Chapter IX.2

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

CARNEYS POINT TOWNSHIP CHAPTER

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I. INTRODUCTION

This chapter represents the Carneys Point Township portion of the WMP. The 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 (NJAC 7:15).

The sewer service area for the Township of Carneys Point includes the entire Township of Carneys Point, and small portions Oldmans Township. The planning area encompasses 11,730 acres, (11,431 acres of which make-up the Township of Carneys Point).

Carneys Point Township 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 Township is bounded by five (5) municipalities including Oldmans Township (to the northeast), Pilesgrove Township (to the east), Mannington Township (to the south), Pennsville Township (to the southwest), and Penns Grove Borough, which is an enclave of Carneys Point along the township's western boundary created by the Delaware River. According to the U.S. Census Bureau, Carneys Point encompasses a total area of 17.8 square miles, approximately 313.8 acres of which is surface water (ponds, lakes, reservoirs), and approximately 56.5 miles of streams (shown in Map No.1) flow in the municipality. The land in this municipality has been developed in sparse places along the New Jersey Turnpike, and contains urban development in the area surrounding Penns Grove Borough. In terms of land development, the municipality is relatively split among usage for agriculture, designated forest, urban development, and wetlands. Due to its size and partial development, Carneys Point Township has a somewhat low population density (439 pp/sq mi) according to (2000) U.S. Census data. The remaining land available for future development consists of under and undeveloped parcels throughout the municipality.

Carneys Point Township has a population of 8,049 persons. The municipality's population trend over the last decade can be seen as a 0.48% growth in population each year (4.8% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for Carneys Point Township. In terms of population change over the next three decades, Carneys Point growth is expected to continue experiencing small growth according to the most recent study by the New Jersey Department of Labor, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Table 1.1: Carneys Point- Historic Population

Year	Population	Population Change	
		#	avg yearly %
1980	8,396		
1990	8,443	47	0.06%
2000	7,684	-759	-0.90%
2010*	8,049	365	0.48%

~Source: 1990 U.S. Census, *2010 U.S. Census

Table 1.2: Carneys Point- Projected Population

Year	Population	Population Change	
		#	avg yearly %
2010	8,049		
2020	8,722	673	0.84%
2030	9,330	608	0.70%
2040	9,957	627	0.67%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPS

The Township of Carneys Point has submitted several Wastewater Management Plans (WMP's) / Amendments since 1991. These amendments have included proposed expansions to the Carneys Point Sewer Service Area within Carneys Point Township and inclusion of specific sites within Oldmans Township. Proposals most recently included the consolidation of the Penns Grove and Carneys Point Sewer Service Areas, and conveyance of wastewater flows from the Carneys Point Sewage Treatment Plant (STP) to the DuPont Chamber Works for final treatment until necessary final treatment upgrades are made to the CPSA STP.

The current WMP in effect for the Township of Carneys Point is an amendment to the Lower Delaware WQMP, which was adopted on December 16, 1999. The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Carneys Point Township 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.

Most recently proposed was a 2006 WMP revision prepared by the engineer Schoor DePalma, dated December 22, 2006. This revision called for the addition of 87.5 acres within Oldmans Township to accommodate the second phase development of the Gateway Business Park (formally known as the Salem County Industrial Park. This revision to the WMP was approved by the DEP on July 20, 2007.

B. CURRENT WASTEWATER SERVICES

The Township of Carneys Point community wastewater system serves approximately 5,296 persons within the municipality according to current municipal data. This equates to 8.1 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the wastewater treatment plant. The Carneys Point Sewer Service Area 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 Carneys Point Wastewater Treatment Plant and were derived from existing sanitary sewer infrastructure currently constructed and/or approved.

The current Lower Delaware WMP amendment from December 16, 1999 identified a sewer service area expansion of the CPSA Sewage Treatment Plant (STP) within Carneys Point Township to serve most of the Township to the north of the New Jersey Turnpike except for two parcels, one bordered by the Oldmans Township boundary, the N.J. Turnpike, West Quillytown Road and Pennsville-Auburn Road and the other a wetlands area south of Layton Well Pit in the Game Creek Watershed. Areas south of the N.J. Turnpike also to receive sewer service include the existing Cedar Crest Manor development, the Route 48 corridor, and the eastern portion of the U.S. Route 40 corridor. Areas excluded from the SSA are designated as having subsurface sewage disposal systems with wastewater planning flows less than 2,000 gallons per day.

The wastewater management planning area includes the Township of Carneys Point, and designated areas within Oldmans Township located in Salem County, New Jersey. The areas in Oldmans are service connections to the N.J. Turnpike Service Areas 1S and 1N. The facilities served by the Carneys Point WWTP within Oldmans Township are further defined within the Oldmans Township municipal chapter and clearly identified on the mapping provided.

The Carneys Point STP is located on "E" Street and Cleveland Avenue, Block 157, Lot 2. This facility operates under NJPDES Permit Number-NJ0021601 effective on April, 2007. Wastewater generated within the WMP existing sewer service area is conveyed to the STP, which is permitted to operate at 1.3 MGD. The CPSA-STP currently receives contributing flow from residential living units, commercial and industrial uses. The monthly flow generated by these contributors for the 2010 calendar year was 1.069 MGD.

C. CURRENT WATER SERVICES

Water Service in the Township of Carneys Point is currently provided by two community water systems. The New Jersey American Water Company serves approximately 5,143 persons within Carneys Point's planning area, and is the largest provider of water service to the municipality. The population served by NJAW equates to 7.78% percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the water system.

The New Jersey American Water Company (previously the Penns Grove Water Supply Company) was identified in the 1999 Carneys Point WMP Amendment as the water supplier for Carneys Point Township. NJAW presently draws from seven (7) ground water wells. All wells are located within Carneys Point and draw from the Potomac Raritan Magothy (PRM) Aquifer. Two of the wells pump water from the Lower PRM while the other five draw from the Upper PRM source. Aside from NJAW, Handy's Mobile Park operates its own community water system to serve a total of 90 residents, and is the only other community water system serving Carneys Point Township. The remaining population within Carneys Point Township is served by individual or private water wells.

NJAW completed improvements in 2010 to interconnect their Penns Grove water system and Logan Township water system to allow for operational flexibility. The Logan system of NJAW draws from five (5) ground water wells, as noted in Table 2.H.1. 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

Carneys Point Township does not currently own or operate a public community water supply system. The Township's potable water within the sewer service area is primarily supplied by NJAW. The Township's water supply is sufficient to meet the current demand. However, an additional source of water supply will be necessary in order to accommodate development within the FWSA. Other than the need for additional water supply in the future, the municipality has not identified any other issues regarding water quality or concerns with non-sewered areas**.**

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Township of Carneys Point has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Township'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, FW-2 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map 3 consists 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 and the identified areas that are currently built but do not currently have adequate wastewater treatment, Map 2 and Map 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 sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, projected build-out flow summarized by municipality.

Based on the build-out analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, insufficient wastewater treatment capacity exists to accommodate the complete buildout of the FWSA. Future expansion of the identified treatment works or identification of an alternative treatment works will be 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.

2. Expansion of the existing treatment works or construction of a new treatment facility will be required to meet the future wastewater generation needs of the municipality.

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 CPSA Sewage Treatment Plant is a localized system for the conveyance, treatment, and disposal of municipalities' wastewater within the CPSA sewer service area. The plant operates under the NJPDES Permit No. NJ0021601 issued 6/1/2010, which will expire 9/30/2015. The STP treats domestic waste as well as industrial waste at a present permitted capacity of 1.3 MGD. Treated wastewater is discharged to the Delaware River- Zone 5 via Helms Cove. This Treatment system meets current permitted parameters under current conditions with Biochemical oxygen demand (BODs) and total suspended solids (TSS) removal efficiencies of the overall treatment system averaging 96.81% (BOD) and 98.07 % (TSS).

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

The Carneys Point Sewerage Authority (CPSA) owns and operates one STP, a series of pump stations, force mains and sanitary sewer, which are used to convey wastewater to the treatment facility. The sanitary sewer collection system in Carneys Point is owned and maintained by the Authority. There is approximately 28.2 miles of sanitary sewer main with pipes ranging in size from 8 inches to 24 inches in diameter. All flow is conveyed first to the CPSA STP for primary 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. "Actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

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.

Table 2.C.1: Non-Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	**Facility Name**	**NJPDES Permit Number**	**Discharge Type (Groundwater or Surface Water)**	**Facility Table Number**
5	Carney's Point Twp SA	NJ0021601	SW	5
7	Carneys Point Generating Plant	NJ0128996	GWND	7
8	Westwood Villa	NJG0100641	DGW - T1	8
9	Deepwater Diner	NJG0165565	DGW - T1	9

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. Table 2.D.1 lists all existing industrial treatment works that discharge 2,000 gallons per day or more of process and 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.

Table 2.D.1: Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	**Facility Name**	**NJPDES Permit Number**	**Discharge Type (Groundwater or Surface Water)**	**Facility Table Number**
6	Carneys Point Gen Plant	NJ0073750	GWIND	6

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.

F. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the CPSA STP were calculated based on flows metered by CPSA. The present average annual wastewater for 2010 is 1.069MGD. 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.

Table 2.F.1: Wastewater Treatment Plant Capacity and Flows 2010				
WWTP	**NJPDES Permit No.**	**Permitted Capacity (MGD)**	**Average Daily Flow 2010 (MGD)**	**Build-Out Projection (mgd)**
Carneys Point WWTP	NJ0021601	1.3	1.069	2.19

Included within the above existing wastewater flows are projections from connections located within Carneys Point Township, and Oldmans Township. The flows from these connections are identified within the specific municipal chapter or facilities tables provided within Chapter 7 (VII) of this report. Monthly wastewater flow data for 2010 is identified in Table 2.F.2 below.

Table 2.F.2: Existing Wastewater Contributions by Municipality				
Month			**Municipality**	
		Total System	**Carneys Point Township**	**Oldmans Township**
		Monthly Avg. (mgd)	**Monthly Avg. (mgd)**	**Monthly Avg. (mgd)**
Jan-10		1.333	1.319	0.0137
Feb-10		1.405	1.394	0.0112
Mar-10		1.799	1.786	0.0131
Apr-10		1.449	1.433	0.0161
May-10		1.015	0.994	0.0211
Jun-10		0.673	0.649	0.0243
Jul-10		0.848	0.820	0.0279
Aug-10		0.861	0.835	0.0264
Sep-10		0.731	0.705	0.0264
Oct-10		0.943	0.915	0.0281
Nov-10		0.892	0.868	0.0236
Dec-10		0.878	0.854	0.0230
Yearly Average	**(mgd)**	**1.069**	**1.048**	**0.021**
	(mgm)	**32.513**	**31.867**	**0.646**
	(mgy)	**390.161**	**382.408**	**7.752**

G. EXISTING WASTEWATER TREATMENT

The CPSA STP is currently operated under NJPDES Permit number NJ0021601. This treatment facility currently operates within permitted effluent limits, based on 2010 data.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

The Township of Carneys Point is presently serviced from the New Jersey American Water Company (NJAW). NJAW currently owns and operates seven wells within the township. The wells: "Ranney 7" and "Layton 11A" (the replacement for the previous well "11") draw from the Lower PRM (Potomac Raritan Magothy Aquifer) source. Whereas, the wells: "Layton 2", "Layton 4", and "RF1A", "RF2B", and "RF3A" draw from the Upper PRM source. 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 properly either is connected or has all regulatory approvals necessary to be connected with no further review.

The public water supply infrastructure of this system consists of 16.6 miles of water main ranging from 4 – 12 inches diameter in size. The following Table 2.H.1 summarizes each public community water supply facility currently serving the municipality, excluding the Handy's Mobile Park well No.1 which has minimal pump capacity and operates under permit No.3000014192. The wells located in this table are owned and operated by NJAW. The NJAW water system serves Carneys Point, Oldmans Township, and Penns Grove Borough. All wells in this system are located within the Carneys Point Township municipal boundary. In addition, the five (5) ground water wells included as part of the NJAW (Logan System) have also been identified within the table. The franchise areas are depicted on Map No.1.

Table 2.H.1: Existing Water Supply Wells

Water System	Well Permit Number	Well Designation	Pump Capacity (gpm)	Aquifer
Auburn Village Water Supply	3000001151	1	N/A	N/A
	3000011400	2	N/A	N/A
NJAW Penns Grove System	3000000563	7	500	Lower PRM
	3000001113	2	500	Upper PRM
	3000001815	4	450	Upper PRM
	3000003310	RF1A	250	Upper PRM
	3000003535	RF3A	100	Upper PRM
	3000008511	RF2B	250	Upper PRM
	3000019273	11A	250	Lower PRM
NJAW Logan System	3000001371	2	800	Mid PRM
	3000009444	4	590	Mid PRM
	3000005212	5	100	Mid PRM
	3000014797	6	600	Mid PRM
	E201002435	7	800	Mid PRM

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

New Jersey American Water (NJAW) is currently the primary source of water to the Township of Carneys Point. NJAW purchased the Penns Grove Water System in 2007. NJAW operates under permit No.WAP070002 to provide water to a service area, which includes Carneys Point Township, Borough of Penns Grove and Oldmans Township. As a result, a specific allocation for each of these municipalities has not been established.

General information presented within this municipal chapter regarding the water system's overall annual demand and the estimated yearly demand for each municipality from 2008 through 2010 has been obtained from NJAW. Projected average daily demand values have been estimated for each of the three (3) municipalities served by this system. This was necessary as NJAW meters each individual connection to their system and not the municipality as a whole. Based on available water demand information provided, between 2008 through 2010, the following average demand percentages have been estimated to represent the water supplied by NJAW to the three municipalities: Borough of Penns Grove 30.5%, Carneys Point Township 62.5% and Oldmans Township 7%.

The Township of Carneys Point currently has an estimated average daily demand of approximately 0.789 MGD based upon the 2010 calendar year. The Township's peak annual and monthly water demand over a period of 5 years between 2006 through 2010 was shown to occur in the month of July 2007. Estimates of monthly flows to Carneys Point from 2006-2010 were made based on data supplied by NJAWC. Monthly data was formulated by adjusting total water supplied by NJAW by the associated demand percentage utilized by Carneys Point as indicated above. The reduction in average demand, over the last few years, is partially due to the enforcement of water restrictions and water conservation appurtenances in residential and commercial buildings and improvements/replacements within the system's infrastructure.

The following Table 2.I.1 summarizes current water demands and allocation diversion limits permitted for the New Jersey American Water system (which includes the Borough of Penns Grove and Oldmans Township).

Table 2.I.1: Water Allocation and Demand 2010

Water Company (Breakdown by Municipality)		Permit # / Program Interest ID	2010 Water Allocation *		Average Demand 2010		Build-Out Projection	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
New Jersey American Water	**% of System Demand**	**WAP070002/ 5328**	**70.4**	**753**	**37.95**	**455.409**	**140.07**	**1649.66**
Penns Grove	30.5	N/A	N/A	N/A	11.299	135.586	2.05	24.57
Oldmans	7.0	N/A	N/A	N/A	2.653	31.842	53.54	630.41
Carneys Point Township	62.5	N/A	N/A	N/A	23.998	287.981	84.48	994.68

*Source: The Average Demand indicated above represents data obtained from DEP water use results.

The following Table 2.I.2 summarizes historical daily, monthly and annual water demand estimates specific to the demands of Carneys Point Township on the NJAW water system. The districts and franchise areas are depicted on Map No.1.

Table 2.I.2: Annual Water Demand Summary

Year	Annual Yearly Demand (MGY)	Average Daily Demand (MGD)	Average Monthly Demand (MGM)
2006	312.811	0.857	26.068
2007	323.818	0.887	26.985
2008	311.038	0.852	25.920
2009	279.901	0.767	23.325
2010	**287.981**	**0.789**	**23.998**

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. DELINEATION 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 at NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. 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	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	9/15/09

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Carneys Point 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 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.

Table 5.B.1: Summary of Carneys Point Municipal Zones			
Zone Name	**Zone Description**	**Municipal Area (ac)**	**SSA Developable Area (ac)**
AG	AGRICULTURE	2,929.6	444.34
GC	GENERAL COMMERCIAL	1,751.8	731.03
GC-R	GENERAL COMMERCIAL (REDEVELOPMENT)	146.9	102.96
GI-R	GENERAL INDUSTRIAL (REDEVELOPMENT)	1,115.9	377.61
HR	HIGH DENSITY RESIDENTIAL	101.8	2.81
IC	INTERCHANGE COMMERCIAL	338.2	175.81
LC	LIMITED COMMERCIAL	175.6	66.20
LI / LI-R	LIGHT INDUSTRIAL / REDEVELOPMENT	801.3	151.36
LR	LOW DENSITY RESIDENTIAL	923.5	321.05
MHR	MEDIUN HIGH DENSITY RESIDENTIAL	491.2	72.73
OS	OPEN SPACE	733.9	37.90
RR-1	RURAL RESIDENTIAL 1	1,192.2	511.75
RR-2	RURAL RESIDENTIAL 2	110.2	30.71

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 defines 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 Township of Carneys Point 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 Township's sewer service is defined on Map No.3.

2. Sewer Service Area Build-out Analyses

The build-out of the FWSA 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 FWSA. 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 Build-Out Projections					
Zone	**Developable Acres**	**Zoned Lot Areas**	**Potential Units**	**Average Daily Flow (GPD)**	**Total ADF (GPD)**
	See Note (a)		*See Note (b*	*See Note (c*	*See Note (d*
Ag	444.34	1 ACRE	385	300	115,500
GC	731.03	15,000SF	2042	450	918,900
GC-R	102.96	15,000SF	295	450	132,750
GI-R	377.61	10 ACRES	35	1250	43,750
HR	2.81	5,000SF	16	225	3,600
IC	175.81	50,000SF	136	1250	170,000
LC	66.20	5,000SF	565	300	169,500
LI / LI-R	151.36	5 ACRES	20	1250	25,000
LR	321.05	15,000SF	843	300	252,900
MHR	72.73	7,000SF	403	225	90,675
OS	37.90	N/A	182	0	0
RR-1	511.75	22,000SF	893	300	267,900
RR-2	30.71	2 ACRE	5	300	1,500
				Total FWSA Projected Sanitary Flows (GPD)	**2,191,975**
				Total FWSA Projected Sanitary Flows (MGD)	**2.19**

The notes referenced below are indicated in the above table.

Notes:

(a) "Developable Acres" represents the developable acreage per zone, within the sewer service area, excluding the environmentally constrained areas..

(b) "Potential Units" represent the projected number of units that may be constructed within each zone within the FWSA.

(c) Average Daily Flow has been calculated based on current NJDEP regulations.

(d) TOTAL ADF represents the potential build-out within the FWSA. 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 Build-out 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 sanitary sewer flows for the Township, included as part of this WMP submission, are identified within section 5.E.2.1 above.

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. The final column determines whether existing capacity is or is not adequate for the projected flows. Where capacities are inadequate, the issue is addressed in later sections. 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 #	Treatment Capacity (mgd)	Average Daily Flows 2010 (mgd)	FWSA Build-Out Projection (mgd)	Contributing FWSA Build-out (mgd)	Remaining Treatment Capacity (mgd)
Carneys Point WWTP	NJ0021601	1.300	1.069	2.190	1.362	-3.321

Note: Contributing Municipalities include Oldmans Township

The total treatment capacity (1.3 mgd) of the wastewater treatment plant (Carneys Point WWTP) that serves the municipality is less than the projected flows necessary to support existing demands and proposed development within the Carneys Point Township FWSA**.** 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 is not currently available to accommodate the FWSA in its entirety.

Included within the summaries above of "Average Daily Flows" and "Contributing FWSA Build-out" are existing contributions and proposed contributions from connections to the Carneys Point sewerage system that are located within Oldmans Township. Detailed information regarding anticipated flows from contributing FWSA's are identified within the Oldmans Township municipal chapter.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

The FWSA sanitary buildout analysis results above indicate that Carneys Point Township does not have sufficient wastewater treatment capacity to support future wastewater management needs projected by the plan. The wastewater treatment plant does have sufficient capacity to support existing flows from this municipality and marginal capacity for growth in the future. Due to the current economic climate, projected growth rate of the population and the anticipated short-term need for additional capacity, the municipality is not proposing new or expanded facilities at this time. Carneys Point Township will begin to review the potential process improvements and available treatment alternatives based on the direction of the governing body. It is anticipated that the Township would consider the Gloucester-Salem County Regional Alternative to meet future development needs.

The Salem County Pollution Control Financing Authority conducted a sanitary sewer study in an effort to conceptualize a regional sewage system plan for the County. The intent of the plan is to convey sanitary sewer to a newly constructed treatment facility to be located on the Dupont Chambers Works property in Carneys Point Township. The planning of this effort is ongoing and currently in the environmental assessment and preliminary engineering stage of development.

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.

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 within the existing sewer service area are compared. A build-out projection of the proposed sewer service area is then prepared to determine the additional water demands that may result. Finally, the demands are compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. SUFFICIENCY OF WATER SUPPLY

The Township of Carneys Point'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 demand was 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 300gpd / dwelling unit. Commercial flows were projected assuming 0.125 GPD/sq.ft. of building area**.**

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

Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	See Note (a)	*See Note (b)*	*See Note (c)*	*See Note (d)*
Ag	444.34	385	400	154,000
GC	731.03	2042	563	1,149,646
GC-R	102.96	295	563	166,085
GI-R	377.61	35	1250	43,750
HR	2.81	16	225	3,600
IC	175.81	136	1250	170,000
LC	66.20	565	400	226,000
LI / LI-R	151.36	20	1250	25,000
LR	321.05	843	400	337,200
MHR	72.73	403	225	90,675
OS	37.90	182	0	0
RR-1	511.75	893	400	357,200
RR-2	30.71	5	400	2,000
			Total FWSA Projected Water Demand (GPD)	**2,725,156**
			Total FWSA Projected Water Demand (MGD)	**2.73**
			(mgm)	**84.480**
			(mgy)	**994.682**

Notes:

(a) "Developable Acres" represents the developable acreage per zone, within the sewer service area, excluding the environmentally constrained areas..

(b) "Potential Units" represent the projected number of units that may be constructed within each zone within the FWSA.

(c) Average Daily Flow has been calculated based on current NJDEP regulations.

(d) TOTAL ADF represents the potential build-out within the FWSA. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

2. Future Sewer Service Area: Water Build-out 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 water demands for the Township, 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 flow demands within the municipality. The final column determines whether existing capacity is sufficient to support projected daily demands. Where capacities are inadequate, the issue is addressed in later sections. 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 7.A.3.1: Water Supply Capacity

Water Company (Breakdown by Municipality)		Permit # / Program Interest ID	2010 Water Allocation *		Total Projected Water Demand		Remaining Water Allocation	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
New Jersey American Water (Logan System)		WAP100001/ 5003	60	392	N/A	N/A	(Alternative Source)	
New Jersey American Water (Penns Grove System)	**% of System Demand**	**WAP070002/ 5328**	70.4	753	178.02	2,105.07	-107.62	-1,352.07
Penns Grove	30.5	n/a	n/a	n/a	13.35	160.16	n/a	n/a
Oldmans	7	n/a	n/a	n/a	56.19	662.25	n/a	n/a
Carneys Point Township	62.5	n/a	n/a	n/a	108.48	1,282.66	n/a	n/a

Note: Total Projected Water Demand reflects the Average Daily Demand in 2010 and additional demand associated with the FWSA build-out projections.

Based on the analysis presented above, the total monthly water allocation for the water purveyor (NJAW), supplying the Carneys Point Township, Oldmans Township and the Borough of Penns Grove water systems (70.4mgm/ 753mgy) is less than the water supply necessary to support existing demands and proposed development within the Carney Point 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.

Carneys Point Township will need to obtain additional water supply to support the FWSA in its entirety, as the population increases and development expands. Due to the current economic climate, projected growth rate of the population, and the anticipated short-term need for additional water supply, these municipalities are not seeking additional water supply at this time. As NJAW is only operating at 54% of their monthly allocation and approximately 60% of their annual diversion limit, the existing water capacity is sufficient to support existing demands and short-term development in the future, based on the current water utilization indicated above. However, it should be noted that NJAW system has additional water production capabilities and could supply more than the current allocation.

NJAW supplies water to Penns Grove Boro, Oldmans and Carneys Point Townships through its Penns Grove system, which receives water from its local sources, as permitted by the Department, and from the Tri-County pipeline. NJAW completed improvements in 2010 to interconnect their Penns Grove water system and Logan Township water system to allow for operational flexibility. The Logan system of NJAW draws from five (5) ground water wells, as noted in Table 2.H.1. Therefore, NJAW could supply more than the current allocation if necessary. This may require NJAW to make adjustments or infrastructure improvements to its water system in order to supply additional water to the area.

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 Carneys Point WMP provides the most current planning efforts within the Sewer Service Area.

The Carneys Point WMP 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 Carneys Point Township WMP Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWl) 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. This planning area is exclusive to the municipality's boundary. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. MAP NO.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 Carneys Point Township, 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 NO.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 NO.4: CARNEYS POINT TOWNSHIP ZONING MAP

The map depicts the current zoning of Carneys Point Township. 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.

Table 8.B.4.1: Zoning Regulations

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
RR-1	RURAL RESIDENTIAL 1	22,000SF	125'	150'	30/40'	15/10'	30/10	35/15	20%
RR-2	RURAL RESIDENTIAL 2	2 ACRE	150'	200'	40'	25'	50	35/15	20%
AG	AGRICULTURE	1 ACRE	100'	125'	30/40	15/10	30/10	35/15	15%
LR	LOW DENSITY RESIDENTIAL	15,000SF	100'	125'	30/40	15/10	30/10	35/15	25%
MHR	MEDIUN HIGH DENSITY RESIDENTIAL	7,000SF	60'	90'	30/30	10/5.	25/5	35/15	25%
HR	HIGH DENSITY RESIDENTIAL	5,000SF	50'	70'	30/30	10/5.	25/5	35/15	30%
LC	LIMITED COMMERCIAL	5,000SF	50'	70'	30/30	10/5.	25/5	35/15	30%
GC	GENERAL COMMERCIAL	15,000SF	100'	125'	40/40	30/30	40/40	40/40	30%
GC-R	GENERAL COMMERCIAL (REDEVELOPMENT)	15,000SF	100'	125'	40/40	30/30	40/40	40/40	30%
LI-R	LIGHT INDUSTRIAL (REDEVELOPMENT)	5 ACRES	300	400	60/60	30/30	40/40	50/50	30%
GI-R	GENERAL INDUSTRIAL (REDEVELOPMENT)	10 ACRES	500'	500'	75/75	30/30	40/40	50/50	40%
IC	INTERCHANGE COMMERCIAL	50,000SF	200'	200'	50'	20'	35'	45'	40%

5. MAP NO.5A: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP)

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)

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)

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.