption. The capacity to support septic systems without violating groundwater quality standards is determined by the amount of dilution available.

The Water Quality Management Planning Rules advocate a watershed approach to assessing the adequacy of available dilution to meet future development on septic systems. Using this approach, available dilution, (essentially groundwater recharge), is calculated within a HUC- 11 watershed and translated into a finite amount of wastewater that can be discharged, which in turn can be translated into a finite number of housing units that can be supported while maintaining a target concentration of nitrate in groundwater. Zoning is then applied to the available land in that same watershed, outside of any sewer service area, to calculate the number of units that could be developed on septic systems.

The results of these two analyses are then compared and if the number of units based on zoning does not exceed the maximum units that can be supported, adequate capacity has been demonstrated. If the number of units allowed by zoning exceeds that which can be supported in a particular watershed, then it is an indicator that there may be a water quality problem in the future under full build-out conditions. However, it is important to remember that "full build-out" with maximum new septic systems might not ever occur, and is influenced by other variables such as market demand for lower-density housing. Also, some land could be preserved instead of developed.

Table 6 - Future Wastewater Planning Flows By Facility or General Service Area

Domestic Sewerage Treatment Plant (STP) OR General Service Area for Septic Systems	Facility Permitted Flow (MGD) and Municipal Allocations	Existing Flows (MGD)*	Projected Residential Dwelling Units	Projected Residential Flow (MGD)	Projected Industrial Units (sq ft)	Projected Industrial Flow (MGD)	Projected Commercial Space (sq ft)	Projected Commercial Flow (MGD)	Total Future Planning Flows (MGD)	Excess (Deficit) Facility Capacity (MGD)
Sussex County MUA Upper Wallkill STP	3.265	1.45	3,800	1.15		0.15	5,000,000	0.500	3.265	
Newton Town STP	1.4	1.02	930	0.28			5,300,000	0.530	1.83	(0.43)
Musconetcong Sewerage Authority STP	5.9									
Stanhope	0.541	0.276	TBD							
Byram (from approved Chapter, in 2010)	0.100	0.032 <u>0.047</u>	130	0.031			149,056	0.0149	0.078 <u>0.0928</u>	<u>0.0072</u>
Hopatcong (under Highlands grant)	0.580	0.392	TBD							
General Service Area for Septic Systems										

*Note: "Existing Flows" for Musconetcong Sewerage Authority based on metered flow, monthly average for 2012.

For other facilities, "Existing Flows" were based on monthly average flow for most recent 12 months, Feb. 2013 – Jan. 2014.

Hopatcong Municipal Chapter is being prepared with Highlands Council

Adequacy of Sewage Treatment Plant Capacity

Table 7 further separates the countywide projections by sewage treatment facility and municipality. Details of the projections are included within the municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Table 7 - Wastewater Flows by Sewage Treatment Facility and Municipality				
Facility	NJPDES Permit	Facility Type (DGW/DSW)	Municipality	Projected Flow (MGD)
Sussex County MUA Upper Wallkill Sewage Treatment Plant (STP)	NJ0053350	DSW		
			Franklin	0.785
			Hamburg	0.420
			Hardyston	0.607
			Sparta	0.210
			Sussex Borough	0.464
			Vernon	0.645
			Wantage	0.063
Newton STP	NJ0020184	DSW	Newton	1.83
Musconetcong Sewerage Authority STP	NJ0027821	DSW		
			Byram	0.0928
			Hopatcong*	TBD
			Stanhope	TBD

For projected flow in SCMUA area, municipal allocations with the SCMUA were used. If a municipality has a build-out projection in their sewer service area and provides a different projected flow, those details can be shown in their Municipal Chapter. For regional facilities such as the SCMUA or MSA, transfer of allocation can be used between municipalities if additional flow is needed.

Using the 20-year planning horizon for the wastewater plan, the capacity is analysed for the sewage treatment plants listed above. For the Town of Newton, their full build-out analysis showed a projected flow of 1.83 MGD, and details are shown in their Municipal Chapter. According to DEP, methods to address any potential wastewater deficit would include: Modifying the Sewer Service Area Delineation and Build-out; Reducing Planning Flows Through Structural Controls and Conservation; and/or Planning Flows Requiring New or Expanded Capacity.

TBD = To Be Determined

The facilities tables in **Appendix C** provide detailed information on the planning flows (in Million Gallons per Day, or MGD) for each new and expanded treatment facility with Discharge to Ground Water (DGW). There are no proposed Discharges to Surface Water in Sussex County. The following facilities will require new or expanded capacity:

Table 9 - New and Expanded Wastewater Treatment Facilities				
Facility	Domestic (D) or Industrial (I)	NJPDES Permit # DSW or DGW	Permitted Flow (MGD)	Future Flow Projection (MGD)
Rachel Manor Property ("Wantage Heights" project) Route 23, Wantage	New Domestic	Proposed DGW	To Be Determined (TBD)	0.01995
Maione (Mt. View STP) Route 23, Wantage	New Domestic	NJ0227536 DGW	0.0046	0.0046
Nouvelle Associates Route 15, Lafayette	New Domestic	Proposed DGW	TBD	0.0149
North Village Route 15, Sparta	New Domestic	Proposed DGW	TBD	0.120
Martin Property Route 206, Hampton	Expanded Domestic	NJ0135160 DGW	0.01998	0.10255
St. Paul's Abbey Route 206, Andover Twp.	Expanded Domestic	NJ0023132 DGW	0.020	0.040
Hampton Square Route 206, Hampton	New Domestic	NJ0166791 DGW	0.01994	0.01994
Hampton Crossings Route 206, Hampton	New Domestic	NJ0173754 DGW	0.01988	0.01988
Wawa store Route 206, Andover Twp.	New Domestic	NJ0166553 DGW	0.00272	0.00272
Branchville/ SCMUA plant Route 206, Frankford	New Domestic	NJ01410676 DGW	0.206	0.206
Frankford Town Center Route 206, Frankford	New Domestic	NJ0208990 DGW	TBD	0.2104
Crossed Keys B & B Route 603, Green	New Domestic	Proposed DGW	TBD	0.005
Kimber Petroleum Corp. Route 15, Lafayette	New Domestic	Proposed DGW	0.0025	0.0025
Blue Heron Senior Housing Route 15, Sparta	New Domestic	NJ0077127 DGW	0.0261	0.0261
Wantage Village Route 628, Wantage	New Domestic	NJ0166561 DGW	0.01987	0.01987

Analysis and Selection of Treatment Alternatives

Relationship to Water Quality Classification

New and expanded discharges will not be permitted in FW1 surface waters or Class I-A ground waters. New and expanded discharges that would degrade current water quality will not be permitted in FW2-Category 1 surface waters or Highlands Preservation Area ground and surface waters. New and expanded discharges to FW2-Category 2 surface waters and Class II-A ground waters may be permitted subject to an analysis of their potential to degrade water quality, the justification for doing so, opportunities for avoiding such degradation, and an overriding requirement that any degradation may not be allowed to violate or increase the violation of standards.

Additional requirements for new or expanded treatment works or increased pollutant loads will be applied through the NJDEP regulatory process, including but not limited to compliance with antidegradation requirements of the Surface Water Quality Standards, NJAC 7:9B, and the Ground Water Quality Standards, NJAC 7:9C. Most stringent of these are the nondegradation requirements. Nondegradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharges to an FW1 stream, with the exception of upgrades to or continued operation of existing facilities serving existing development. 2) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9C. Nondegradation requirements also apply in most situations for waters of the Highlands Preservation Area.

Discharges to Ground Water

The treatment method for all new or expanded facilities listed above in **Table 9** is Discharge to Ground Water. There exists sufficient capacity to address the future wastewater management needs projected by the plan.

Adequacy of dilution to meet future septic area demand

In the DEP analysis, required acres per new septic system were calculated for each HUC-11 Watershed using a target of 2 parts per million (ppm) Nitrate concentration based on the overall dilution available in the watershed. **Map 9** shows "New Jersey Septic Densities Based on Regional HUC-11 Analysis" where each watershed has a calculated acreage per new septic system required to maintain strict nitrate dilution standards.

Table 9 provides the resulting values for septic system densities by HUC-11 watershed, then distributed among the municipalities within the watershed. Using the DEP model, environmentally sensitive areas are not removed prior to performing the build out analysis. This is due to the fact that while certain areas may be unbuildable, such as riparian zones or steep slopes, they still contribute to the overall available dilution of nitrate in groundwater. These areas were also not removed when analyzing the available dilution on a HUC-11 watershed basis used to establish the maximum number of units that can be built in a watershed and continue to meet the 2 ppm nitrate target. Preserved open space and farmland were also included in “Lands Available for Dilution” because that provides a realistic view of the dilution that occurs in a watershed.

$$\frac{\text{Total Undeveloped Land Outside of Sewer Area}}{\text{Acres per New Septic}} = \text{Total New Units Allowed}$$

To calculate “Total New Zoned Units”, the zoning within the general service area for septic systems for the municipality was used for developable land. **Table 9** compares the Total New Allowed Units within each HUC-11 watershed to the Total New Zoned Units that could be built under the existing zoning within that watershed. For the purposes of this analysis it is inconsequential if one municipality’s zoning exceeds its allocation provided that the HUC-11 does not exceed the Total New Allowed Units. **Appendix J** further describes the NJDEP Build-out Model and some of its limitations as well.

DEP Watershed Model Interpretation - The NJDEP Build-out Model should be viewed as a rough indicator. The Model includes variables with a range of values (such as household size) and assumes that existing zoning would not change. It is a regional planning tool with just one focus: to identify possible areas of future stresses on ground water quality. The number of maximum allowable units is a theoretical number, and local municipal plans could provide for much less growth. There are many other considerations for municipalities, and it is not meant to replace or override the local perspective. Given the rural character of Sussex County, its roads and infrastructure, its quality of life, these are some other factors important to planning for future growth.

The DEP Model uses “Septic Densities” with Acres per New Septic by HUC-11 watershed, as shown on Map 9. This should not be misinterpreted as a required minimum lot size. It is a number used in the regional HUC-11 watershed model.

Where a municipal chapter does not exist, the County WMP anticipates that NJDEP will use its regulatory authority under NJAC 7:15 and other laws to ensure compliance with this nitrate dilution analysis or the Highlands rules at NJAC 7:38, whichever is more stringent, for any development regulated by NJDEP. Developments in such municipalities that do not require any NJDEP approval will not be affected.

Table 9 – DEP Septic Densities by HUC-11 Watershed,

Comparison of Allowed Units and Zoned Units by Municipality

HUC11 Watershed Name and Number DEP Septic Density	Municipality	Total Undeveloped Land Available for Dilution (Acres)	Total New Allowed Units Based on DEP Septic Density (Average Recharge)	Total Zoned Units Based on Build-out (Average Recharge)
Shimers Brook/ Clove Brook 02040104090 5.0 acres/septic	TOTAL	6,542	1,310	926
	Montague	6,542	1,310	926
Walpack Bend/ Montague Riverfront 02040104110 4.5 acres/septic	TOTAL	8,550	1,990	218
	Montague	1,852	410	157
	Sandyston	4,432	980	61
	Walpack	2,266	500	0
Little Flat Brook 02040104130 4.8 acres/septic	TOTAL	5,332	1,110 (+10% = 1,220)	1,120
	Montague	1,580	330	300
	Sandyston	3,740	780	820
	Walpack	2	0	0
Big Flat Brook 02040104140 5.2 acres/septic	TOTAL	17,220	3,310	400
	Frankford	190	37	30
	Montague	7,172	1,380	0
	Sandyston	9,774	1,880	370
	Wantage	84	16	0
Flat Brook 02040104150 5.0 acres/septic	TOTAL	3,716	740	8
	Frankford	13	2	2
	Sandyston	858	170	6
	Walpack	2,845	570	0
Van Campens Brk/ Dunnfield Creek 02040104240 4.6 acres/septic	TOTAL	510	111	0
	Walpack	510	111	0

HUC11 Watershed Name and Number DEP Septic Density	Municipality	Total Undeveloped Land Available for Dilution (Acres)	Total New Allowed Units Based on DEP Septic Density (Average Recharge)	Total Zoned Units Based on Build-out (Average Recharge)
Trout Brook/ Swartswood Lake 02040105030 4.8 acres/septic	TOTAL	7,541	1,570	1,270
	Frankford	279	58	50
	Hampton	1,993	415	475
	Stillwater	5,269	1,097	745
Paulins Kill (above Stillwater Village) 02040105040 4.8 acres/septic	TOTAL	21,249	4,420	4,345
	Andover Twp.	1,067	222	240
	Branchville	37	7	29
	Frankford	4,668	970	987
	Fredon	3,205	667	425
	Hampton	5,850	1,220	1,510
	Hardyston	24	5	4
	Lafayette	3,464	720	748
	Newton	158	33	47
	Sparta	1,711	350	140
	Stillwater	1,055	220	218
Pequest River (above Bear Swamp) 02040105070 4.5 acres/septic	TOTAL	10,934	2,435	1,990
	Andover Bor.	400	90	86
	Andover Twp.	4,301	955	920
	Fredon	1,741	385	95
	Green	4,359	968	825
	Newton	28	6	45
	Sparta	105	25	20
Bear Creek 02040105080 4.6 acres/septic	TOTAL	1,940	420	327
	Fredon	728	160	111
	Green	1,212	260	216

<i>Musconetcong River (above Trout Brook)*</i> 02040105150	Municipality	Total Undeveloped Land Available for Dilution (Acres)	Total Allowed Units Based on DEP Septic Density (Average Recharge)	Total Zoned Units Based on Build-out (Average Recharge)
4.7 acres/septic	TOTAL	303	65	105
	Sparta	91	20	18
	Stanhope	212	45	87
Paulins Kill (below Stillwater Village) 02040105050 4.7 acres/septic	TOTAL	3,625	770	632
	Stillwater	3,475	740	607
	Fredon	150	30	25
Rutgers Creek tributaries 02020007000 5.1 acres/septic	TOTAL	689	135	116
	Wantage	689	135	116
Wallkill River (above road to Martins) 02020007010 4.8 acres/septic	TOTAL	6,457	1,340 (+10% = 1,475)	1,471
	Franklin	659	130	148
	Hamburg	53	10	7
	Hardyston	2,583	540	601
	Lafayette	444	90	130
	Ogdensburg	198	40	50
	Sparta	1,526	320	230
	Vernon	185	40	50
	Wantage	809	170	255
Papakating Creek 02020007020 4.9 acres/septic	TOTAL	18,608	3,795 (+10%=4,175)	3,880
	Frankford	5,166	1,055	1,092
	Lafayette	1,142	230	241
	Sussex Bor.	6	1	2
	Wantage	12,294	2,510	2,547
Wallkill River (below road to Martins) 02020007030 5.0 acres/septic	TOTAL	6,170	1,230 (+10%=1,353)	1,267
	Vernon	1,227	245	180
	Wantage	4,943	985	1,087

<i>Pochuck Creek</i> <i>02020007040</i> <i>4.8 acres/septic</i>	MUNICIPALITY	Total Undeveloped Land Available for Dilution (Acres)	Total Allowed Units Based on DEP Septic Density (Average Recharge)	Total Zoned Units Based on Build-out (Average Recharge)
	TOTAL	2,995	620	435
	Hardyston	52	10	15
	Vernon	2,943	610	420
<i>Rockaway River</i> <i>02030103030</i> <i>4.8 acres/septic</i>	TOTAL	2	0	1
	Sparta	2	0	1

*** Note: For Musconetcong River (above Trout Brook), portions of Byram and Hopatcong are also in the HUC-11 watershed.**

These build-out numbers labeled as “Total Zoned Units” are compared to the allowable densities as determined through nitrate dilution analysis labeled “Total Allowed Units” (see discussion in Environmental Impact Assessments, above). For most HUC-11 watersheds in the County (Flat Brook and Shimers Brook, for example), the Total Zoned Units are less than Total Allowed Units and adequate nitrate dilution will occur to meet DEP standards. According to DEP staff, a 10% range can be used since the model provides approximate results. For the Walkkill River and Papakating Creek watersheds, the Total Zoned Units < Total Allowed Units + 10% and adequate nitrate dilution is shown in the model results. The model uses a build-out number that assumes all property is developed based on current zoning. In reality, this situation might not occur for decades.

Compliance with Environmental Protection Standards

The County WMP must ensure that proposed wastewater service areas will minimize or eliminate primary and secondary environmental impacts. The identification of appropriate wastewater service areas begins with the analysis of environmentally sensitive areas discussed above. Added to this result is the build-out analyses. The result is a determination of what areas are both zoned for and appropriate for community sewer service, and which areas are not appropriate for sewers due to zoning, environmentally sensitive areas, or both. The WQMP rules require that development densities and aggregated demands or impacts remain within thresholds. Where the thresholds are exceeded, either the size or development density of a sewer service area or the development density of a non-sewered area must be reduced, or the impact must be mitigated. This plan has demonstrated compliance with these capacity constraints.

TMDLs and Watershed Restoration/ Regional Stormwater Management Plans

Total Maximum Daily Loads (TMDLs) are established by State DEP for limiting pollutants for water bodies that do not meet water quality standards and are “impaired”. In Sussex County, there are Watershed Restoration Plans prepared by Walkill Watershed Group and approved by NJDEP to address TMDLs and improve water quality. Reducing Total Phosphorus is a goal in both Watershed Restoration Plans. In **Appendix M**, descriptions of the Watershed Restoration Plans for Upper Paulins Kill Watershed, Papakating Creek and Clove Acres Lake Watershed are provided.

Lake Hopatcong Restoration Plan

The NJDEP has recognized that Lake Hopatcong is impaired for excessive in-lake total phosphorus (TP) originating from high phosphorus loads. This propagated the need for the development of a Restoration Plan for the lake. In June 2006, “A Refined Phosphorus TMDL and Restoration Plans for Lake Hopatcong and Lake Musconetcong, Upper Musconetcong River Watershed, Morris and Sussex Counties, New Jersey” was finalized. Based on this TMDL, “the existing TP load must be reduced by 41% to achieve the targeted TP loads as outlined in the State’s TMDL.”

VII. Future County Water Supply Availability

Sufficiency of Water Supply

The New Jersey Statewide Water Supply Plan is dated 1996, and it has not yet been updated by the State. For more current information about water supply, DEP Water Allocation Permits have relevant data about firm capacity, water usage and water availability.

In the Highlands Region, Table 10 provides estimates for each HUC14 regarding current water availability using the Highlands Council's Water Resources Technical Report, Volume 2. The latter limits are more stringent in their conservative estimates of water availability.

Table 10 - Water Availability by HUC-14 and Municipality (from Highlands Regional Master Plan)				
HUC-14 Watershed		Non-Ag Ground Water Available (MGD)	Total Max. Month Consumptv/Depletv Use (MGD)	Net Water Availability (MGD)
<i>Wallkill River/ Lake Mohawk (above Sparta Station) 02020007010010</i>		0.091	0.8176	(- 0.727)
<i>Wallkill River (Ogdensburg to Sparta Statn) 02020007010020</i>		0.039	0.3243	(- 0.286)
<i>Franklin Pond Creek 02020007010030</i>		0.040	0.0890	(-0.049)
<i>Wallkill River (Hamburg SW Bndry to O'burg) 02020007010040</i>		0.114	0.868	(-0.754)
<i>Hardistonville tribs 02020007010050</i>		0.028	0.265	(-0.228)
<i>Beaver Run 02020007010060</i>		0.012	0.0045	+0.0078
<i>Wallkill River (Martins Rd to Hmbrg SW Bndry) 02020007010070</i>		0.060	0.780	(-0.719)

Table 10 - Water Availability by HUC-14 and Municipality (from Highlands Regional Master Plan)				
HUC-14 Watershed		Non-Ag Ground Water Available (MGD)	Total Max. Month Consumptv/Depletv Use (0MGD)	Net Water Availability (MGD)
<i>Wallkill River (to Martins Road) 02020007030010</i>		0.028	0.068	(-0.04)
<i>Wallkill River (Owens gauge) 02020007030030</i>		0.015	0.019	(-0.004)
<i>Wallkill River (State line to Owens gauge) 02020007030040</i>		0.016	0.018	(-0.002)
<i>Black Creek (above/incl G. Gorge Resort trib) 02020007040010</i>		0.049	0.545	(-0.496)
<i>Black Creek (below G.Gorge Resort trib) 02020007040020</i>		0.135	0.311	(-0.176)
<i>Pochuck Creek/ Glenwood Lake 02020007040030</i>		0.033	0.038	(-0.005)
<i>Highland Lake/ Wawayanda Lake 02020007040040</i>		0.034	0.037	(-0.003)
<i>Wawayanda Creek and tribs 02020007040050</i>		0.104	0.978	+ 0.006

Table 10 - Water Availability by HUC-14 and Municipality (from Highlands Regional Master Plan)				
HUC-14 Watershed		Non-Ag Ground Water Available (MGD)	Total Max. Month Consumptv/Depletv Use (MGD)	Net Water Availability (MGD)
<i>Lafayette Swamp tribs</i> 02040105040040		0.001	0.0003	+0.005
<i>Sparta Junction tribs</i> 02040105040050		0.101	0.903	(- 0.803)
<i>Paulins Kill (above Rt. 15)</i> 02040105040060		0.00	0.0004	(-0.0001)
<i>Paulins Kill (Blairstown to Stillwater)</i> 02040105050010		0.054	0.052	+0.002
<i>New Wawayanda Lake/ Andover Pond trib</i> 02040105070020		0.027	0.065	(-0.0379)
<i>Pequest River (above Brighton)</i> 02040105070030		0.040	0.018	+ 0.022
<i>Pequest River (Trout Brook to Brighton)</i> 02040105070040		0.100	0.026	+ 0.074
<i>Trout Brook/ Lake Tranquility</i> 02040105070050		0.072	0.021	+ 0.051
<i>Bear Creek</i> 02040105080020		0.089	0.018	+ 0.07

Note: Watershed values were adjusted to % area of HUC-14 within Highlands Region.

In addition to these values, the NJDEP Highlands Rules restricts development densities and the extension of public water service into the Highlands Preservation Area to a few types of development specified in the Highlands Water Protection and Planning Act.

Sufficiency of Water Supply

In accordance with any DEP and/ or Highlands Council requirements, some municipalities are developing Water Conservation Plans. Sparta and Vernon have ongoing pilot projects with the Highlands Council, and Hardyston, Franklin and Hamburg may also be participating.

Measures to Ensure Adequate Water Supply

Modifying the Water Supply Service Area Delineation or Build-out

Reducing Demands Through Beneficial Reuse, Structural Controls and Conservation

Obtaining Alternative Water Supply Sources>

Water Use and Conservation Management Plan

The target for the Highlands WUCMP (Water Use and Conservation Management Plan) is to eliminate the Net Water Availability deficit for specific sub-watersheds, and to achieve a positive Net Water Availability to ensure sufficient supply during severe droughts and to provide a buffer for potential future needs.

Water reduction measures being considered include:

- Water System Leak Reduction
- Meter Calibration or Replacement
- Stormwater Collection and Infiltration

[sample from Jeff Twp]

VIII. Municipal Wastewater Management Chapters