

Chapter IX.15

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

WOODSTOWN BOROUGH CHAPTER

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I. INTRODUCTION

This chapter represents the Borough of Woodstown portion of the Salem County WMP. The Salem County WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (N.J.A.C 7:15).

The sewer service area for the Borough of Woodstown includes the entire Borough of Woodstown, and small portions from the adjacent municipalities of Pilesgrove and Mannington Townships. The planning area encompasses 1,434 acres (1,034 acres of which make-up the entire Woodstown Borough).

The Borough of Woodstown is located in the Delaware River Drainage Basin and lies within the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area.

The Borough of Woodstown is an enclave of the Township of Pilesgrove. The Borough has a total area of 1,036 acres (1.62 square miles), including approximately 156.4 acres of which is surface water (ponds, lakes, reservoirs) and 3 miles of streams (shown in Map #1) flowing in the municipality.

The Borough of Woodstown has been developed extensively, with little land area available for future development and has one of the highest population densities in Salem County (2,244.3 people/sq mi), according to (2000) U.S. Census data. The remaining land area for future growth consists of infill development.

Woodstown has a population of 3,505 persons, which can be seen as an 11.8% growth in population over a ten-year period, according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for the Borough of Woodstown according to June 2011 projections prepared by the South Jersey Transportation Planning Organization (SJTPO). In terms of population change over the next two decades, Woodstown is expected to grow slowly between 0.7-0.85% each year according to the most recent study by the New Jersey Department of Labor, prepared in June, 2006. A summary of the NJDOL projected population can be found below in Table 1.2:

Year	Population	Population Change	
		#	avg yearly %
1980	3,250		
1990	3,154	-96	-0.30%
2000	3,136	-18	-0.06%
2010*	3,505	369	1.18%

~Source: Historical U.S. Census data, *2010 U.S. Census

Year	Population	Population Change	
		#	avg yearly %
2010	3,505		
2020	3,797	292	0.83%
2030	4,061	264	0.71%
2040	4,333	272	0.71%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The Woodstown Sewerage Authority (WSA) has submitted several Wastewater Management Plans (WMP's) / Amendments since 1991. These amendments have included proposed upgrades or expansions to the original WSA Sewage Treatment Plant adopted on April 4, 1991. Amendments also specified the inclusion of sites within Pilesgrove Township and Mannington Township, as well as a re-rating of the WSA WWTP capacity from 0.5 million gallons per day (MGD) to 0.53 MGD.

The current WMP in effect for the Woodstown Sewerage Authority (WSA) is an amendment to the Lower Delaware WQMP, which was adopted on March 30, 1999. The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Woodstown Sewerage Authority WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

A 2007 WMP amendment WMP prepared by the WSA Engineer, Remington, Vernick and Walberg (RV&W), was proposed October 27, 2007. The WSA performed an analysis of the existing plant capacity and identified upgrades to the WWTP's clarifiers necessary to expand the SSA to service expected future developments in Pilesgrove Township.

B. CURRENT WASTEWATER SERVICES

The Borough of Woodstown sanitary sewer system serves approximately 3,505 persons within their municipal boundary according to current municipal data and DEP online sources. This equates to 5.3 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the waster treatment plant.

Sewer service areas may include industrial businesses that discharge process wastewater to the collection system for treatment by a facility not owned by that business. The existing sewer service limits, delineated on Map No.2, are serviced by the Woodstown Wastewater Treatment Plant and were derived from existing sanitary sewer infrastructure currently constructed and/or approved.

Areas served by the Woodstown WWTP include the Borough of Woodstown, and small portions of the Township of Pilesgrove and the Township of Mannington located in Salem County, New Jersey. The sewer service area includes all of the Borough of Woodstown excluding Memorial Lake, East Lake, Preserved Lands and the Salem River. These areas were not included within the Sewer Service Area as they are environmentally sensitive areas. The remainder of the Borough of Woodstown is completely serviced by the WSA.

The SSA also includes the buildings presently served by the Salem County Vo-Tech School Treatment Plant in Mannington Township, the Salem County Roads Department and garage and office in Pilesgrove Township, and the proposed Salem County Correctional Facilities in Mannington Township. Further information with regard to Pilesgrove Township is provided within Section 2.2.1 of the Pilesgrove municipality chapter. The facilities served by the WSA WWTP within Pilesgrove Township and Mannington Township municipalities are further defined within their respective municipal chapters.

The Woodstown WWTP is located on West Avenue and operates under NJPDES Permit Number-NJ0022250 effective on April 2007. The WSA-WWTP currently receives contributing flow from residential living and commercial units. Wastewater generated within the WMP existing sewer service area is conveyed to the WWTP, which is permitted to operate at 0.53 MGD. The plant is designed to withstand an instantaneous peak flow rate of 1.4 MGD according to the flow study prepared by RV&W, dated April 2005. The monthly flow generated by these contributors for the 2010 calendar year was 0.346 MGD.

C. CURRENT WATER SERVICES

The Borough of Woodstown community water supply system serves approximately 3,505 persons within their sewer service area according to current NJDEP data. This equates to 5.3 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the waster treatment plant.

The water service area includes the Borough of Woodstown, and designated areas within Pilesgrove and Mannington located in Salem County, New Jersey. The facilities served by the Woodstown water supply system within adjacent municipalities are further defined within those municipal chapters respectively and clearly identified on the mapping provided.

The Borough of Woodstown owns and operates its own potable water supply system. The public is presently serviced from five (5) ground water wells located throughout the Borough. Three of these wells (#2, #3, and #5) withdraw water from the Potomac Raritan Magothy Aquifer (PRM). The other two wells (#4, #6) withdraw from the Mount Laurel-Wenonah Aquifer (MLW). In addition, the Borough of Woodstown constructed a Water Treatment Plant adjacent to Well #4 on West Millbrooke Avenue to treat for iron. Generally, sanitary sewer service is available where potable water service is currently in place. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

D. OVERVIEW OF ENVIRONMENTAL, 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 regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, State, regional or local land use plans would be inconsistent with those protection objectives.

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 endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

A majority of the Borough of Woodstown is served by potable water and sanitary sewer service. The water system utilizes five (5) ground water wells located throughout the Borough. Three (3) wells are located within the Potomac-Raritan-Mogathy (PRM) Aquifer, which have exhibited elevated sodium levels. The secondary drinking water standard for sodium is 50 ppm and levels exceeding 100ppm have been recorded for these wells. The other two (2) wells withdraw from the Mount Laurel-Wenonah (MLW) Aquifer (MLW). The NJDEP has concerns regarding the productivity/sustainability of wells in this aquifer. The municipality has not identified any other issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Woodstown Sewerage Authority has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Borough's Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, and C-1 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map No.3 consist of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental and local land use planning objectives discussed above, Map No.2 and Map No.3 identify areas presently served by public sewers and the appropriate areas to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewerage treatment plant authorized under this plan to accept and treat wastewater from its corresponding sewer service area has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, and projected build-out flow summarized by municipality.

Based on the buildout analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, sufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Area. Future expansion of the identified treatment works is not required to meet the future wastewater generation needs of the municipality.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included in the WSA sewer service areas in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. WASTEWATER TREATMENT PLANT

Map No. 2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term “actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

The WSA WWTP is a localized system for the conveyance, treatment, and disposal of the municipalities' wastewater within its service area. The WWTP treats domestic waste as well as industrial waste. Treated wastewater is discharged to the Salem River under NJPDES Permit No. NJ0022250.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

The Woodstown Sewerage Authority (WSA) owns and operates one wastewater treatment facility, a series of pump stations, and force mains used to convey wastewater flow to the WWTP. The sanitary sewer collection system in Woodstown is owned and maintained by the Authority. There is approximately 18.1 miles of sanitary sewer main with pipes ranging in size from 6 inches to 12 inches in diameter within the sewer service area. The Authority currently owns and operates seven (7) pump stations. All flows are conveyed to the WSA WWTP for treatment. Map No.2 depicts the areas actively served by existing wastewater facilities, and the tables in Chapter 7 (VII) provide detailed information on each facility. “Map No.2 shows the major interceptors, trunk lines and pumping stations within the various sewer service areas for public wastewater treatment facilities.

C. 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. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Municipal Map Designation	Facility Name	NJPDES # & Discharge Type	Discharge Type (Groundwater or Surface Water)	Facility Table Number
51	Woodstown WWTP	NJ0022250 Municipal Multi-Municipality	DSW-A	51

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

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. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. However, the Borough of Woodstown does not contain any industrial wastewater treatment facilities.

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally the remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water. However, the proposed SSA for the Borough of Woodstown includes the entire municipality minus environmentally constrained areas. Consequently, general wastewater management areas for septic systems have not been designated and do not apply to this municipality.

F. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the WSA WWTP were calculated based on flows metered by WSA. The present average annual wastewater discharged for 2010 is 0.346MGD. The present average flow includes residential, commercial and industrial flows. The following table 2.F.1 summarizes the permitted wastewater treatment plant capacity and associated average daily flows for 2010.

TREATMENT FACILITY	NJPDES Permit #	Permitted Capacity (MGD)	Average Daily Flow 2010 (MGD)	Build-Out Projection (MGD)
Woodstown WWTP	NJ0022250	0.53	0.346	0.152

Included within the above existing wastewater flows are connections located within the Townships of Pilesgrove and Mannington. The flows from these connections are identified within the specific municipal chapter or facilities tables provided within the appendix of this report. Monthly wastewater flow data for 2010 is identified in Table 2.F.2 below.

Month	Monthly Avg. (mgd)		Estimated Monthly Avg. (mgd)	
			Woodstown Borough	Contributing Municipalities
January	0.359		0.359	0.000
February	0.439		0.439	0.000
March	0.506		0.506	0.000
April	0.396		0.396	0.000
May	0.321		0.321	0.000
June	0.310		0.310	0.000
July	0.298		0.298	0.000
August	0.292		0.292	0.000
September	0.303		0.303	0.000
October	0.319		0.319	0.000
November	0.310		0.310	0.000
December	0.307		0.307	0.000
Annual Average	(mgd)	0.346	0.346	0.000
	(mgm)	10.539	10.539	0.000
	(mgy)	126.469	126.469	0.000

The monthly flows indicated above are inclusive of contributory flows from connections located within Pilesgrove Township and Mannington Township. The specific flows from these adjacent municipalities are provided within those individual municipal chapters respectively.

G. EXISTING WASTEWATER TREATMENT

The WSA WWTP currently operates under NJPDES permit NJ0022250. The plant was designed for an average flow of 0.53 MGD, which is the present permitted capacity. A maximum plant capacity analysis was performed by the WSA Engineer Remington, Vernick & Walberg (RV&W) in April of 2005. This study identified the existing and maximum capacities of facility components.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

The Borough of Woodstown is presently serviced from five (5) ground water wells located throughout the Borough. Three of these wells (#2, #3, #5) withdraw water from the Potomac Raritan Magothy Aquifer (PRM). The other two wells (#4, #6) withdraw from the Mount Laurel-Wenonah Aquifer (MLW). In addition, the Borough of Woodstown constructed a Water Treatment Plant adjacent to Well #4 on West Millbrooke Avenue to treat for iron.

Generally, sanitary sewer service is available where potable water service is currently in place. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

The Borough of Woodstown water supply system serves the Borough of Woodstown, and designated areas within Pilesgrove and Mannington located in Salem County, New Jersey.

The following Table 2.H.1 summarizes each public community water supply facility currently serving the municipality. The franchise areas are depicted on Map No.1.

Well Permit Number	Well Designation	Pump Capacity (gpm)	Aquifer
5000000038	2	425	PRM
3000001441	3	600	PRM
3000009510	4	200	MLW
3000013120	5	550	PRM
3000019108	6	200	MLW

Information presented within this municipal chapter was obtained from the most current water allocation permit, previous WMP documents provided by the County, online DEP sources and the Borough of Woodstown.

The three (3) wells located within the Potomac-Raritan-Mogathy Aquifer range in depth from 675 feet to 712 feet below the ground surface. As a result of the this depth, the wells located within the Potomac-Raritan-Mogathy Aquifers are below sea level and the sodium levels are considered high (175-315 mg/L). The chlorides (135-240 mg/L) and total dissolved solids (565-860 mg/L) are also considered to be at high levels.

In an effort to reduce the total withdrawal from the Potomac-Raritan-Mogothy Aquifer, the Borough of Woodstown has drilled Well #4 within the Mount Laurel-Wenonah Aquifer. Well #4 is located along East Millbrooke Avenue near the Mary Shoemaker School. Well #4 was drilled to a depth of 160 feet with a rated capacity of 400 gallons per minute. The potable water obtained from Well#4 is low in sodium (2-3 mg/L), chlorides (5 mg/L) and total dissolved solids (300 mg/L).

The Borough of Woodstown constructed a Water Treatment Plant adjacent to Well #4 on West Millbrooke Avenue to treat the effluent for iron. The Water Treatment Plant removes iron by means of continuous regeneration potassium permanganate. The effluent is not treated for hardness at the Water Treatment Plant.

The Borough of Woodstown drilled Well #5 adjacent to Well #4. Well #5 was drilled within the Potomac-Raritan-Mogothy Aquifer to a depth of 675 feet and a rated pumping capacity of 500 gpm. Well #5 has the same effluent characteristics as Well #2 and Well #3, all drilled within the Potomac-Raritan-Mogothy Aquifer. The effluent is high in sodium, chlorides, and total dissolved solids while having low hardness, iron and manganese levels. The effluent from Well #5 is mixed with the effluent from Well #4 at a ratio of 2.3:1 in the Water Treatment Plant to bring the total hardness within acceptable levels.

The Borough of Woodstown drilled Well #6 within the Mount Laurel-Wenonah Aquifer. Well #6 is approximately 650 feet from Well #4 and Well #5 and is piped to the existing Water Treatment Plant located on East Millbrooke Avenue.

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

The Borough of Woodstown currently has an average daily usage of approximately 0.379 million-gallons/day based upon the 2010 calendar year. The peak annual and monthly water demand over a period of 5 years between 2006 through 2010, occurred in 2008.

The following Table 2.I.1 summarizes current water allocation diversion limits permitted for the public community water system.

Table 2.I.1: Water Allocation and Demand 2010				
Water Company	Permit # / Program Interest ID	Water Allocation (mgm) / (mg)	Average Demand (mgm) / (mg)	Build-Out Projection (mgm) / (mg)
Woodstown Water Dept	5167 / WAP070001	19.00 / 174.10	11.54 / 138.448	5.055 / 59.523

The following Table 2.I.2 summarizes historical daily, monthly and annual water demands currently supplied by the public community water system. The districts and franchise areas are depicted on Map No.1.

Year	Annual Demand Total (mgy)	Average Daily Demand (mgd)	Average Monthly Demand (mgm)	Peak Monthly Demand (mgm) / (Month)	
2006	132.374	0.363	11.031	14.257	August
2007	141.088	0.387	11.757	15.076	July
2008	141.631	0.388	11.803	15.432	July
2009	130.790	0.358	10.899	13.775	July
2010	138.448	0.379	11.537	14.054	August

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. 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.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.

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

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. 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.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. 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 habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to geographical features and political boundaries within the municipality. No exceptions were made for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Table 4.D.1 Information Sources for Environmentally Constrained Areas		
Category	Source	Source Location
Wetlands	NJDEP	www.state.nj.us/dep/gis
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs
Stream Corridors	NJDEP	www.state.nj.us/dep/gis
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis
Zoning	Municipality	Current Ordinance

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Salem City WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the future sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The build out in the non-sewer service area was calculated by applying the zoning over all undeveloped land except polygons too small to support additional development. 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 build out method 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 within this chapter and in the facilities tables found in the appendices at the end of this document.

A. 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 are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and was been utilized for the associated build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “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. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
C1	COMMERCIAL	14.6	0.71
C2	COMMERCIAL	2.8	0.50
C3	COMMERCIAL (PRINCIPAL USE, SHOPPING CENTER)	31.8	9.65
CONS	CONSERVATION	133.3	0.34
CR	COMMERCIAL	112.5	0.35
IR	INDUSTRIAL	14.4	12.39
LC	LIGHT COMMERCIAL	21.4	0.64
LI	LIGHT INDUSTRIAL	67.2	11.13
R1	RESIDENTIAL	15.5	0.00
R2	RESIDENTIAL	57.1	2.86
R3	RESIDENTIAL (SINGLE FAMILY, DUPLEX / TWIN)	88.8	3.05
R4	RESIDENTIAL	196.9	0.00
R5	RESIDENTIAL	100.6	21.60
R6	RESIDENTIAL (SINGLE FAMILY, MULTI-FAMILY, CLUSTER)	176.7	25.65
R7	RESIDENTIAL	98.0	0.00
SI	SUPPLY INDUSTRIAL	13.5	0.00

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities. An urban municipality is defined as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out permanently preserved open space.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

The Borough of Woodstown does not meet the definition of an urban municipality as defined above. Consequently, future wastewater build out projections are based on existing zoning identified below.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land will be the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out, based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities' Sewer Service Areas

In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. The existing zoning is then applied to the remaining developable land area within the sewer service area(s) to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. Build out data for each municipality has been provided on a compact disk (cd) for reference.

The Borough of Woodstown's existing sewer service area extends to the municipal boundary and serves portions of Pilesgrove Township and Mannington Township as defined on Map No.3. Consequently, infill development has been identified by utilizing a parcel based build-out approach as defined below. The zoning based analysis was not required for this municipality.

2. Existing Sewer Service Area Build-Out Analysis

The build-out of the existing sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a "parcel based" build out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial and industrial flows were projected assuming 0.1 GPD/ sq.ft. of building area.

Table 5.E.2.1 summarizes the build-out flow projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 5.E.2.1: FWSA Overall Sewer Service Area Build-Out Projections				
Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
C1	0.71	15,385	0	1,538
C2	0.50	1	850	850
C3	9.65	16	850	12,800
CONS	0.34	0	300	0
CR	0.35	1	800	300
IR	12.39	111	800	33,300
LC	0.64	4	800	3,200
LI	11.13	3	2,614	7,842
R1	0.00	0	300	0
R2	2.86	17	225	3,825
R3	3.05	24	225	5,400
R4	0.00	0	300	0
R5	21.60	79	300	23,700
R6	25.65	92	300	27,600
R7	0.00	0.00	300	0
S1	0.00	0.00	300	0
Pilesgrove School				5,000
Mannington Previously Allocated Flow				27,000
TOTAL			(gpd)	152,355
			(mgd)	0.152

The notes referenced below are indicated in the above table.

Notes:

- a. The Developable Acres represents the identified acreage per zone within the FWSA.
- b. The POTENTIAL UNITS represent the number of remaining units that may be constructed within each zone within the sewer service area.
- c. Average Daily Flow has been calculated based on current NJDEP regulations.
- d. The TOTAL ADF represents the remaining potential build-out within the existing sewer service area.
- e. Conservation Zone CONS, Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings.
- f. Residential Zones, R1, R4, R5, R6 & R7, Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings.
- g. Residential Zones, R2 & R3, Average Daily Flow Based on 225 GPD established for 1-2 bedroom dwellings.
- h. Commercial Zone LC, ADF Based on 0.1 gal/SF established for a Floor Area of 8,000sf.
- i. Commercial Zone C1, Average Daily Flow Based on 0.1 gal/SF established for a 2:1 Floor Area Ratio Applied to Lot Acreage.
- j. Commercial Zone C2, ADF Based on 0.1 gal/SF established for a Floor Area of 8,500sf
- k. Commercial Zone C3, ADF Based on 0.1 gal/SF established for a Floor Area of 8,500sf for parcels less than 5 acres; 7500sf for greater than 5 acres
- l. Industrial Zones LI, Average Daily Flow Based on 0.1 gal/SF established for Offices and Industry (20% coverage of 3 Acres or 26,136 SF respectively)
- m. Table Information has been adjusted to reflect previously approved developments. Information provided by Woodstown.
- n. A reduction of available lot area has been indicated to account for Right-of-Way, Open Space and Basin requirements of potential development.
- o. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

3. Future Sewer Service Area Buildout Analysis

Generally, the future sewer service area build out is prepared utilizing a “zoning based” build out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

All proposed flows for the Borough of Woodstown, included as part of this WMP submission, are identified within section 5.E.2 above.

F. FUTURE WASTEWATER OUTSIDE OF SEWER SERVICE AREAS

Generally, the default wastewater management alternative to support development in areas that are not designated as sewer service area is discharge to groundwater less than 2,000 gallons per day. A nitrate dilution analysis for septic systems is typically performed, in similar fashion to that conducted for sewer service areas, except that environmentally sensitive areas are not removed prior to performing the build out analysis. The intent of this analysis is to assess the available dilution on a HUC 11 basis used to establish the maximum number of units that can be built in a watershed and continue to meet the regulatory nitrate target.

The Borough of Woodstown’s existing sewer service area extends to the municipal boundary. Consequently, the nitrate dilution analysis necessary for assessing the future wastewater outside of a sewer service area is not applicable.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing wastewater treatment capacity with existing and future flow demands within the municipality. Current treatment capacity was taken from the most current NJPDES permit, and average daily flows for the WWTP were taken from the NJDEP website database for NJPDES facilities. The final column determines whether existing capacity is sufficient to accommodate the projected flows. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Table 6.A.1: Wastewater Treatment Plant Capacity					
Treatment Works	Permit #	Current Treatment Capacity (mgd)	Average Daily Flows 2010 (mgd)	FWSA Build-Out Projection (mgd)	Remaining Treatment Capacity (mgd)
Woodstown WWTP	NJ0022250	0.53	0.346	0.152	0.032

The total treatment capacity for the sanitary sewer system that serves the municipality (0.53 MGD) is greater than the projected flows necessary to support existing demands and proposed development within the sewer service area (0.498 MGD). The calculations were based on the proposed build-out projections and average daily flow values utilized within the regulations for each type of development. Based on the analysis presented above, sufficient wastewater treatment capacity exists to accommodate the currently proposed FWSA.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

This section is not applicable to this municipality, as sufficient capacity currently exists to address the future wastewater management needs projected by the plan.

C. ANTIDegradation ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

D. DISCHARGES TO GROUND WATER

This Section is not applicable as the Borough of Woodstown’s existing sewer service area extends to the municipal boundary and a nitrate dilution analysis has not been provided, as indicated above.

E. ADEQUACY OF DILUTION TO MEET FUTURE NON-SEWER SERVICE AREA DEMAND

Generally, a wastewater estimation tool, provided by the Department is used to compare existing zoning to the available nitrate dilution within each HUC11 in an effort to determine whether adequate dilution is available to meet future non-sewer service area demands. However, as indicated above, the Borough of Woodstown’s existing sewer service area extends to the municipal boundary and this analysis is not applicable for this municipality.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build-out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water demand within the existing sewer service area were compared. A build-out projection of the proposed sewer service area was then prepared to determine the additional water demands that may result. These demands were also compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. SUFFICIENCY OF WATER SUPPLY

The Borough of Woodstown’s current water allocation and existing average water demands are identified in Section 2 of this municipal chapter. Development of vacant land was the predominant factor in determining future water supply needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide potable water while protecting surface and ground water quality for the entire projected build-out allowable by zoning.

Proposed daily demands required to support development within the future sewer service area utilized the same method of analysis as was performed for the sanitary sewer analysis. Future demands are generally evaluated and projected based on two sets of data; water demands projected within the existing sewer service area and proposed water demands for the expanded sewer service area. Future water demands within the existing sewer service area utilize a “parcel based” method for calculating the demand of infill development. Whereas, future water demands within the expanded sewer service area utilize a “zoning based” method for calculating the demand.

Water demands were evaluated based on current zoning of identified developable land. All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

Proposed daily demands were evaluated and projected based on two sets of data. This included identified developable land within the existing sewer service area or infill development as well as proposed future development within the expanded sewer service area. The summaries for each of these sets of data are provided below.

1. Existing Sewer Service Area: Water Build Out Analysis

The build-out of the sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build-out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Generally, residential flows were projected assuming 320gpd / dwelling unit. Commercial flows were projected assuming 0.125 GPD/sq.ft. of building area.

Table 7.A.1.1 summarizes the build-out water demand projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 7.A.1.1: FWSA Water Supply Build-Out Projections

Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
C1	0.71	15,385	0	1,923
C2	0.50	1	1,063	1,063
C3	9.65	16	1,063	14,504
CONS	0.34	0	320	0
CR	0.35	1	1,000	320
IR	12.39	111	1,000	35,520
LC	0.64	4	1,000	4,000
LI	11.13	3	3,267	9,801
R1	0.00	0	320	0
R2	2.86	17	225	3,825
R3	3.05	24	225	5,400
R4	0.00	0	320	0
R5	21.60	79	320	25,280
R6	25.65	92	320	29,440
R7	0.00	0.00	320	0
S1	0.00	0.00	320	0
Pilesgrove School				5,000
Previously Allocated Demand				27,000
TOTAL			(gpd)	163,076
			(mgd)	0.163
			(mgm)	5.055
			(mgy)	59,523

The notes referenced below are indicated in the above table.

Notes:

- a. The Developable Acres represents the identified acreage per zone within the FWSA.
- b. The POTENTIAL UNITS represent the number of remaining units that may be constructed within each zone within the sewer service area.
- c. Average Daily Flow has been calculated based on current NJDEP regulations.
- d. The TOTAL ADF represents the remaining potential build-out within the existing sewer service area.
- e. Conservation Zone CONS, Average Daily Flow Based on 320 GPD established for 3 bedroom dwellings.
- f. Residential Zones, R1, R4, R5, R6 & R7, Average Daily Flow Based on 320 GPD established for 3 bedroom dwellings.
- g. Residential Zones, R2 & R3, Average Daily Flow Based on 225 GPD established for 1-2 bedroom dwellings.
- h. Commercial Zone LC, ADF Based on 0.1 gal/SF established for a Floor Area of 8,000sf.
- i. Commercial Zone C1, Average Daily Flow Based on 0.125 gal/SF established for a 2:1 Floor Area Ratio Applied to Lot Acreage.
- j. Commercial Zone C2, ADF Based on 0.125 gal/SF established for a Floor Area of 8,500sf
- k. Commercial Zone C3, ADF Based on 0.125 gal/SF established for a Floor Area of 8,500sf for parcels less than 5 acres; 7500sf for greater than 5 acres
- l. Industrial Zones LI, Average Daily Flow Based on 0.125 gal/SF established for Offices and Industry (20% coverage of 3 Acres or 26,136 SF respectively)

2. Future Sewer Service Area: Water Buildout Analysis

Generally, the future sewer service area build-out is prepared utilizing a “zoning based” build-out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

The Borough of Woodstown’s existing sewer service area extends to the municipal boundary. All proposed water demands for the Borough, included as part of this WMP submission, are identified within section 7.A.1 above.

3. Analysis of Water Capacity to Meet Supply Needs

This section of the wastewater management plan analyzes whether there is sufficient potable water treatment capacity to meet the needs of the Municipality based on the projections described above. This requires a comparison of the projected future demand to the existing capacity of the water supply system.

Table 7.A.3.1 provides a comparison of existing water allocation with existing and future water demands within the municipality. The final column determines whether existing capacity is sufficient to support projected daily demands.

Water System	Permit #	Current Water Allocation (mgm)/(mgy)	Average Demand 2010 (mgm)/(mgy)	FWSA Build-Out Projection (mgm)/(mgy)	Remaining Water Allocation (mgm)/(mgy)
Woodstown Water Department	WAP070001	19.00 / 174.10	11.54 / 138.448	5.055 / 59.523	2.405 / (-23.871)

The total monthly water allocation for the water system that serves the municipality is greater than the water supply necessary to support existing demands and proposed development within the sewer service area. However, annual allocation would be insufficient to support complete development of the FWSA. The projected calculations were based on the proposed build-out projections and average daily demand values utilized within the regulations for each type of development.

Based on the analysis presented above, the Borough of Woodstown appears to have sufficient monthly allocation to accommodate the FWSA water build out, but the annual diversion may be exceeded if the complete FWSA build-out is realized.

As population increases and development expands, the Borough will need to obtain water supply to support the FWSA in its entirety. Water conservation measures could be enforced during peak water use periods in an effort to reduce the projected annual water demand. However, it should be noted that conservation measures alone would likely not be sufficient as the Borough's probably already realized much of the available reduction as evidenced by low peak per capita use and low unaccounted for water.

In addition to water conservation measures, the Borough may also elect to obtain an additional/alternative water supply source. The Borough will need to review available options and determine the feasibility of each option. Water supply additions/alternatives that could be evaluated consist of interconnection to NJAW, construction of new wells, and desalination.

1. Interconnection with NJAW: The closest potential interconnection with NJAW is approximately 6 miles from Woodstown. A pipeline of this length would be cost prohibitive and could have significant obstacles which may include extending water supply mains through Preserved Farmland, road opening/railroad crossing permits, stream crossings/FW wetlands permits, etc.
2. Construction of New Wells: As stated above, the Department has concerns regarding the water quality and quantity associated with Woodstown's current groundwater diversion sources. Based on a cursory review of available published data from USGS, the Upper PRM aquifer may be a potentially viable supplemental source of supply.
 - a. Woodstown should consider testing the water quality (i.e. for Sodium and Chloride) in the Upper PRM aquifer before committing any substantial resources to installing well(s) in the Upper PRM.
 - b. If the water quality is found acceptable and quantity sufficient, Woodstown could even pursue replacing some or all of the existing Middle PRM wells with Upper PRM well(s).
 - c. It should be noted that additional discussions would have to be engaged between Woodstown and the Bureau of Water Allocation and Well Permitting and the New Jersey Geological and Water Survey before pursuing the installation of any new wells in the area.
3. Desalination: Construction, operation and maintenance costs may be cost prohibitive based on Woodstown's population and demands.

Given the options indicated above and considering the small size and location of the municipality, in order for the Borough to obtain adequate annual allocation to support the water supply demands of the existing and future sewer service area, a significant investment could be required on the part of Woodstown.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Woodstown proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Woodstown Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water Quality Standards at NJ.A.C. 7:9-6." Areas so designated are included on Map No.3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. Map #1: WMP Municipal Map/Water Infrastructure

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. The map also includes Woodstown Borough's municipal boundary, HUC-11, and existing water service infrastructure. There are no areas within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas within the Borough of Woodstown. The Woodstown Sewerage Authority regulates all public sewer and water within the WMP planning area.

2. Map #2: Existing Facilities & Service Areas

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of Salem City, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. Map #3: Proposed Facilities & Service Areas

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. Map #4: Woodstown Borough Zoning Map

The map depicts the current zoning of the Borough of Woodstown. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Zone	Zone Title	Minimum Lot Area	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum side yard setback	Minimum rear yard setback	Maximum Building Height	Maximum Building Coverage	Maximum Impervious Coverage	
CONS	CONSERVATION	5 ACRES	300'	400'	80'	30'	60'	35'	5%	5%	
R1	RESIDENTIAL	5 ACRES	150'	200'	40'	30'	40'	35'	20%	10%	
R2	RESIDENTIAL	6,000 SF	50'	100'	30'	10'	20'	35'	20%	10%	
R3	RESIDENTIAL	SINGLE FAMILY DETACHED	6,000 SF	50'	100'	30'	10'	20'	35'	20%	10%
		TWIN / DUPLEX	7,500 SF	60'	120'	30'	10'	20'	25'		
R4	RESIDENTIAL	6,800 SF	65'	100'	30'	10'	20'	35'	20%	10%	
R5	RESIDENTIAL	8,000 SF	70'	100'	35'	15'	25'	35'	20%	10%	
R6	RESIDENTIAL	SINGLE FAMILY DETACHED	12,000 SF	90'	125'	35'	15'	20'	35'	20%	10%
		MULTIFAMILY	5 ACRES	300'	400'	40'	20'	40'	35'	40%	30%
		CLUSTER	8,000 SF	70'	100'	35'	15'	25'	35'		
R7	RESIDENTIAL	18,000 SF	120'	140'	35'	20'	35'	35'	20%	10%	
LC	LIGHT COMMERCIAL	6,000 SF	50'	100'	30'	10'	20'	35'	20%	10%	
C1	COMMERCIAL	2.0 (FLOOR AREA RATIO)	30'	100'				40'			
C2	COMMERCIAL	25,000 SF	125'	175'	50'	15'	20'	35'	15%	15*	
C3	COMMERCIAL	PRINCIPAL USE	25,000 SF	125'	175'	50'	15'	20'	35'	15%	65%
		SHOPPING CENTER	5 ACRES	400'	400'	150'	15'	40'	35'	25%	55%
SI	SUPPLY INDUSTRIAL	1 ACRE	150'	200'	50'	25'	25'	40'			
LI	LIGHT INDUSTRIAL	3 ACRES	250'	300'	50'	30'	50'	40'			

5. Map No.5A: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. Map No.5B: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. Map No.5C: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.