

# 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	Included	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 Resolution for Resubmittal: \_\_\_\_\_

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

Prepared By:  
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## I. Introduction

The purpose of this document is to provide a comprehensive Wastewater Management Plan (WMP) for Sussex County. Upon approval by the New Jersey Department of Environmental Protection (DEP) via the WQMP amendment procedures (N.J.A.C. 7:15), it will be incorporated into the Sussex County Water Quality Management Plan.

### **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. The Musconetcong Watershed portion of the Sussex County Water Quality Management Planning Area includes four municipalities in Morris County. 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. All twenty-four Sussex County municipalities remain the responsibility of the Sussex County Board of Chosen Freeholders. Any proposed revisions or amendments to the Sussex County WQM 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 modified the 2001 WMP 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 County WMP includes the wastewater service areas and facility tables from the approved Byram Township WMP adopted by the DEP on July 24, 2012 as part of the Highlands Conformance process. No modifications were made to the Byram Twp. Highlands Conforming sewer service area as originally approved and adopted by DEP and it has been incorporated into the County mapping. Three existing DEP T-1 Permits have been added to the sewer service area map for Frankie's Lakeside Tavern, Wild West City, and Jefferson Lake Day Camp, and are included in Appendix C - NJPDES Permit Summary Table.

The Byram Twp. WMP was approved by the New Jersey DEP and all build-out data and mapping information was incorporated. It is anticipated that the Byram Twp. WMP shall assume the same ten-year WMP update schedule as the County-wide WMP. In addition, this County WMP includes chapters for each municipality, with the exception of **Hopatcong Borough which has agreed to Highlands Plan Conformance, and as a result their Municipal WMP Chapter with build-out analysis will be developed later in conjunction the Highlands Council.**

Development that relies on discharges to ground water of less than 2,000 gallons per day (gpd) will be required to comply with the relevant NJDEP rule, N.J.A.C. 7:9A that regulates construction and local approval of these systems.

## **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 miles. According to U.S. Census Bureau, the 2016 population estimate for Sussex County is 142,522, a -4.5% 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 Water Pollution Control Plant” has the design capacity to treat up to 3.265 MGD of wastewater and its sewer service area extends into Franklin, Hamburg, Hardyston, Vernon, Sussex, Wantage, and Sparta. The current NJDEP Permit (NJ0053350) for Discharge to Surface Water currently allows for the discharge of up to 3 Million Gallons per Day (MGD) of treated wastewater (MGD) into the Walkkill River. In 2005, the DEP approved an amendment to the Sussex County WMP which provided for the auxiliary treatment of up to 0.265 MGD at the SCMUA facility for Discharge to Ground Water to disposal beds located in Vernon Twp. (Permit NJ0145688). 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 (Permit NJ0020184). It has a permitted wastewater flow of 1.4 MGD Discharge to Surface Water to Moore’s Brook. The Musconetcong Sewer Authority owns and operates a wastewater treatment plant (Permit NJ0027821) located in Mount Olive, Morris County, with a current permitted flow value of 4.31 million gallons per day (MGD) with a future staged flow of 5.79 MGD with Discharge to Surface Water into the Musconetcong River. Its sewer service area extends into portions of Morris County and Stanhope, Byram and Hopatcong in Sussex County. There are also numerous 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 Public Water Supply Services**

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 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 and permits, 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 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 Wallkill Watershed Management Group, which has received DEP grants for work in the Upper Delaware and Wallkill watersheds. 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. The SCMUA facility operates a Discharge to Ground Water of up to 0.265 MGD. After treatment at the SCMUA facility in Hardyston, the wastewater is piped back to Vernon for groundwater discharge and maintains ground water quantity in Black Creek watershed. Branchville and SCMUA recently moved forward with 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 Septic Systems and Septic Management**

In Sussex County, some areas have environmental constraints such as shallow depth to bedrock or seasonal high water table. Alternative septic system design, with features such as peat biofilters, have been approved by the NJDEP since 2006. Installation by certified contractors and a Maintenance Contract is regulated under NJDEP Treatments Works Approval. Where applicable, use of these systems is encouraged and will provide higher quality water discharge, including reduced nitrates. Their use is increasing, and in 2016, there were 136 alternative septic systems permitted in Sussex County, according to County Health Dept. records.

As part of the County Wastewater Plan, **Septic System Maintenance** will be discussed in **Appendix G**. DEP is looking for a septic system inventory, list of current activities for public education and outreach regarding septic system maintenance, and future plans to address it. Septic system maintenance involves ongoing pump-outs every 3-5 years or when needed in order to protect ground water quality and the environment. Septic system maintenance is especially important for existing development on small lots, such as lake communities, where protecting water resources is important. The issue is also highlighted in the Highlands Preservation Areas, in accordance with Plan Conformance by the Highlands Council.

## **Overview of Future Wastewater Service and Capacity**

Based on the environmental, regional and local land use planning objectives, the “Wastewater Service Area Map” (Map 3) identifies areas served by central sewers now and in the future. This map also identifies sites that are served by an on-site treatment works regulated under a New Jersey Pollutant Discharge Elimination System (NJPDES) permit. Each sewer service area is keyed to a specific wastewater treatment plant authorized under this plan to accept and treat wastewater from that sewer service area. Each treatment plant identified in this plan has an accompanying Facility Table that provides information concerning the facility owner, operator, permitted flow, existing flow, and projected build-out flow. There are new and expanded wastewater facilities (shown on Table 8) that have not been built yet, so there is growth potential and approved infrastructure for proposed development in Sussex County.

Based on the build-out analysis of the wastewater service areas, the permitted capacity of the sewage treatment plants identified in this plan are compared to the potential future wastewater generation needs. For the SCMUA Upper Walkkill facility, the total permitted Discharge to Surface Water is 3.0 MGD and Discharge to Ground Water permitted amount in Vernon is 0.265 MGD.

There is allocation for municipalities within its sewer service area, and allocation may transferred between municipalities by contractual agreements. In this way, build-out is balanced throughout the Wallkill Basin based upon existing and future sewer needs. There is permitted and approved sewer capacity in both SCMUA and MSA facilities and individual NJPDES Permits to accommodate population growth in Sussex County, and additional development.

## **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. Portions of the following four municipalities located 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

**Removal of General Sewer Service Area Less Than 20,000 GPD** – In accordance with DEP regulations the Future Sewer Service Area Map as adopted by the Department, removed all areas previously designated “General Service Area for Wastewater Facilities with Planning Flows of Less Than 20,000 gallons per day that Discharge to Ground Water” that were identified on the Future Sewer Service Areas map of the 2001 WMP. In the past, this general designation of <20,000 gpd was mostly used for commercial zones designated in municipal ordinances. As part of this WMP, locations where a WQMP Amendment has been adopted and/or a NJPDES discharge to groundwater permit has been issued the associated sewer service has been included as an Individual Groundwater Discharge Area (GWIND) .

**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 (FWSA) Map in June 2013, the following are proposed new or expanded facilities that were deemed consistent with the Sussex Water Quality Management Plan (WQMP) as they were delineated as sewer areas on the FWSA map. applicants/ owners notified that they were eligible to apply for a NJDEP permit:**

**Proposed Wastewater Treatment Facility – North Village, Route 15, Sparta**

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.**

To serve up to 80 units of proposed affordable housing, the existing wastewater facility at St. Paul’s Abbey (NJ0235075) is proposed to be upgraded and expanded from the current permitted designed flow of 20,000 gpd to 40,000gpd. This is a Discharge to Ground Water Facility that already serves the abbey and Willow Glen School.

**Expanded Wastewater Treatment Facility – (NEMSA) Martin Property, Route 206, Hampton**

Proposed to serve additional commercial/ retail development on lots along both sides of Route 206, the Martin wastewater facility (NJ0135160) has a current permitted design flow for up 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.

**Proposed New Wastewater Treatment Facility – Nouvelle Associates, Route 15, Lafayette**

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.

**Proposed Wastewater Treatment Facility – Wantage Heights, Route 23, Wantage Twp.**

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

**Withdrawal of Future Sewer Service Area, 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 2013 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 (NJG0139866) owned by Montague Sewer Company / High Point Country Club Community that serves 303 specific lots within High Point Country Club, and their sewer service area is shown on the approved County Future Sewer Area Map.

**Based on the NJDEP permit actions listed below, related to NJPES Permits, changes have been made to the proposed wastewater facility and service areas shown on the Map 3, Wastewater Service Area Map (previously titled “Future Sewer Service Area Map” in 2013):**

**Proposed Wastewater Treatment Facility – Highview Estates, Rt. 94, Fredon Twp.**

Based on a 2001 County WMP map designation for Block 104 Lot 19 and Block 801 Lot 1.01, DEP issued a NJPDES Permit in 2014 for 19,950 gallons per day discharge to groundwater. This would serve 69 residential units, and for any increased wastewater discharge, a Plan Amendment is required.

**Revised Sewer Service Area for Maione Property, Route 23, Wantage Township. AKA Mountain View Manor at Wantage (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 are located on Route 23 and Boulder Hills Boulevard with proposed commercial and residential uses. The development is to be served by an onsite discharge to ground water facility; for 16 apartments there is a permitted facility (NJ0227536) with an approved design flow of 4,600 gpd for Lots 1 and 2 in Block 4.02. There is commercial development that will be served by an onsite discharge to ground water facility for Lot 1.05 in Block 4.

**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 has been revoked by DEP. The proposed facility was to have served a proposed mixed-use residential and commercial development.

**“Significant Actions” also include proposed Plan Amendments that have received Preliminary Approval by the Sussex County Board of Chosen Freeholders, and their sewer service areas are shown on Map 3, Wastewater Service Areas Map:**

**Proposed 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 (NJ0024163) owned by Kere Associates, which has a Discharge to Surface Water permitted to up to 20,000 GPD. This would allow for the abandonment of the older Big ‘N’ treatment plant. The proposed action 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 adjoining 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. 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 Township.**

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 and 13.01) 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. 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 Township.**

To expand the SCMUA sewer service area and use the existing force main along Route 23 (owned by Sussex Borough), and SCMUA allocation of 49,000 GPD to serve the proposed “Quarry Crossroads” mixed-use project located on Block 11, Lot 5 and portions of Block 10, Lot 1.01 will consist of 310,000 square feet of office and retail space and 80 apartments. This Plan Amendment was granted Preliminary Approval by Freeholder Resolution dated June 11, 2014.

**Expanded Sewer Service Area to serve Wantage Ridge project, Rt. 628, Wantage Twp.**

The proposed Wantage Village mixed-use development (Block 116 Lot 10.01) has a NJPDES Permit for 19,867 gallons per day. To serve the adjacent Wantage Ridge development (Block 116 Lot 10.06) the Wantage Village wastewater treatment facility is proposed for expansion to 39,817 gpd and the discharge to groundwater will be sent to two separate disposal fields, on Lot 10.01 and 10.06. The proposed development consists of 211 residential units (including affordable and age-restricted units) and over 10,000 sq.ft. commercial space. There is an agreement for the Borough of Sussex to supply water to the site.

## II. Existing Infrastructure

This section addresses wastewater treatment facilities utilized by development within Sussex County, whether the facilities are located within or outside of the County.

### Existing Areas Served by Wastewater Facilities

The Summary Table and detailed Facility Tables in Appendix C provide detailed information on each existing wastewater facility. For an area to be “actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected. Sewer service areas can also 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.

<b>Wastewater Utility</b>	<b>Municipalities</b>
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 (Sussex County) Netcong, Mt. Arlington, Mt. Olive, Roxbury (Morris County)
*Hardyston Twp. Municipal Utilities Authority /District	Maintains Collection system for Hardyston Twp., except Aqua NJ area (Served primarily by SCMUA)
Town of Newton	Newton
Aqua NJ -Walkkill	Portion of Hardyston Twp.
Andover Utility Co. Inc.	Serves Franchise Area in Andover Twp. For Andover Nursing Home/ Intermediate Care Center and Rolling Hills condominiums.
Montague Sewer Company (owned by Utilities Inc.)	Serves Franchise Area in Montague Twp. located in High Point County Club
Vernon Twp. Municipal Utilities Authority	Portion of Vernon Twp.

\*Hardyston Twp. Municipal Utilities Authority is responsible for providing a potable water supply and public sewage collection and conveyance for its customers only.

**Table 2** lists the regional wastewater treatment facility of Sussex County Municipal Utilities Authority (SCMUA) and the municipalities served. **Table 3** list the 3 municipalities in Sussex County served by the Musconetcong Sewerage Authority. Allocations identified in this document are neither determined nor enforced by NJDEP. They are contractual agreements between the regional facility and its member communities. The NJDEP does not establish these allocations and is not involved in any agreements to set them.

**Table 2 – Regional Wastewater Treatment Facilities and Allocations  
Sussex County Municipal Utilities Authority (SCMUA)  
Upper Wallkill Valley Pollution Control Plant**

<b>Municipality or Utility</b>	<b>SCMUA Allocation (Gallons Per Day, GPD)</b>	<b>Existing Flow 2014-Apr 2015 (Monthly Average, GPD)</b>
Franklin Borough	785,000	409,000
Hamburg Borough	420,000	219,000
Hardyston Township (Hardyston Township MUA/ )	452,000	220,000
Hardyston Township (Aqua-Wallkill)	155,000	74,000
Vernon Township * (Vernon Twp. MUA.)	380,000 (DSW) 265,000 (DGW) Total = 645,000	186,000 8,000
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
<b>SCMUA TOTAL Discharge to Surface Water Flow (DSW) Wallkill River</b>	<b>3,000,000 GPD</b>	<b>1,421,000</b>
<b>Discharge to Ground Water Flow (DGW) in Vernon</b>	<b>*265,000 GPD</b>	<b>8,000</b>

**Table 3 - Musconetcong Sewerage Authority Water Pollution Control Plant  
Allocations for Sussex County Municipalities**

<b>Municipality</b>	<b>*Allocation (Gallons Per Day)</b>	<b>Existing Flow 2014-Apr 2015 (Monthly Average Gallons Per Day)</b>
Byram	100,000	32,000
Hopatcong	580,000	343,000
Stanhope	541,000	320,000
<b>Total Flow For MSA</b>	<b>4,310,000 GPD Permitted Flow</b>	<b>2,130,000</b>

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 staged increase to 5.79 MGD as stated in their permit issued on December 1, 2011. MSA service area also includes four municipalities in Morris County: Mt. Olive, Mt. Arlington, Netcong and Roxbury Twp.

### **Major Transmission Piping and Pumping Stations**

There are 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 SCMUA Upper Walkkill Sewage Treatment Plant (STP). Due to "inflow and infiltration" (I & I) 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. The Borough of Sussex continues to make repairs and I & I reductions such that the force main capacity can be certified by an engineer for Sussex Borough. There is an "Effluent Recharge Force Main" that extends from the SCMUA treatment plant in Hardyston to Vernon Township for a permitted Discharge to Ground Water back to the Black Creek Watershed to maintain ground water supply there.

A Plan Amendment was approved by DEP in 2015 for expansion of the sewer area of SCMUA Upper Walkkill treatment plant to serve the SCMUA landfill located in Lafayette. A force main will be constructed for the direct conveyance of landfill leachate from SCMUA landfill to SCMUA Upper Walkkill facility in Hardyston.

### **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.

### **Septic Areas**

Remaining areas of the County, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are recognized on Map 3 as within Septic Areas or Areas to be served by individual subsurface sewage disposal systems (ISSDS) with planning flows 2,000 gallons per day or less.

## **Septic System Maintenance**

With the numerous lake communities in Sussex County, issues of septic system maintenance have been a concern for years. Two municipalities have adopted ordinances to enforce septic system maintenance programs in specific lake communities, including Lake Mohawk in Sparta Township and Cranberry Lake in Byram Township. A **Septic System Management Plan** (Appendix G) will be developed separately and submitted to DEP, as required by the DEP Water Quality Rules.

## **Existing Public Water Supply Infrastructure**

The table in **Appendix F** lists the public community water supply facilities and the municipality or municipalities they serve.

### 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, the Water Quality Management Planning Rules, Freshwater Wetlands Protection Act Rules, Flood Hazard Area Control 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 regulated riparian zone adjacent to trout production waters and all upstream waters, including tributaries, is 150-feet. The regulated 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 and associated regulated transition 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 as part of the adoption of the approved County FWSA mapping, DEP produced 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 located 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.

**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 Walkkill 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 2** 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/ Swartswood Lake  
Paulins Kill (above Stillwater Village)  
Pequest River (above Bear Swamp)  
Bear Creek  
Musconetcong River (above Trout Brook)

**WALLKILL**

*(WMA #2)*

Walkkill River  
  
Papakating Creek  
Pochuck Creek  
Rutgers Creek tributaries

**UPPER PASSAIC /**

**ROCKAWAY**

*(WMA #6)*

Rockaway River  
Peguannock River

## **IV. Delineation of Sewer Service Areas and Planning Integration**

The WQMP rules at NJAC 7:15-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” (now called Wastewater Service Area Map) was completed and approved by DEP in June 2013.

### **Environmentally Sensitive Areas Map**

The DEP Water Quality Management Planning Rules define environmentally sensitive areas as “contiguous areas of 25 acres or larger consisting of habitat for threatened and endangered species as identified on the DEP Landscape Project Maps, Natural Heritage Priority Sites, Category One protected waters, alone or in combination”. For their map review process, DEP established the composite “ESA-25” map using the following steps:

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 were merged into a single composite GIS coverage.

The composite areas were corrected by eliminating areas designated as “urban” in the most recent Land Use/ Land Cover GIS layer to update it for changes since the environmental feature layers were prepared.

Any composite areas less than 25 acres in size were deleted 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. There were exceptions (described in the next section) for development that had already secured prior approvals or center- based development approved by the Department through the Plan Endorsement process or the Department determined that the habitat on site was in fact not suitable. 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 (ESA's) within the sewer service area (SSA) under limited conditions. For a complete description of the conditions and or provisions that allow for SSA within ESA's refer to the adopted WQMP rule. In part, the following modifications were applied, as applicable for the purposes of delineating SSA as adopted on the Sussex County Wastewater 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 had an adopted site-specific Water Quality Management Plan Amendment from the Department, the project was included on the adopted FWSA map 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 for the most part used readily identifiable geographic or political boundaries such as municipal boundaries, roads, lot lines in order to delineate wastewater service areas. In some cases, during the DEP review process, environmentally sensitive area such as riparian buffers or delineated habitat areas were removed and the resulting sewer service area boundary often does not follow an identifiable geographic or political boundary or lot line. Alternately, 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 DEP enforces compliance with the Highlands Act through regulations at NJAC 7:38. In addition, the Highlands Regional Master Plan (RMP) 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. Pursuant to the Highlands Act, parcels within previously delineated sewer service areas not served or currently connected to the sewer system in the Highlands Preservation Area were not eligible to remain in the SSA and therefore removed as part of the

2013 Future Sewer Service Area Map approved 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. 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 completed 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 (WUCMP)** would be needed for specific HUC-14 subwatersheds with “water deficits”. At that time, 5 municipalities in Sussex County were listed: Franklin, Hamburg, Hardyston, Sparta and Vernon. Since then, a Highlands study of “Net Water Availability” has shown that Hamburg Borough does not have a water deficit area. The remaining four towns will proceed with Scope of Work for WUCMP. Both Sparta and Vernon Townships have started working with the Highlands Council on pilot programs to address water conservation. Hardyston Township has an approved Scope of Work with the Highlands Council to prepare a Water Use and Conservation Management Plan. The information on the Scope of Work for the 4 municipalities is in **Appendix O**.

Of the two Highlands municipalities that have agreed to Highlands Plan Conformance, Byram Twp. and the Highlands Council prepared a Municipal Chapter for Wastewater Plan that DEP approved in 2012. The Byram Twp. Chapter approval is still current and is included with the County WMP as a Municipal Chapter. Hopatcong Borough will work with the Highlands Council for its WMP Chapter in the future. Both Byram and Hopatcong are recognized as “Highlands Centers” where growth and development are being planned in sewer service areas. For the remaining 8 municipalities in the Highlands region (Franklin Borough, Green Township, Hamburg Borough, Hardyston Township, Ogdensburg, Borough, Sparta Township, Stanhope Borough, Vernon Township) the Highlands Council will receive a copy of the County WMP for their review and comment. The 8 municipalities conform within the Highlands Preservation Areas, but opted to not conform within Highlands Planning Areas.

## **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**

The first State Development and Redevelopment Plan (State Plan) was adopted in 1992 and the second in 2001. A draft State Strategic Plan was proposed in 2012 and its adoption has been pending for a number of years.

Sussex County had, in accordance with the procedures of the State Planning Commission (SPC), submitted its County Strategic Growth Plan and received Plan Endorsement in 2007. The Sussex County 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, mixed-use centers and nodes rather than scattered throughout the county, and that sprawl is discouraged. In Sussex County, Town Centers such as Sparta, Newton, Vernon and Branchville, to name a few, have growth occurring in sewer service areas. 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.

## **Coordination with Municipalities, Sewer Authorities and Water Utilities**

Municipalities, wastewater and water utilities have been consulted during the entire process and preparation of the County WMP. The County consulted with them by invitation to public meetings, one-on-one discussions with any interested party upon request, requests for formal resolutions of support from all stakeholders, provision of information on the County website [www.sussex.nj.us](http://www.sussex.nj.us) and in public notices. The Sussex County Water Quality Policy Advisory Committee (PAC) is comprised of municipal representatives, regional wastewater utilities, and other stakeholders, and holds public meetings each month. All resolutions from the PAC then go to the County Board of Chosen Freeholders for their action at a public meeting.

## **Wastewater Service Areas**

**Map 3** shows both the existing and proposed wastewater service areas for the Sussex County WMP, and is the basis of the mapping for the municipal chapters included in this WMP. Map 3 (previously called the “Future Sewer Service Area Map”) was approved by DEP in June 2013. Since the DEP approval in 2013, **Appendix P** lists the changes to Map 3 that are being included with this County WMP document.

The Byram Twp Highlands Conforming Municipal WMP was recently adopted in 2012, and some existing T-1 Permits were added to the sewer service areas map.

The “Wastewater Service Area Map” (Map 3) shows wastewater facilities that Discharge to Surface Water and Discharge to Ground Water. The category “Proposed Sites subject to Sussex County WQMP Amendment Procedure” is used on the map for areas proposed by public comment in 2011 and reviewed by DEP, and approved in June 2013. Supporting documentation for these areas is included in the relevant Municipal Chapters. These areas are similar to “unassigned sewer service areas” in that there is no specific wastewater facility proposed to serve them, but DEP has reviewed and approved the sewer areas, after removing environmentally sensitive areas from the map.

All areas not mapped as sewer service areas are by default recognized on Map 3 as Septic Areas or Areas to be served by individual subsurface sewage disposal systems (ISSDS) with planning flows 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 wastewater service area, deemed to be consistent subject to a determination by the DEP to be within the approved wastewater service area.

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 methodology used to conduct the build out analysis to project future wastewater treatment demand to serve future sewer service areas and the nitrate dilution analysis to determine groundwater recharge adequacy to meet future septic area demand outside the service areas the County. In general, composite zoning, as described below, was applied to a parcels and developable area within the sewer service area after removing those areas where it is not expected for development to occur: small irregular polygons, open space, wetlands, 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 4** below. These composite zones are used for build-out analyses.

<b>Table 4 - Summary of Sussex County Composite Zones</b>	
<b>Composite Zone Name</b>	<b>Zone Description And Min. Lot Size</b>
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.

### **Calculating Future Wastewater Needs and Capacity**

The countywide composite municipal zoning information, existing wastewater treatment facilities’ sewer service area (SSA) and environmentally constrained areas were all applied in the build-out analysis to project potential wastewater demands. The build-out results can be used to determine wastewater capacity within the SSA.

### **Municipal Demand Projections: Urban and Non-urban Municipalities**

With the definition of “Urban Municipality” used in the 2016 DEP Water Quality Rules, Sussex Borough is the only municipality in Sussex County that is now classified as “urban”. For an “urban” municipality, there is much less vacant land available, and the sewer demand projections can be calculated differently, using on population and employment projections. However, Sussex Borough has already completed their Build-out analysis using a parcel-based method with current zoning and proposed redevelopment.

For the “non-urban municipalities”, the development of vacant available land is used as the predominant type of growth to determine future wastewater treatment needs. The 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 types of analysis employed in the DEP Build-out Model for calculating future wastewater generation at build out, depending upon whether the area is designated as sewer service area (SSA) or areas to be served by individual septic systems (Septic Areas).

### **Future Wastewater Projections from Sewer Service Areas**

For areas within the sewer service areas, undeveloped and underdeveloped land is calculated by excluding following features because they are unlikely to project 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 (applied as a GIS shapefile/ polygon layer) over the sewer service area to calculate estimated future wastewater needs for each individual Sanitary Treatment Plants. Furthermore, local municipal input was obtained and applied in the process because GIS data cannot capture all the relevant or site specific details about future development, such as reuse of existing buildings.

Build out data for each municipality is presented in Section VIII – Municipal Chapters. The results of the calculated potential new residential units or total commercial square footage 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 generated wastewater. For non-residential land uses the anticipated floor area is multiplied by 0 .1 gallons 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) on individual residential lots 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 concentration 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 plus the existing wastewater discharge volume calculated as the most recent monthly average flow as reported on Discharge Monitoring Reports to the existing permitted capacity of the sewage treatment plant.

**In areas outside of sewer service areas,** the default wastewater management alternative is discharge to groundwater of less than 2,000 gallons per day, 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 are also discharged from a septic system, (e.g., phosphates, chlorides, calcium, sodium, and potassium). 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 potential residential units and equivalent units based on municipal 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 5 - Future Wastewater Planning Flows By Facility**

Sewerage Treatment Plant (STP) with NJPDES Permit numbers	Facility Permitted Flow (MGD)	Existing Flows MGD 2014-April 2015	Projected Residential Dwelling Units	Projected Residential Flow (MGD)	Projected Nonresidential Space (sq ft)	Projected Nonresidential Flow (MGD)	Total Future Planning Flows (MGD)
Sussex County MUA Upper Wallkill -DSW Permit NJ0053350	3.	1.45	3,800	1.14	4,000,000	0.400	3.
Sussex County MUA Vernon - DGW Permit NJ0145688	0.265	0.008	n/a	n/a	n/a	n/a	.265
Newton Town DSW Permit NJ0020184	1.4	1.02	930	0.28	5,300,000	0.530	1.83
Branchville Borough (SCMUA facility) - DGW Permit NJ0146676	0.200	n/a	n/a	0.109	n/a	0.091	0.20
Musconetcong Sewerage Authority DSW Permit NJ0027821	4.31	2.13	n/a	n/a	n/a	n/a	5.79
Hampton Commons (SCMUA facility) - DSW Permit	0.050	0.031	Built out	0.036	140,000	0.014	0.050

n/a = not available

DSW = Discharge to Surface Water

DGW = Discharge to Ground Water

Note: ‘Existing Flows’ were based on monthly average flow for 2014 – April 2015.

\* The MSA facility’s NJPDES permitted flow is 4.31 million gallons per day (MGD) with a future stage flow of 5.79 MGD. MSA also serves 4 towns in Morris County.

**Adequacy of Sewage Treatment Plant Capacity**

Table 6 further separates the countywide projected planning flows by sewage treatment facility and municipality. Details of the projected wastewater flows are included within the municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Table 6 - Future Wastewater Planning Flows by Treatment Plant and Municipality						
Facility	NJPDES Permit	Facility Type Discharge to Surface Water (DSW)	Municipality	*Municipal Allocations Million Gallons Per Day (MGD)	Planning or Build-out Flow (MGD)	
Sussex County MUA Upper Walkkill Sewage Treatment Plant (STP)	NJ0053350	DSW				
			Franklin	0.785	0.780	
	NJ0145688	DGW	Hamburg	0.420	0.410	
			<i>Hardyston</i>	0.607	0.890	
			<i>Sparta</i>	0.210	TBD	
				<i>Sussex Boro</i>	0.464	.355
				<i>Vernon</i>	0.645	0.645
			<i>Wantage</i>	0.063	0.079	
Newton STP	NJ0020184	DSW	Newton	1.40	1.83	
Musconetcong Sewerage Authority STP	NJ0027821	DSW				
			Byram	0.100	0.0985	
			Hopatcong**	0.580	TBD	
			Stanhope	0.541	0.406	

**\* The allocation amounts identified in this document are neither NJDEP-determined nor NJDEP-enforced. They are used entirely by SCMUA, MSA and their customers for allocation and billing.**

**\*\*Hopatcong Municipal Chapter is being prepared with Highlands Council under Plan Conformance.**

**TBD = To Be Determined**

Details of Build-out projections for each respective municipality are shown in their Municipal Chapter. It is noted, for regional facilities such as the SCMUA or MSA, transfer of allocation can be used between municipalities if additional flow is needed. Sparta will complete their Build-out as part of Highlands Council Scope of Work, along with Water Conservation Plan.

Using the Build-out planning horizon for the wastewater plan, the capacity is analyzed 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.

Below are the results of the NJDEP's Division of Water Quality's WWTP Capacity Analysis Tool provided for use as a preliminary analysis to determine if any wastewater facility's Actual Flow are currently at 80% of the Permitted Flow. This initial analysis indicated that the following 3 facilities within Sussex County are listed with existing flow at or over 80% of the current permitted flow value. The data used for this evaluation was the same data that was used for the DEP [Capacity Assurance Program](#) proposed rule changes. It is based on Discharge Monitoring Report (DMR) data from 6/1/2010 through 5/31/2015, using the maximum 12-month period .

**Table 7 – DEP Capacity Analysis: Facilities at 80% of Permitted Flow**

NJPDES Permit #	Facility Name		Permitted Flow (MGD)	Max. Rolling Average * (MGD)	% of Permitted Flow
NJ0020184	NEWTON SEWAGE TREATMENT PLANT (STP)		1.4	1.357	97.0%
NJ0027057	SPARTA PLAZA STP		0.05	0.086	171.0%
NJ0050580	HAMPTON COMMONS STP		0.05	0.040	80.0%

**\* Maximum 12-Month Rolling Average over 5- year  
Time period from 6/1/2010 through 5/31/2015, as provided by DEP staff**

The above information is for guidance on the Capacity Assurance Program requirements provided under the new rule at N.J.A.C. 7:15-4.5(b)5. However, during the summer of 2011, the storms Hurricane Irene and Hurricane Lee resulted in extremely heavy rainfall that skewed the Maximum Rolling Averages for the wastewater facilities. Since wastewater flow data for the listed facilities does vary, DEP staff advised that the County can update the capacity analysis using a more recent 5-year period.

The table below shows updated Maximum Rolling Average during recent 5 Years from 9/1/2011 thru 9/1/2016. Using this updated measure, the resulting “% of Permitted Flow” is less than 80% for the Hampton Commons facility and for Sparta Plaza (also called “White Deer Plaza”). Newton facility is at 82% Maximum 12-Month Average for that time period, but more recent data shows that actual annual flow is less than 80% of permitted flow. The Newton Municipal Chapter does include a discussion of future options to the potential need for additional wastewater treatment capacity, since their planning flow from projected build-out exceeds their permitted flow.

NJPDES #	Facility Name		Permitted Flow (MGD)	Updated Max. Rolling Average (MGD)	% of Permitted Flow
NJ0020184	NEWTON SEWAGE TREATMENT PLANT (STP)		1.4	1.148	82%
NJ0027057	SPARTA PLAZA STP		0.050	0.35	70%
NJ0050580	HAMPTON COMMONS STP		0.050	0.036	72%

**\* Maximum 12-Month Rolling Average over last 5 years  
Time period used was 9/1/2011 through 9/1/2016**

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:

<b>Table 8 - New and Expanded DGW Wastewater Treatment Facilities</b>				
<b>Facility</b>	<b>Domestic (D) or Industrial (I)</b>	<b>NJPDES Permit # DGW</b>	<b>Permitted Flow (MGD)</b>	<b>Future Flow Projection (MGD)</b>
Rachel Manor Property ("Wantage Heights" project) Route 23, Wantage	New Domestic	Proposed DGW	*TBD	0.01995
Nouvelle Associates Route 15, Lafayette	New Domestic	Proposed DGW	TBD	0.0149
North Village Route 15, Sparta	New Domestic	Proposed DGW	TBD	0.120
NEMSA (A.K.A.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
Proposed convenience store Route 206, Andover Twp.	New Domestic	Proposed DGW	TBD	0.00272
Branchville/ SCMUA plant Route 206, Frankford	New Domestic	NJ0146676 DGW	0.170	0.170
Frankford Town Center Route 206, Frankford	New Domestic	NJ0208990 DGW	TBD	0.2104
Crossed Keys B & B Route 603, Green	New Domestic	NJ0159948 DGW	.0045	0.0045
Kimber Petroleum Corp. Route 15, Lafayette	New Domestic	Proposed DGW	TBD	0.0025
Blue Heron Senior Housing Route 15, Sparta	New Domestic	NJ0077127 DGW	0.026	0.026
Wantage Village Development Route 628, Wantage	New Domestic	NJ0166561 DGW	0.01987	0.0398
Highview Estates (Martin property) Route 94, Fredon	New Domestic	NJ0205893 DGW	0.01995	0.01995

\*TBD = To Be Determined

## 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** are regulated by a Discharge to Ground Water permit and therefore the determination that there is sufficient capacity to meet the projected/permitted design flow to meet the needs of proposed development will be address as part of the Department 's NJPDES regularity program.

### 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 not exceed the nitrate dilution target.

**Table 9** provides the resulting values for septic system densities by HUC-11 watershed, then distributed among the municipalities within the watershed. This was accomplished by using the DEP GIS application called the "Wastewater Estimation model builder," which calculated the number of undeveloped acres per municipality, within each HUC-11 watershed. Unlike the build-out analysis performed for sewer service areas, for areas to be served by individual septic systems, not all environmentally sensitive areas are 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. The septic densities calculated by the Nitrate Dilution Model are entered into the Wastewater Estimation model builder application, to establish the maximum number of units that can be built in each municipality/HUC-11 watershed area to meet the 2 parts per million (ppm) nitrate target. Permanently 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.

Total Undeveloped/Underdeveloped Acres Outside of Sewer Area /  
Acres Required per New Septic (HUC11 Septic Density)

= Total New Units Allowed

The description of the NJDEP Model in **Appendix J** states limitations of the model, and that “the model itself does not represent sustainable environmental planning.” It is intended to “supplement county or municipal-wide comprehensive planning that takes additional environmental considerations into account.” For that reason, build-out results from the Sussex County Strategic Growth Plan were also used. One example is in the Flat Brook Watershed, where some Municipal Ordinances limit the number of new units based on environmental constraints such as wetlands and flood plains. The lower results based on Municipal Ordinances and County Strategic Growth Plan were used.

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. 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.

In addition, within the Highlands Preservation Area, the County WMP anticipates that NJDEP will use its regulatory authority to ensure compliance with this nitrate dilution analysis under Highlands rules at NJAC 7:38, development regulated by NJDEP.

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, results for the entire HUC-11 watershed should not exceed the Total New Allowed Units.

Based on recent guidance from DEP staff, the following tables will show calculations for the regional HUC-11 watershed level, and also for municipal areas within each HUC-11 watershed. The build-out numbers labeled as “Total Zoned Units” are compared to the allowable densities as determined through nitrate dilution analysis labeled “Total Allowed Units.” The model provides approximate results for “septic density”, or the average acres required to provide recharge for a single septic system to meet the nitrate target of 2 milligrams per liter (2 mg/l). Therefore, DEP determined that if the calculated Total Zoned Units fall within 10% of the Total Allowed Units, that individual HUC-11 watershed would be deemed as meeting the nitrate standard.

The following tables show the 10% range calculations for those HUC-11 watersheds and portions of municipalities where the Total Zoned Units are initially greater than Total Allowed Units. As the tables show, with a 10% reduction of units, this resolves the issue for most HUC-11 watersheds and municipal areas.

**Table 9 –Septic Densities/Nitrate Dilution Analysis 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
<b>Shimers Brook/ Clove Brook</b> 02040104090 <b>5.0 acres/septic</b>	<b>TOTAL</b>	<b>6,542</b>	<b>1,310</b>	<b>926</b>
	Montague	6,542	1,310	926
<b>Walpack Bend/ Montague Riverfront</b> 02040104110 <b>4.5 acres/septic</b>	<b>TOTAL</b>	<b>8,550</b>	<b>1,990</b>	<b>218</b>
	Montague	1,852	410	157
	Sandyston	4,432	980	61
	Walpack	2,266	500	0
<b>Little Flat Brook</b> 02040104130 <b>4.8 acres/septic</b>	<b>TOTAL</b>	<b>5,332</b>	<b>1,110</b>	<b>1,120 -10% = 1,008</b>
	Montague	1,580	330	300
	Sandyston	3,740	780	820-10%= 738
	Walpack	2	0	0
<b>Big Flat Brook</b> 02040104140 <b>5.2 acres/septic</b>	<b>TOTAL</b>	<b>17,220</b>	<b>3,310</b>	<b>350</b>
	Frankford	190	37	30
	Montague	7,172	1,380	0
	Sandyston	9,774	1,880	320
	Wantage	84	16	0
<b>Flat Brook</b> 02040104150 <b>5.0 acres/septic</b>	<b>TOTAL</b>	<b>3,716</b>	<b>740</b>	<b>8</b>
	Frankford	13	2	2
	Sandyston	858	170	6
	Walpack	2,845	570	0
<b>Van Campens Brk/ Dunnfield Creek</b> 02040104240 <b>4.6 acres/septic</b>	<b>TOTAL</b>	<b>510</b>	<b>111</b>	<b>0</b>
	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
<b>Trout Brook/ Swartswood Lake</b> 02040105030  <b>4.8 acres/septic</b>	<b>TOTAL</b>	<b>7,541</b>	<b>1,570</b>	<b>1,270</b>
	Frankford	279	58	50
	Hampton	1,993	415	475-10%= 428
	Stillwater	5,269	1,097	745
<b>Paulins Kill (above Stillwater Village)</b> 02040105040  <b>4.8 acres/septic</b>	<b>TOTAL</b>	<b>21,249</b>	<b>4,420</b>	<b>4,345</b>
	Andover Twp.	1,067	222	240-10%= 216
	Branchville	37	7	29-10%= 26
	Frankford	4,668	970	987-10%= 889
	Fredon	3,205	667	425
	Hampton	5,850	1,220	1,510-10%= 1,359
	Hardyston	24	5	4
	Lafayette	3,464	720	748-10%= 674
	Newton	158	33	47-10%= 43
	Sparta	1,711	350	140
	Stillwater	1,055	220	218
<b>Pequest River (above Bear Swamp)</b> 02040105070  <b>4.5 acres/septic</b>	<b>TOTAL</b>	<b>10,934</b>	<b>2,435</b>	<b>1,990</b>
	Andover Bor.	400	90	86
	Andover Twp.	4,301	955	920
	Fredon	1,741	385	95
	Green	4,359	968	825
	Newton	28	6	45-10%= 41
	Sparta	105	25	20
<b>Bear Creek</b> 02040105080  <b>4.6 acres/septic</b>	<b>TOTAL</b>	<b>1,940</b>	<b>420</b>	<b>327</b>
	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)
<b>4.7 acres/septic</b>	<b>TOTAL</b>	303	<b>65</b>	<b>105-10%= 95</b>
	Sparta	91	20	18
	Stanhope	212	45	87-10%= 79
<b>Paulins Kill (below Stillwater Village)</b> 02040105050 <b>4.7 acres/septic</b>	<b>TOTAL</b>	<b>3,625</b>	<b>770</b>	<b>632</b>
	Stillwater	3,475	740	607
	Fredon	150	30	25
<b>Rutgers Creek tributaries</b> 02020007000 <b>5.1 acres/septic</b>	<b>TOTAL</b>	<b>689</b>	<b>135</b>	<b>116</b>
	Wantage	689	135	116
<b>Wallkill River (above road to Martins)</b> 02020007010 <b>4.8 acres/septic</b>	<b>TOTAL</b>	<b>6,457</b>	<b>1,340</b>	<b>1,470 -10% = 1,325</b>
	Franklin	659	130	148-10%= 134
	Hamburg	53	10	7
	Hardyston	2,583	540	601-10%= 541
	Lafayette	444	90	130-10%= 117
	Ogdensburg	198	40	50-10%= 45
	Sparta	1,526	320	230
	Vernon	185	40	50-10%= 45
	Wantage	809	170	255-10%= 230
<b>Papakating Creek</b> 02020007020 <b>4.9 acres/septic</b>	<b>TOTAL</b>	<b>18,608</b>	<b>3,795</b>	<b>3,880 - 10% = 3,492</b>
	Frankford	5,166	1,055	1,092-10%= 983
	Lafayette	1,142	230	241-10%= 217
	Sussex Bor.	6	1	2
	Wantage	12,294	2,510	2,547-10%= 2,293
<b>Wallkill River (below road to Martins)</b> 02020007030 <b>5.0 acres/septic</b>	<b>TOTAL</b>	<b>6,170</b>	<b>1,230</b>	<b>1,267 -10% = 1,140</b>
	Vernon	1,227	245	180
	Wantage	4,943	985	1,087-10%= 979

<b><i>Pochuck Creek</i></b> <i>02020007040</i> <b>4.8 acres/septic</b>	<b>MUNICIPALITY</b>	<b>Total Undeveloped Land Available for Dilution (Acres)</b>	<b>Total Allowed Units Based on DEP Septic Density (Average Recharge)</b>	<b>Total Zoned Units Based on Build-out (Average Recharge)</b>
	<b>TOTAL</b>	<b>2,995</b>	<b>620</b>	<b>435</b>
	Hardyston	52	10	15-10%= 14
	Vernon	2,943	610	420
<b><i>Rockaway River</i></b> <i>02030103030</i> <b>4.8 acres/septic</b>	<b>TOTAL</b>	<b>2</b>	<b>0</b>	<b>1</b>
	Sparta	2	0	1

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

For almost all HUC-11 watersheds in the County, the Total Zoned Units fall within 10% of the Total Allowed Units, and are deemed as meeting the nitrate standard. There are four HUC-11 watersheds where the 10% range was used, as shown on Table 9: Little Flat Brook, both Walkkill River watersheds (above and below road to Martins), and Papakating Creek. The Musconetcong River watershed (above Trout Brook) is the only HUC-11 watershed where the Total Zoned Units remain higher than Total Allowed Units, even with the 10% reduction. This occurred in Stanhope Borough, where there are 79 Zoned Units, compared to 45 Allowed Units.

According to DEP, if a HUC-11 watershed or municipal area were projected to exceed the Total Allowed Units in the build-out results, this deficiency would be addressed as part of the ongoing "Continuing Planning Process" that is outlined in the new DEP Water Quality Rule. There are strategies that the DEP identified to be used when the nitrate dilution standard might not be met, according to projected build-out. For example, one of the strategies of the Continuing Planning Process is "Identifying areas appropriate for sewer service area". For a municipality like Stanhope Borough, the number of new septic systems could be reduced if the sewer service area were expanded. During DEP review, some sewer areas were removed in Stanhope Borough, and the Nitrate Dilution Model results show that it would be beneficial for water quality if some sewer areas were again restored in Stanhope.

The Nitrate Dilution Model results in the tables also show that some municipalities have Total Zoned Units exceeding the Total Allowed, even when the overall HUC-11 watershed numbers are within the Allowed limits. This occurs for municipal areas in Branchville, Newton, Franklin, and Vernon. Recent DEP guidance from staff says that there should be strategies for these "municipal deficits". If so, as part of the Continuing Planning Process, we would support restoration of some sewer areas that were removed during DEP review, so more lots could be served by sewers and the number of septic systems reduced in these municipalities.

For Nitrate Dilution Model results, Hampton, Lafayette, Ogdensburg, and Wantage also have areas where Total Zoned units exceed Total Allowed, even though HUC-11 watershed overall has acceptable results. Another DEP strategy to address "municipal deficits" is continued land preservation to protect open space and farmland. With the oversupply of approved large-lot subdivisions in the past decade, DEP has actually purchased some subdivisions that were approved but not constructed. There were two subdivisions in Ogdensburg and two in Hampton Twp. that DEP purchased, and this reduces the Total Zoned Units in each municipality. In Sussex County, there is an active Open Space and Farmland Preservation Program with County Planning staff that meets with two different advisory committees and advise the County Freeholder Board about property and pending applications. Between Municipal and County Open Space funding, and non-profit groups such as The Nature Conservancy, there will continue to be an ongoing process of land preservation and protection in Sussex County.

Another strategy that the DEP has identified for “municipal deficits” in nitrate dilution standard is “Use and Monitoring of Alternative Septic Systems.” This will be addressed more fully as part of the “Septic Management Plan” that will be prepared and submitted separately as part of the Sussex County Wastewater Plan.

## **Environmental Protection**

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 above septic density analysis provides an indication as to whether 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. Maps